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**ADDRESS BY  
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**JADAVPUR UNIVERSITY**

**CALCUTTA 700 032**

**INDIA**

## 45<sup>th</sup> ANNUAL CONVOCATION

JADAVPUR UNIVERSITY

24 December, 2000; Calcutta

### DEVELOPED NATION: THE VISION\*\*

I am indeed delighted to participate in the 45<sup>th</sup> Annual Convocation of Jadavpur University which is indeed a great institution that has contributed in a big way to the national freedom and national development movements. I greet all the Professors, teachers and staff for the excellent contribution in shaping young minds to contribute to the nation in multiple fields. I take this opportunity to congratulate and greet all the graduating students today. My best wishes.

On this important occasion, I was thinking what thoughts I can share with you. Recently, my friends had launched a web site in my name. I normally exchange views particularly with the young in the country and abroad. I had put forth two points in the web site for the young to share their thoughts. The first point I had put forth was, "*India is a developing country for more than half a century. What you will do to make it Developed India?*". The second one was, "*When can I sing a song of India?*" There is a connectivity. There were more than 100 responses. I thought of sharing with you four important suggestions that I received. One young man had responded. "I will become a teacher (rather a Professor of Engineering) since I am good in, as well as enjoy teaching. Since I believe that one of the best ways in which to serve any nation is to be either a Professor or a soldier..... among many other professions". Another young boy says. "Single flower makes no garland. *I will make my countrymen to love the nation and work for garland, that is developed India*". A twenty year old boy from Goa has responded, "*I would become an electron and like an electron in the orbit, I will work ceaselessly for my country, now onwards*". With reference to the second point which

I had put forth, a young man from Atlanta says, "when India builds the capability to put sanction against the US; if needed, then I will sing a song of India" What the young man meant was: Economic strength brings prosperity. Like that there are many responses. The cross section of people of your age group have inspired mind to make the nation great. Hence the subject I have chosen for today's talk is, how the young can transform this country to a 'developed nation'. Fortunately, India is young with more than its 50% of billion population.

Friends, my talk will be in five parts. The first part deals with knowledge society - how India has to transform into a knowledge society, in a decade. A Task Team of the Union Planning Commission will shortly submit its report. Knowledge society is a very important foundation for transforming India into a developed country. In the second part, I will be discussing the challenge in change. The third part deals with technology integration. The second vision for the nation is presented in the fourth part. Finally, I will be focussing on how to achieve the second vision for the nation.

### **Core competence for Knowledge society**

A knowledge society can be one of the foundations for such a vision for the nation: Developed India. Knowledge has many forms and it is available at many places. Knowledge has always been the prime mover of prosperity and power. The acquisition of knowledge has therefore been the thrust area throughout the world and sharing the experience of knowledge is a unique culture of our country. India is a nation endowed with natural and competitive advantages as also certain distinctive competencies. But these are scattered in isolated pockets and the awareness on these is inadequate. During the last century the world has undergone a change from agriculture society, where natural labour was the critical factor, to industrial society where the management of technology,

capital and labour provided the competitive advantage. In the 21<sup>st</sup> century, a new society is emerging where knowledge is the primary production resource instead of capital and labour. Efficient utilisation of this existing knowledge can create comprehensive wealth of the nation in the form of better health, education, infrastructure and other social indicators. Ability to create and maintain the knowledge infrastructure, develop knowledge workers and enhance their productivity through creation, growth and exploitation of new knowledge will be the key factors in deciding the prosperity of this Knowledge Society. Whether a nation has arrived a stage of knowledge society is judged by the way the country effectively deals with knowledge creation and knowledge deployment.

### **Knowledge Society Components**

Knowledge Society has two very important components driven by societal transformation and wealth generation. The societal transformation is on education, healthcare, agriculture and governance. These will lead to employment generation, high productivity and rural prosperity. How do we do that?

The wealth generation is a very important task for the nation, which has to be woven around national competencies. The task team has identified core areas that will spearhead our march towards knowledge society. The areas are: Information Technology, bio-technology, space technology, weather forecasting, disaster management, tele-medicine and tele-education, technologies to produce native knowledge products, service sector and Infotainment which is the emerging area resulting from convergence of Information and entertainment. These core technologies, fortunately, can be interwoven by IT. IT took off only due to enterprising spirit of the young. Thus there are multiple technologies and management structure that have to work together to generate knowledge society. It has to be recognized that the difference between an IT-driven society and

a knowledge-driven society is the role of multiple technology growth engines. With India carving a niche for itself in Information Technology, the country is hence uniquely placed to fully capitalize the opportunity to quickly transform into a knowledge society. The methodology of wealth generation in these core areas and to be able to meet an export target set at 50 billion dollars by the year 2008, especially using IT sector is subject of discussion, while simultaneously developing capability to generate Information Technology products worth 30 billion dollars domestically to pump in for societal transformation.

Evolution of policy and administrative procedures, changes in regulatory methods, identification of partners and most importantly creation of young and dynamic leaders are the components to be in place. In order to generate wealth, which is the second component for establishing a knowledge society, it is essential that simultaneously a citizen-centric approach to evolution of business policy, user-driven technology generation and intensified industry-lab-academy linkages have also to be established.

### **Challenge in Change**

Knowledge society leading to knowledge super power can prosper and survive only in the environment of economic security and internal security. The freedom movement or the vision integrated political leadership mostly drawn from the profession of law during our freedom movement. Scientists, technologists and industrialists were partners to this great political movement. We got freedom in many aspects of life, improvement in literacy, agricultural products, strategic areas, certain small and large-scale industries. Also, the life expectancy has increased. We are capable to produce sufficient foodgrains, cereals and milk. Today, India has the capability to design, develop and lead to production strategic systems for national development and security. Also, we have seen in the ambient conditions the growth in the Information Technology; the

country is progressing in hardware and software business of more than 5 billion dollars. Now more than fifty years have gone by and we are branded as one of the hundreds of developing countries, in a distinct way a separation from G-8 countries. We have many challenges. Nearly 300 million people who are below the poverty line have to join the mainstream of a good life. 100% literacy, health for all, multiple industrial and agricultural productivity and life style with value system has to blossom. Hence as the Prime Minister called the nation to enter into a developed India calls for transformation. I consider the transforming the developing India into "Developed India", is the second vision for the nation.

### **Technology -The integrator**

What can change the present cast where we appeared to have been trapped as a society. Technology is the only tool that can free us from our shackles - both physical and psychological. The advent of information technology can be seen across the entire cross-section of our lives. Similar spread of technological transformation is needed in the area of healthcare and value-added production. This is the only way to become a developed nation. Fortunately we have all components of technology to succeed — people, material, skills, infrastructure. The time has come when we come out from our mindset of a suffering civilization and strive for our destiny to be a developed nation. There is no need for the peacock to turn into an ostrich. The rhythm and harmony that signifies a song and the grace of a peacock that goes with that is something that is so innate and natural of India. It has to be preserved in our social fabric and the benefits of the technology must percolate down to the lowest strata of the society to change. This is the idea that seems to be knocking on our door. Why don't we open it?

## **Second vision for the nation**

After 50 years of progress, the aspirations are mounting that India should become a developed country. This is the second vision for the nation. How we can prepare ourselves to this challenge? To become a developed India, the essential needs are :-

(a) India has to be economically and commercially powerful, at least to be one of the six top nations in terms of size of the economy. Our target should be a GDP growth of 9-11 % annually and that the people below poverty line to be reduced to 10%.

(b) near self-reliance in defence needs of weapon, equipment with no umbilical attached to any outside world.

(c) India should have a right place in world forums.

Technology Vision 2020 is a pathway to realise this cherished mission. The Technology Vision 2020 consisted of 17 technology packages in the core sectors such as agriculture and food, healthcare, infrastructure and strategic industries. The Task Teams formed by TIFAC with nearly 500 experts of our country worked for two years, deliberated national status of various branches of national development and generated 35 documents detailing the steps to be taken for creating wealth for the nation and the well being of our people.

"Technology" is the most vital key for achieving the goals.

## **Five mega projects to transform the nation to a developed country**

We have identified five areas where India has a core competence for an integrated action: (1) Agriculture and food processing - we have to put a target of 360 million tons of food and agricultural production. Other areas of agriculture and agro-food processing would bring prosperity to rural people and speed up the economic growth. (2) Reliable and quality electric power for all parts of the country. (3) Education and Healthcare - we have seen, based on the experience, education and healthcare are

inter-related. For example, Kerala with education and better healthcare can bring down the population growth and provide improvements in quality of life of the people. Similarly, in Tamil Nadu also we have seen the downward growth of population resulting from a unique system of "mid-day meal" coupled with education. Studies about Andhra Pradesh also have different facets. These experiences, we feel, should be taken and spread in big states like Bihar and Uttar Pradesh. Beginning of agricultural prosperity through better yields in these States will help this process. (4) Information Technology - This is one of our core competence. We believe, this area can be used to promote education in remote areas and also to create national wealth. (5) Strategic sectors - This area, fortunately, witnessed the growth in nuclear technology, space technology and defence technology.

These five areas are closely inter-related and lead to national, food, economic and security. A strong partnership among the R&D, academy, industry and the community as a whole with the Government departments will be essential to accomplish the vision.

### **Can we make the nation 'developed'**

#### **Second Green Revolution from an enlightened Ninety Plus**

Few months ago, I had the great opportunity to be with Shri C. Subramaniam who was 90+, who spearheaded the green revolution in 1960s. He had put forth a comprehensive plan for the second green revolution and said he will establish a National Agro Foundation based on the experience of success of first green revolution. His mind was full of concrete ideas to make science work for India, to remove poverty and to make the country strong. The second green revolution envisages developing and providing to the farmers hybrid seeds backed by a complete set of agriculture systems packages comprising fertilisers, water management and information systems. He had unfurled the second green



revolution with a strategy for adoption of small, and marginal farmers to enable them to produce high value products. The National Agro Foundation has since been established. The scientific inputs range from soil testing to providing access to information on weather, markets and best practices. The Foundation aims at bringing a million farmers under the scheme. For this purpose, he has enlisted the support of top agriculture consultants, managers and technologists. I was really inspired to be with him and his unfurling concept of the second agricultural revolution in India. I had also a few separate meetings with him on other important developmental issues. I found his ideas so stimulating that I must share with you here because many persons young and old have to get inspired like him to build the developed India.

### **Indomitable spirit**

Sir C.V. Raman started his career in the Office of Accountant General, Calcutta. But the scientific mind in him probed and probed. Fortunately, it was supported by a great educationalist Shri Ashutosh Mukherjee, who encouraged him to pursue his research. What strikes to some of us is that the birth of 'Raman Effect' which brought him Nobel Prize, did not come out of a grand establishment with major scientific environments. I believe, the urge to show to the world the excellence of Indian minds would have been one of the major motivating factor of Sir C.V. Raman for the scientific achievement. The same is the case with Prof. S.Chandrasekhar, the great astrophysicist. There are some interesting information from his biography. I quote from a book "Chandra" by Shri Kameshwar Wali:

*"Chandra grew up in what was a golden age for science, art and literature in India, spurred on partly by the struggle for independence. J.C.Bose, C.V. Raman, Meghnad Saha and Srinivasa Ramanujam, by their achievements in scientific and creative endeavours, become national*

heroes along with Jawaharlal Nehru, Mahatma Gandhi, and a host of others active in the political movement." A question was posed to Prof. Chandrasekhar, "how world class Indian scientists flourished during pre-independence?"

*"Chandra: I mean It is a remarkable thing that in the modern era before 1910, there were no (Indian) scientists of international reputation or standing. Between 1920 and 1925, we had suddenly five or six internationally well known men. I myself have associated this remarkable phenomenon with the need for self expression, which became a dominant motive among the young during the national movement. It was a part of the national movement to assert oneself: India was a subject country, but in the sciences, in the arts, particularly in science, we could show the West in their own realm that we were equal to them."*

I found a reinforced answer from Sir C.V. Raman at the age of 82, while addressing young graduates: *"I would like to tell the young men and women before me not to lose hope and courage. Success can only come to you by courageous devotion to the task lying in front of you. I can assert without fear of contradiction that the quality of the Indian mind is equal to the quality of any Teutonic, Nordic or Anglo-Saxon mind. What we lack is perhaps courage, what we lack is perhaps driving force which takes one anywhere. We have, I think, developed an inferiority complex. I think what is needed in India today is the destruction of that defeatist spirit. We need a spirit of victory, a spirit that will carry us to our rightful place under the sun, a spirit which will recognise that we, as inheritors of a proud civilization, are entitled to a rightful place on this planet. If that indomitable spirit were to arise, nothing can hold us from achieving our rightful destiny."*

That was a saintly saying to the young. Friends, I request all who are responsible for the young, all who are creators of the young, for their children's growth, allow them to dream. Dream. Dream transforms into thoughts and thoughts result into actions.

### **Concluding Remarks**

The Technology Vision - 2020 provides immense opportunity for Indian R&D community and the Industry to work together and harness their full potential, thereby leading the nation to the status of a developed country. Our 'WILL AND COMMITMENT' will make it happen. Our adopting this vision is like lighting of a few lamps. This is a good beginning. Let us carry it further from here. Let us carry this vision in our hearts like a 'lighted lamp' and further light many more lamps using it. It will lighten up the entire India and all the countrymen. Ignited young minds is the greatest resource on the earth. Once that happens, I am confident that this will drive all of us, take us in the twenty first century with a resolve that we will transform India into a developed country by our dedicated technological partnerships at various levels all over the country.

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