ETERNAL LIFE: NO MORE AN ILLUSION*

Reason and Logic: Search for Truth

I have a reason to be with you today. You are men of science and technology. I am a man of law. Our ways are different and yet there is something in common between you and me. I serve the people and judge their actions on the basis of authorities and these authorities become reason and logic for me. That is the man of law. For you, the men of science and technology, an authority does not bind; reason and logic is your armoury and based on that, you establish authority.

The approach of the man of technology is best illustrated by an anecdote referable to George Bernard Shaw, who once remarked that the most intelligent person he met in his life was his tailor. Bernard Shaw said – "because he is the only one who takes fresh measurements every time I go to him."[1] This is the approach of technology. A fresh look every time; an urge for innovation; and, no stagnation. Every next step is not a retrial but an experiment afresh and that is how the search for truth and voyage for discovery, on which you are on, continues.

Fledglings

I would like to share some of my thoughts with the young and talented students who have received their degrees today. God has been kind to you. Your efforts have been rewarded. Your parents and teachers are proud of your achievements. They have great expectations from you and so has our nation. Today, you are like fledglings which have developed wings and are about to fly and discover the outside world. Life is full of opportunities, but accompanied by challenges. So far, you have been in the protective environment of your parents and teachers. You have a bright future and life is full of promises for you but not without some adversities and perils which do exist as realities of practical life and which you must be prepared to take on as challenges. My advice to you is – "Tread your path with firm steps, full of determination and confidence but with a certain measure of reasoning and caution".

Your Choice of Scientific Education

I felicitate you for choosing to be a student of science and technology. There used to be times, when opting for education in science and technology meant getting the very best in life and engineering colleges and institutes used to overflow with learners. Gradually, there has been a decline in the number of students aspiring to be scientists and technologists. Apparently, the reason is that the youth of today is more attracted towards IT, finance, business management and similar other courses as they provide more lucrative opportunities which pure science is unable to provide. But the charm of creativity and a sense of satisfaction which the students of science and technology enjoy, is unparalleled. Success is the ability to be happy and make others happy. The job satisfaction which the subject of technology brings is much more than just a source of monetary benefit. You are the one who view your work as a source of delight. You can never feel boredom or frustration. Your learning in this University, would enable you to be an excellent person in your life.

What? Where? And, How?

This day I would like to share some of my views dealing with three topics, each of significance to you as students of Science and Technology, standing at the threshold of your

career ahead and befitting this moment. Briefly put, they are 'what', 'where' and 'how'. What are you? Where have you to go? And, how do you reach? These perennial questions, you must ask to yourself today and continue to ask throughout your life. They will enable you to have a vision in your eyes, a mission in your life and confidence in yourself. I know you have the capability of finding out the answers. Your teachers will also help you. My duty, today is to give you a few suggestions only. I beseech you as men of science and technology: (i) to be close to nature and not to forget your own rich cultural heritage; (ii) to be a perfect person; and (iii) to aim at creating joy and cultivating happiness for the world and having done so, to have your legitimate share therein because you are also a part of the world. And before we do so, let us take stock of the times and space around us.

World around us: Changes ushered in by 21st Century

In terms of achievements and advancements, the meeting point of the past and present millennium, which we have left just 4½ years behind, is an unprecedented landmark. Ever since the evolution of man and civilization, the mysteries of cosmos were not unravelled to that extent as has been done now. The boundaries of distances have been breached. All barriers of time and space have been removed. How beautifully, though humorously, someone has said – "Shortly, one day there will be no tomorrow." Science has attained unprecedented intellectual maturity and is becoming an indispensable feature of the incoming civilization. Man has developed artificial intelligence. Sophistication and complexities of science are profound. Scientific development and discoveries have gained a rapidity almost akin to the speed of light and has penetrated, in-depth, in our day-to-day life. Any step taken in the field of science and technology in any corner of the world, whether forwards or backwards, is not confined to that place alone; it has international implication. All the changes are reassuring for the welfare and prosperity of the humanity but, at the same time, they are frought with equally dangerous trends.

Achievements of Science and Technology

What science and technology have gifted to us in the beginning of 21st century is not only fascinating, not only fantastic but also hair-raising. In a recent book titled 'Fantastic Voyage' written by Ray Kurzweil and Dr. Terry Grossman, the learned authors say that immortality is within our grasp. We do have the means to dramatically slow disease and the ageing process, far more than most people realize but we do not yet have all the techniques, we need, to extend human life indefinitely. However, it is clear that far from halting, the pace of science and technological discovery is accelerating.[2] "As we succeed in understanding the genome and the proteome, many dramatic advances in treating disease and even reversing ageing will emerge. The first two decades of the 21st century will be a golden era of biotechnology. Many experts believe that within a decade we will be adding more than a year to human life expectancy, every year. At that point with each passing year, your remaining life expectancy will move further into the future."[3] There will be profound changes in every facet of our lives, from our health and longevity to our economy and society, even our concepts of who we are and what it means to be human. Within a couple of decades, we will have the knowledge to revitalize our health, expand our experiences – such as full-immersion virtual reality incorporating all of the senses, augmented reality, and enhanced human intelligence and capability – and expand our horizons. As we peer even further into the 21st century, nanotechnology will enable us to rebuild and extend our bodies and brains and create virtually any product from mere information, resulting in remarkable gains in prosperity. We will develop means to expand our physical and mental capabilities, vastly, by directly interfacing our biological systems with human-created technology."[4]

SUTRAS

Sutra-1*: Be Close to Nature: Do not miss your own Cultural Heritage*

Technology changes the vision of a person. He looks at the nature with an eye, different from his fellow beings. St. Augustine put it poetically, when he said: "…that people travel to wonder at the height of mountains, at the huge waves of seas, at long courses of rivers, at the circular motion of the stars, and yet pass by themselves without wondering".[5]

> "The Hindu view of Creation is no different from that of scientists. The belief is not that there is an actual Creator, but that creativity is inherent in nature itself. There is a universal law. The creator of that law is *prakriti* or nature. Creation is a beginningless continuity, so you cannot say that a particular day is the first day of creation. There are millions of stars, suns and planets. They are all subject to a constant process of creation and destruction."[6]

There is no end to achievements with the help of technology. The 21st century itself is the gift of technology. It is established that ancient Indian knowledge was far above and went much beyond the most modern western technological developments. I find an interesting reference to this in a recent write up. "With the help of technology, we are now engaged in a search for other civilisations in the far reaches of outer space. More than curiosity, the search for extraterrestrials is spurred by our thirst for connectivity. Sagan, who pioneered the Search for Extra Terrestrial Intelligence (SETI) programme, points out that Hindu cosmic time scales curiously correspond to those of modern cosmology. Fritjof Capra has drawn a parallel between Nataraja or Dancing Shiva and the subatomic motion of particle physics."[7]

You are armed with technology. Your attitude towards live events and nature must undergo a change. You must enjoy the wonders of nature and wonder at nature's ordinary events.

Pope John Paul II said – "Science can purify religion from error and superstition; religion can purify science from idolatry and false absolutes. Each can draw the other into a wider world, a world in which both can flourish…… We need each other to be what we must be, what we are called to be."[8]

Sutra–2: *Be a perfect person – Be your Own-self, have a Vision and develop Communication Skills*

Be your own self – the original you. Do not imitate. The wonders of science, technology and energy developments are leading this world to move into a golden age. You have the insight to know the secrets of these wonders. May be you become, in the time to come, the author of such like wonders. In any case, you have the capacity of mastering these wonders and converting them into weapons of destruction or vehicles of welfare. Realising your personal potential and making a strenuous effort towards optimizing the same, you can develop an expertise and use that knowledge efficiently for the job you wish to do. Each one of you can be a power station, generating immense energy and each one of you can be an engine giving lead, drive and direction to the societal movement which is gifted by the nature's bounty, ceaselessly showered. Be your own genuine self. Preserve your originality. Science and Technology, by their very nature, love and respond to originality. Learn but never imitate.

I feel inclined to share with you two real life anecdotes told by none other than *Dr. Jayant* v. *Narlikar*[9]—

> "In the middle of the 19th century, two clever students, Parkinson and Thomson, were competing for the Cambridge Tripos examination. When the results were out, Parkinson stood first and Thomson second. Both stood way above the rest of the pack. They were the only two to have solved a very difficult question. The examiner of the paper, however, was intrigued to find that both had solved the question in the same way. Did one copy the other? He called Parkinson to find out how he arrived at the solution. Parkinson explained that he made it a practice to go beyond the syllabi and texts to read research journals and he

had encountered the question in a research paper whose author was anonymous. The examiner, who had taken the question from the very same source, complimented Parkinson on his preparation and interviewed Thomson. Thomson said: 'I wrote that paper'. Thomson, later, went on to be a famous physicist and is better known as Lord Kelvin."

"In Narlikar's batch, there was an undergraduate who wrote a paper in the Physical Review Letters, pointing out a serious error in an experiment performed in the UK to verify a prediction of Einstein's gravitation theory. The student went on to get a Nobel Prize based on his research work as a graduate student. His name is Brian Josephson."

Narlikar says that the like of such brilliant students, cropping up frequently, increases when the overall level of the students is high. Good students are attracted by good teachers and researchers. A University like this, headed by Vice Chancellor, Prof. M.C. Gupta, is a good ground for reaping the harvest of good teachers, good researchers and good students.

You must have a *vision*. Vision-building is a challenging exercise as it aims to construct future scenarios and links the present with the future. Without vision, – cultures, communities and civilization have perished. Visions are created by combining, the restructuring of the present realities with dreams for future expectations. Visions can be realized and transformed into realities by extending initiative, commitment and hard work. A man of science and technology, personified with a vision, must have trust in self, society and the nature.[10] The lessons which you have learnt in this University will enable you to do so. "The term 'Knowledge Society', 'Information Society' and 'Learning Society' have now become familiar expressions in the educational parlance, communicating, emerging global trends with far-reaching implications for growth and development of any society. These are not to be seen as mere clichés or fads but words that are pregnant with unimaginable potentialities. Information revolution, information technologies and knowledge industries, constitute important dimensions of an information society and contribute effectively to the growth of a knowledge society."[11]

Develop your *Communication Skills*. The ultimate aim of education is to create a concerned and responsible community of individual citizenry. It is said that technical education aims at fulfilling the work requirements of international capitalism. But the real role of technical education in a society is to meet the expected future needs of economic and social development in the country. It is a balance to be achieved between these two aims. In a technological institute, the emphasis is on producing particular technical skills. But the most important function of any form of education is to play a critical role in encouraging creativity in the society. A focus on purely technical or absorptive skills can lead to a downgrading of the process of encouraging analytical capacities, or creating questioning attitudes and socially necessary dissidence. Since educational institutions form the very soul of a society and typically create the space for both creativity and social introspection, downplaying these important features of education can have a deadening effect upon society.[12] More a person has achieved, he is likely to be an introvert. This phenomenon all the more exists in technocrats and technologists. To benefit the society from the achievements made by a technologist, it is necessary that he must be able to communicate with clarity and totality. He should be able to convey the thought, concept or idea which he has conceived or discovered. Mastery over communication skills is a requirement across the board. A professional in whatever walk of life, can neither be effective nor achieve a commanding position unless he possesses skill of communicating, with clarity and precision as its features.

What are communication skills? I find a very practical definition of communication skills in a Chinese proverb. It says – "Tell me, and I will forget; show me and I may remember; involve me and I will understand." This is communication and also a quality of leadership.

***Sutra*–3:** *Learn to create Joy*

Science and Technology, before they assume a life and vital force in the society, must be accompanied by ethics and morality which only religion can teach. Never before, the need was so much felt for an integrated approach of science and spirituality as it is today. Brilliant students, like you, can help in developing the social consciousness of science and technology. You must ask a question to yourself – Where lies human happiness and what values we must cherish and develop so that science and technology do not rule but serve man? Dr. M.G.K.Menon,[13] delivering the Patel Memorial Lecture[14] in February 1973 on the subject of 'Science and Society' had said – "Science represents knowledge as acquired through an unceasing, critical process of experiment, theory and evolution and the research for such knowledge. In fact, it provides an approach and method for this research. Knowledge and the power that stems from it, can be used both for good and evil. It is for all of us to ensure that it will be used as a means towards the goal of human happiness. ……whilst the individual human being is extremely important, it is society as a whole which is even more important. The development of science and technology is making this increasingly so and in the happiness of human society, will be the true happiness of the individual human being." [15]

Armed with technology, you have to contribute to sustainable development, wealth and prosperity of human society. John F. Kennedy has said – "It is our task in our time and in our generation, to hand down, undiminished to those who come after us, as was handed down to us by those who went before, the natural wealth and beauty which is ours."[16] It is only spirituality which can dictate the science to do so.

You must learn the message of Bhagavad Gita – work; put in your best efforts; do not slacken your endeavours. Your attitude towards work should be an expression of love – for yourself and for the welfare of the humanity. You will find, your work enjoyable for ever.

A message from Albert Einstein, the great scientist, would be more appropriate for you on this day: He once said: "Any intelligent fool can make things bigger, more complex, more violent. It takes a touch of genius – and a lot of courage – to move in the opposite direction". The 20th century's greatest scientist had boundless curiosity about the meaning of life and religion. Spirituality and morality always fascinated him, as a scientist. His words are of great relevance to the youth. He had said:

(i) "science without religion is lame; religion without science is blind";

(ii) "never do anything against conscience, even if the State demands it," that is, even if there is compulsion;

(iii) "all that is valuable in human society depends upon the opportunity for development accorded to the individual".

(iv) "the ideas which have lighted my way and, time after time, have given me courage to face life cheerfully, have been Kindness, Beauty and Truth…..The trite subjects of human efforts – possessions, outwards success, luxury – have always seemed to me contemptible."

At his death, the entire estate of Albert Einstein was worth $65,000. Far lesser men died as millionaires on the back of his scientific advances. But he himself had said: "It was far more important to be a man of value than a man of success".[17]

Epilogue

My dear young men of technology! Some of you are bound to be scientists and make a mark in the history of mankind. Your contributions would be memorable and timeless. For you, the

Universe is full of promises and potentials. H.G. Wells, put it beautifully – " It is possible to believe that all the past is but the beginning of a beginning, and that all that is and has been is but the twilight of the dawn. It is possible to believe that all that the human mind has ever accomplished is but the dream before the awakening….We are creatures of the twilight…"[18]

Andrew Carnegie tells us that "there are three types of people: The first type are those who do as little work as possible. The second type are those who do only what their work stipulates, nothing more. But the third type are those who do their duty and a little more. They are not bound by the clock. If there is work to be done, they will do it and more."[19] Scientists and technologists, that you are or are going to be, belong to the third type, that is, the 'top type'. The very fact that you have successfully completed your education in this University, bears testimony to the fact that God has blessed you with intelligence, industry and innovation – all attributes of excellence. You have to repay His obligation – the divine obligation with integrity and inotrusive personality.

The life history, thoughts and philosophy of all great scientists and technologists of the world, be he Albert Einstein, Isaac Newton, Khurana, Narlikar or Dr. A.P.J. Abdul Kalam, tell that they have understood and accepted the concept of universal brotherhood. You are in line with them. You can make true, the dream of brotherhood not only in country, not only in universe but also in cosmos. "The word cosmopolitan, derived from the word Cosmos, means ……not merely a citizen of any one nation, but the cosmos……". It is the recognition of oneness under a common sky, together with inner yearning for the truth of the Self that will revive our cosmic consciousness, bringing us closer to one another and with Self."

* Speech delivered on the occasion of Third Convocation of Rajiv Gandhi Proudhyogiki Vishwavidyalay on 7th August, 2005, at Bhopal.

1. Swami Parthasarathy, '*Reason and not Dogma*', Speaking Tree, TOI.
2. Fantastic Voyage, p. 3.
3. *Ibid*., p. 4.
4. I*bid*., p. 5.
5. Pranav Khullar, *The Sky Above and our Cosmic Connections* in Speaking Tree, TOI.
6. Swami Satyananda Saraswati, *Hindu Concept of Cosmic Creation & Evolution,* Speaking Tree, TOI.
7. Pranav Khullar, *The Sky Above and our Cosmic Connections* in Speaking Tree, TOI.
8. *Sacred Space,* TOI.
9. TOI, July 30, 2005, http://www.indusscitech.net/jayant_v_narlikar.htm.

   Dr. Jayant v. *Narlikar,* internationally acclaimed astro-physicist, now serving as Professor of Theoretic Astrophysics in the Tata Institute of Fundamental Research, Bombay.
10. J.S. Rajput, '*Education*: *Vision 2020, in 'India*: *Vision 2020'* published by Planning Commission, Government of India, p. 245).
11. *Ibid.,* p. 246.
12. Jayati Ghosh, *Business of Education,* Frontline dated 29-07-2005, p. 117-18).
13. Former Minister of State for Science and Technology and for Education; also Scientific Adviser in Ministry of Defence; conferred with Bhatnagar Award, Padma Shri, Padma Bhushan, Padma Vibhushan and several others.
14. Patel Memorial Lectures (Combined) 1955-85, Publications Division, Govt. of India.
15. *Ibid.,* p. 884.

16. John F. Kennedy, *Natural Heritage,* Sacred Space, TOI.
17. Shashi Tharoor, *Was There such a One as This?* The Hindu, July 3, 2005.
18. *Sacred Space,* TOI.
19. Sadhu Vaswani, *Labour of Love,* The Speaking Tree, TOI.