

PROFESSOR JAMAL NAZRUL ISLAM

PROFESSOR EMERITUS
UNIVERSITY OF CHITTAGONG

I congratulate and convey my best wishes to the graduates and the faculty members participating in the Sixth Convocation of East West University.

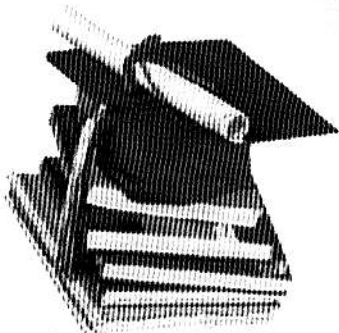
I am particularly happy that today, through this magnificent occasion, the graduates will get a formal recognition. This day will remain an unforgettable memory and an immense source of inspiration for the rest of their lives.

I am aware that East West University has already achieved a place of importance among the universities of this country. I am sure the young graduates will carry forward this reputation even farther in the years ahead.

I look forward to an exciting day, and wish the Convocation all success.

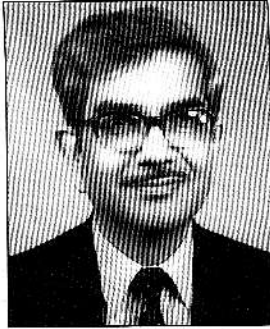
Jamal Nazrul Islam

Professor Jamal Nazrul Islam



A D D R E S S

CONVOCAATION SPEAKER



PROFESSOR JAMAL NAZRUL ISLAM

PROFESSOR EMERITUS
UNIVERSITY OF CHITTAGONG

Honourable Vice-Chancellor, respected teachers and officers, distinguished guests, ladies and gentlemen, dear students: It is a great honour and a privilege to be invited to address this august audience, and to speak to the students who are taking their degrees on this auspicious occasion.

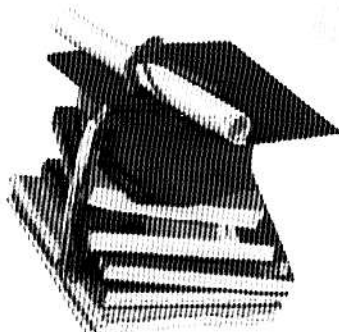
I have been involved in research and teaching, in mathematical and theoretical physics, for almost four decades, and lived abroad for many years, over twenty years in the UK and about five in the US. I returned to Bangladesh permanently in 1984. Apart from purely scientific matters, I have some interest in social problems, national, regional and global, and over the years I have developed a certain point of view. I would like to share some thoughts, for what they are worth, with concerned citizens. I have written and am writing about these matters extensively; the following contains a brief summary.

It is a truism to say that the application of science and technology can help the developing countries to eradicate poverty, hunger and disease and raise the standard of living of the people. Thus it is well-known that modern agricultural methods can improve the yields of crops, modern medicine can check the prevalence of disease, and advanced communications networks can help improve the infrastructure that is needed in administering these developments, and so on. In principle all these are possible, but in practice many difficulties arise. Lack of education, apathy, inefficiency, etc. are well known obstacles to progress in any field. Another serious problem, which is nothing like sufficiently realized, is exploitation of the 'backward' situation by certain unscrupulous persons or institutions of developed or more developed countries.

In any enterprise such as the application of science and technology for development, one needs the collective and strong will of the nation, with a nucleus of highly motivated and capable individuals who are supported fully by the society, government and the nation. Partly for these difficulties, scientific and technological development cannot be seen in isolation, but must be a part of economic, political, cultural, religious, moral and intellectual development, which are all dependent on each other.

I want to emphasize the need to promote basic science in the Third World, as well as applied science. This point was made in the past by the late Prof. Abdus Salam, among others. The following is an excerpt from 'Draft National Science and Technology Policy of Bangladesh' published by the Science and Technology Division of the Government of Bangladesh in 1985. I believe this is still relevant today.

"While in a shattered economy like ours goal-oriented research will continue to be emphasized, a certain proportion of basic research must also be carried out in the Universities, Research and Development Organizations and other enterprises because it provides solid foundation to applied research and development. This type of research will be carried out by those with originality and innovativeness of a high order. Successful accomplishment of basic research... results in the creation of manpower imbued with great intellectual quality, self-confidence and the ability to find





CONVOCATION SPEAKER

new an innovative solutions to problems."

Basic science is used increasingly in modern engineering. In many engineering projects the leaders have to know not only basic science, but also economics and some social science. A writer has made the following comment about modern engineering:

"The need for men who can view engineering, wide and complex as it is, as a single field of operation with relatively few basic laws and methods is increasingly recognized. Such men can work well with people from other disciplines and, when they gain sufficient experience and judgment, can successfully plan and direct vast enterprises."

The importance of basic theoretical understanding in practical applications emerges also in the work of John Maynard Keynes one of the leading economists of the twentieth century. In the preface of his famous book, The General Theory of Employment, Interest and Money, he says:

"This book is chiefly addressed to my fellow economists. I hope that it will be intelligible to others. But its main purpose is to deal with difficult questions of theory, and only in the second place with the applications of this theory to practice."

Notwithstanding the emphasis on theory, or perhaps because of it, the book has had an enormous influence.

One of the obstacles to good scientific research in Bangladesh as in many Third World countries is the poor quality of science education in schools and colleges. There is a little effort to impart to the students a true understanding of basic scientific principles. The students are not encouraged to find out and work out things by themselves – they usually get the material by heart and reproduce it in the examination. This reflects the poor quality of teachers themselves. I believe if the teachers are exposed to a modicum of basic research, this will improve the quality of their teaching, thereby contributing to good science education in schools and colleges.

The M.Phil. degree is particularly suitable for Bangladesh as there are many college and some university teachers for whom the Ph.D. degree, for various reasons, is not appropriate, whereas they are quite capable of or could avail an M.Phil. degree and would benefit greatly from it. At the same time, an attempt should be made, wherever possible, to introduce and maintain a Ph.D. program.

The attainment of a Ph.D. degree by a member of a university department or any institution should be looked upon as a cooperative achievement of the whole institution which, apart from personal advancement of the degree holder, enhances research and academic activities generally, and contributes to a basic function of any academic institution: the pursuit of truth and knowledge for the benefit of society and of mankind.

In Bangladesh, because of various problems that have arisen in state educational systems, private universities and colleges have a role to play in education. However, I believe the bulk of mainstream education, at all levels, must be provided by the state. The following excerpt from Adam Smith may be relevant (quoted by Amartya Sen in his Development as Freedom) in which he expresses "his frustration at the parsimony of public expenditure in the field of education":

"For a very small expense the public can facilitate, can encourage, and can even impose upon almost the whole body of the people, the necessity of acquiring those most essential parts of education."

Private colleges and universities can play an important supporting role to state institutions. Both state and Private academic institutions should be under the "umbrella" of some central authority such as the Ministry of Education and the University Grants Commission, and there could be regular meetings and discussions to create and maintain an appropriate balance. An important aspect is that private academic institutions should be conscious that they exist not just for an affluent section of society, but they should make every attempt to be of genuine service to the whole academic community and society by providing scholarships to intelligent students, library

Convocation 2007

facilities to all students and interested public, holding regular seminars on matters of general interest, etc. There are, of course, financial constraints and some of these activities may be taking place already, but these considerations may be kept in mind. I am sure efforts are being made in this direction, but further steps could be taken to make the cooperation between state and private education sectors more effective and meaningful.

As regards M.Phil and Ph.D. degrees, the Ministry of Education, the Ministry of Science and Technology, the University Grants Commission and similar bodies can extend their support by increasing scholarships; the private sector can also help, either as a service to the country or through collaborative projects between research groups and industry. The Bangladesh Atomic Energy Commission and the Bangladesh Council of Scientific and Industrial Research have played important roles in Research and Development for decades. There is room and need for further improvement. It is very important, in the various research groups, in addition to providing the appropriate facilities, to maintain a relaxed and congenial research environment, in which there is a spirit of cooperation for pursuing truth and knowledge and suitable applications to benefit society, rather than competition for personal advancement.

At the Second General Conference of the Third World Academy of Sciences held in Beijing, China in 1987, the late Prof. Abdus Salam made the following remarks:

"I had the privilege of meeting Chairman Deng last year, when I came to China for preparations of this meeting. I was deeply impressed by his insistence on science transfer in addition to technology transfer. He remarked that the science of today is the technology of tomorrow, and that China and the Third World must build tomorrow's science for tomorrow's technology. In this respect, we of the Third World Academy of Sciences follow Chairman Deng's lead in humble way."

Prof. Salam went on to explain the main purpose of the meeting:

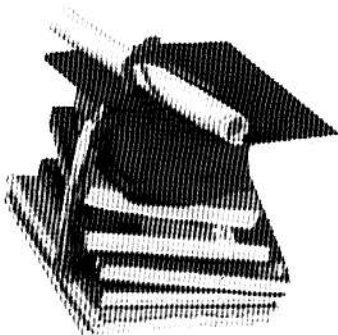
"... to honour the recent achievements of scientists of the South, by making prestigious awards in the basic sciences of Physics, Chemistry, Biology and Mathematics; to listen to them..."

"... to reflect on the growing gap in sciences between the South and the North which, in our view, is the real reason behind the disparity in economic well-being and influence."

"... (A) most important reason for our being here in this beautiful city of Beijing is to study Chinese science in depth. As we all know, China was the world leader in creative technology until about 1600. Since 1949, it has had a state policy of enhancing science which has enabled China to increase its researchers' population from 500 in 1949 to 300000 in 1985-an incredible growth factor of 1:600 in 36 years, with a high impact on China's development!"

The enormous 'growth factor', because of China's size and situation, is, of course unrealistic for Bangladesh, but the emphasis on science is important. I remember the Chairman of the Local Organizing Committee, Prof. Lu Jiaxi, gave the following reasons for China's success in science: "Self-reliance and collective spirit". This could well be emulated in Bangladesh.

It is well-known that there are some negative aspects of science and Technology, which arise from their misuse. I write some years ago: "It is well-known that there are some negative aspects of science and technology, which arise from their misuse. I wrote some years ago: "It is clear even to the casual observer that a certain aspect of science has been highly successful. We have television, jet airliners, space travel, and the many advances in medicine. The list is endless



and well-known. As is also well-known, science and technology have brought in their wake weapons of destruction on an unprecedented scale which have raised acute political, social and moral problems, as well as purely scientific ones. The tackling of these problems presumably require consideration other than purely scientific ones; in other words, the advance of science and technology has given rise to problems which cannot be solved by scientists alone. Even in the

putative beneficial aspects of science there are problems. Technical developments have caused a proliferation of consumer and luxury items far beyond the needs of society, with consequent depletion of the scarce and valuable resources of the planet and

concomitant danger to the environment, not to mention the dehumanizing effect of the ethos of the consumer society."

One is reminded of Gandhi's saying, that there is enough in the world for everyone's need, but not for everyone's greed.

One of the points I want to stress is that we must get away from the idea of catching up with the First or the Second World. There are many aspects of the advanced world, which are direct results of technological innovations, which I believe are or would be undesirable for many of the societies of the Third World. I don't simply mean things like nuclear weapons, which are obviously a threat to the whole of mankind, but more mundane things, such as the proliferation of automobiles in the advanced countries, with accompanying pollution, nervous strain and road deaths. The developing countries are being flooded with unnecessary expensive luxury cars, with increasing petrol prices, producing serious imbalance in society. Another example is the unprecedented increase in mindless Television and video programmes, which is a direct result of technical advance. There should be awareness of these matters from 'both sides'.

After the 'collapse of communism' the use of the terms 'First', 'Second' and 'Third' World has become uncertain. I think with suitable modifications these terms are still valid. Besides, some people find the expression 'Third World' to be pejorative. I don't see it that way. For historical and geographical reasons we all find ourselves in certain positions. The important thing is to accept that position and, for those who can, try to improve matters locally, nationally, regionally and globally. There should not arise 'identity' problem anywhere. The following 'frame of mind' may help: I consider myself neither superior nor inferior to anyone, but to be a member of the human family. I made remarks to this effect in the final session of the TWAS Conference in Abuja, Nigeria in 1995 (the senior members from Asia, Profs CNR Rao and MGK Menon having left, I was asked to represent the Asian delegates; the South African Education Minister also addressed the session). I said further that I was very impressed by the presentations of the African delegates, and I wished them bon voyage on the road to progress and prosperity. I recall humbly that my remarks were appreciated by those present. I may add here, that if the human race is to survive, it must be through cooperation and collaboration among all nations, peoples, religions, ideologies, philosophies of human conduct, professions, etc., worldwide. But each country must pursue 'development' in keeping with its own culture and traditions in the widest sense. Allama Iqbal said: "Your world is that which you create yourself." There are no contradictions in the two points of view: one can have unity in diversity. Indeed, diversity in all realms provides stability to society, as indicated by Prof. Dyson (quoted in the following). The above themes recur in my writings, in various contexts.

Let me now add a few somewhat pessimistic remarks, first by the late Nobel Laureate radio astronomer Sir Martin Ryle:

"Our world is one-yet evolution has now reached the stage where as a species we may soon die ... We, as scientists should be able to see this more clearly than most and must use our influence to change the too limited aspirations of governments."

Convocation 2007

The following is a quote from Bertrand Russell:

"So long as national states exist and fight each other, only inefficiently can preserve the human race. To improve the fighting quality of separate states without having any means of preventing war is the road to universal destruction."

One of the starkest examples of what Russell had in mind is, presumably, the existence of nuclear weapons, which can destroy humanity many times over. Although scientists are not, in the main, responsible for this state of affairs, I believe, as Ryle implies, they cannot be absolved completely from their responsibility in this matter. Ryle's remarks reminds us of the two world wars in which, at every stage, the governments involved thought they were following the right steps, leading eventually, to what the sociologists would call 'unintended consequences of purposive action'. Over fifty million innocent people around the world lost their lives! I believe this could happen again, in regions including the Indian subcontinent. Ryle's message seems to be that we must not allow this to happen again. There appears to be a Frankenstein in human beings, which surfaces now and then, which we must learn to recognize and control. It is almost as if we are pawns at the hands of some malevolent deity, playing out a sort of Hessian "glass bead game" turned sinister!

Erwin Schrödinger, one of the founders of quantum mechanics (with Werner Heisenberg and Paul Dirac), regretted the dichotomy that appears to exist in what he calls "two paths, that of the heart and that of pure reason". In a perceptive analysis of Greek Civilization, he says:

"... it is my opinion that the philosophy of the ancient Greeks attracts us at this moment, because never before or since, anywhere in the world, has anything like their highly advanced and articulated system of knowledge and speculation been established without the fateful division which has hampered us for centuries and has become unendurable in our days."

Here Schrödinger is implying the unity of knowledge, and indeed the unity of all human activity, and the fact that different approaches to the truth and fulfillment of human life that appear to be contradictory are in fact complementary.

Schrödinger goes on to say:

"It was still agreed that the true subject was essentially one, and that important conclusions reached about any part of it could, and as a result would, bear on almost every other part."

In a famous speech in Athens in 1964, Heisenberg says:

"The search for the "one", for the final source of understanding, has probably been the origin both of religion and of science." He ends his speech with the following sentence, which is significant coming from a great scientist:

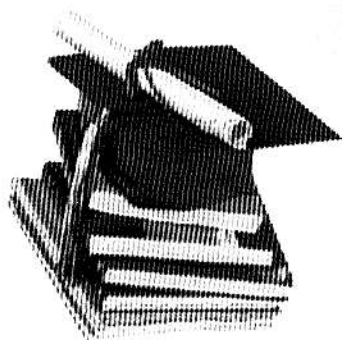
"If harmony in a society depends on the common interpretation of the "one", of the unity behind the multitude of phenomena, the language of the poet may be more important than that of the scientist."

Richard Feynman, a leading physicist of 20th century, says:

"The highest form of understanding we can achieve is laughter and human compassion."

It is interesting that Feynman says this after a lifetime spent in examining the most intricate problems of mathematics and physics. "Laughter and human compassion" are not usually regarded as "forms of understanding"! Perhaps Feynman is expressing his discomfort about too much "cerebralisation" or what might be called "intellectualization". One is reminded of the fact that some of the greatest moral teachers, such as the Buddha, Confucius and Socrates never left behind any writings.

We should recognize that apart from the role of basic and fundamental research to support the science and technology that is needed to improve living conditions, there is another side which helps to ameliorate the negative aspects. It is said that man does not live by bread alone. Improving living standards is not an end in itself but a means to an end. The latter is a life that is fulfilled and complete in every way. One of the noblest pursuits of man over the ages is seeking of





truth and knowledge-knowledge about life, and one's surroundings and about the universe that we inhabit. Fundamental and basic research adds to the quality of life by making us aware and perceptive of the multifarious and diverse nature of the world and the universe we live in. Prof. Steven Weinberg writes at the end of his book 'The First Three minutes' (of the universe!):

"The effort to understand the universe is one of the very few things that lifts human life a little above the level of the farce and gives it some of the grace of tragedy.

Rabindranath Tagore says:

"সত্য যে কঠিন, কঠিনেই ভালবাসিলাম, সে কখনো করেনা বঞ্চনা (The truth is difficult, I have loved the difficult; it does not deceive anyone)."

Kazi Nazrul Islam says:

"এই বৃহৎকে বুঝবার সধনাই জীবনের সর্বশ্রেষ্ঠ সাধনা (The sustained effort to understand the totality of things is life's greatest pursuit)."

Prof. Freeman Dyson, who has been referred to as one of the intellectual giants of this century, says (this is an excerpt from BBC broadcast):

"I believe in diversity ... the one word that summarizes my philosophy is 'diversity' ... that applies to technology and to human affairs and to everything else. That is also the characteristic of life ... the beauty of life and its robustness comes from the fact that it diversifies itself into millions of different forms. If life had stuck with two or three different species it would not have survived. The way it survives is by trying out millions of different patterns. That is of course the reason why the natural world is so beautiful. I believe the same applies to the universe".

In several of his writing, Prof. Dyson has described the endless possibilities, as he sees them, in the future development of mankind, if proper use is made of our abilities and resources. To realize the potentials, it is necessary to have a thorough understanding of how nature works. Two thousand years ago the Roman poet Virgil said "Blessed are those who know the cause of things." This saying is more relevant today than it has ever been. One sometimes talks about 'controlling nature'; I prefer the expression 'harmonizing with nature'.

I want now to make a few remarks about the gap between the rich and the poor, which appears to be widening here and elsewhere, and which I believe is a threat to the stability of society. Benjamin Disraeli, who was Prime Minister of Britain during 1874-80, published a novel called 'Sybil' in 1845 in which he writes as follows about contemporary British society:

"two nations between whom there is no intercourse and no sympathy; who are ignorant of each others' habits, thoughts and feelings, as if they were dwellers of different planets."

Disraeli warned the wealthy that they must close the gulf in society, if only to protect their basic interests. Disraeli also says about young 'drop outs', that they had 'exhausted life in their teens and all that remained for them was to mourn, amid the ruins of the reminiscences, on the extinction of (their intellectual) excitement'. These passages were recently quoted by the Dean of Law of Yale university, who is black, and who says the conditions with regard to black Americans is not dissimilar to the situation depicted by Disraeli more than a hundred and fifty years ago in Britain. I would urge you to ponder to what extent these remarks apply to our society, and what we should all do about it. It is said that beyond a certain point injustice in a society becomes a threat to the whole society. So is it with mankind. I believe sufficient and continuing injustice is likely to pose a threat to the entire human race. Two thousand five hundred years ago Confucius said that the human race is a family. At about the same time Buddha expressed similar sentiments. One the most prophetic sayings of the holy Hadith, I believe, is the following:

"Mankind will not go astray after having found the right path, unless from disputation."

The sayings could help us to find the path ahead.

Convocation 2007