

**“IIMA 2ND CONVOCATION, 1967, ADDRESS BY THE CHIEF GUEST,
DR. VIKRAM A. SARABHAI, CHAIRMAN, ATOMIC ENERGY COMMISSION”**



Source: IIMA Archives

**“DR. K. KASTURIRANGAN, THE THEN CHAIRMAN, ISRO,
AT IIMA, THE FOURTEENTH VIKRAM SARABHAI MEMORIAL LECTURE,
DECEMBER 21, 1998”**



Source: IIMA Archives

"SPECIAL INTERVIEW"

SPECIAL INTERVIEW

**"We should soon see a new generation of bright young scientists in this country",
Dr. K. Kasturirangan, Chairman, Indian Space Research Organization**

What do you see as the vision of your organisation ?

The mission and vision of the organisation has its genesis in the sixties. Just around the time, when the first Sputnik was launched in October 1957, one started recognizing the vantage point of space as a unique vantage point to look down on the earth for many applications and look away from the earth for studies of cosmos and the universe. So this was recognized early by our own pioneer Dr. Vikram Sarabhai, who founded IIMA. He decided that there was an opportunity / capability / technology which could be harnessed and used for a developing country like India, which had several problems still to be overcome in the areas of communications, resource management, and education. It meant essentially questions related to the grassroot development. So here were opportunities of putting satellites on the vantage point of space looking down on the earth, looking at many of these aspects and capable of providing services which could impact on the various facets of our national development. This was the original vision of Prof. Sarabhai.

We started, of course, in a limited way through scientific curiosity of carrying out experiments from the southern part of India to look at the atmosphere. So there was a scientific objective at that time. But this vision of Dr. Sarabhai which was essentially one of looking at the space capability for national development took over as the primary objective. So we have a mission today of using the space systems for communications, meteorology, TV broadcasting, entertainment and, more importantly, from now onwards for education and earth resources, survey using satellite imageries for timely precise information. By and large, in the last 30 years, the vision of Dr. Sarabhai and the missions that this gave birth to has been followed. One of the important aspect of all this activity has been the policy of self reliance. We have developed the capability for self reliant activity in space, which essentially means we can build our own satellites for communications and observations and launch these satellites with our own launch vehicles. So, I should say, looking back, this has been a period of development,



operationalisation, and ultimately use of space for the national development as envisaged by the space pioneer.

What do you think is the impact of the Space Programme on society ?

The social component of the Space Program is going to play an equally important role in the coming years as there are still many questions that need to be addressed in the context of establishing a communication infrastructure. A lot of areas in the country need communication infrastructure much more than what is available today. For example, in the case of access to the telephone, we are below the world average and very well below the developed world. If you look at TV availability for education, we are far short of what is required. Developmental communication which is important for rural development, questions of drinking water, improving the productivity of the land are fundamental questions that face our country in the context of efficient use of land

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and water. Now, these are sociological implications. If you look at all these aspects, the Space will not only continue to play an important role in trying to provide answers to many of these questions or provide support to many of these issues, but it would also try to expand and strengthen in these areas.

I do see in the next one or two decades a continuation and an expansion and strengthening of the present activity in the social sector. However, that does not mean that we are not looking ahead into the commercial component of the space, which essentially means it could be providing services to other countries or other parties in the context of the space systems, providing hardwares or softwares to other agencies of operating systems or countries. And also providing ultimately many other kinds of technology utilisation and support to the technology transfer. This has just taken off. Hopefully, in the coming years, we will try to expand this and certainly bring in an element of commercialism into the effort to ensure that part of the capability that the country has built over the last 30 years is not just left to only one or two purposes but also use it for making certainly some amount of commercial benefit.

A lot of science students switch over to management studies. How do you feel about it ?

This is a question of demand and supply in a market as to where exactly you get the best of offers. The socio-economic factors in our country still dominate the decisions with respect to what profession one has to choose. In the last decade or so, one went gone in for engineering and the medical profession because there was a certain demand in those areas, particularly in areas like telecommunications, computer software, etc. Now, of course, because of globalisation and liberalisation, there is quite a lot of influx of multinationals who have started their own activities and endeavours in the country to provide various kinds of supporting services and things of that kind. Additionally, the government is encouraging quite a lot of internal entrepreneurs to come up with small industries and create niches for themselves in this kind of market. Both these, obviously, demand a large number of managers with a background preferably in engineering or sciences. So, you see this trend very well reflected in the anxiety of the youngsters to take up management courses. Besides, when you get out of a management institute like IIMA, obviously, one gets a salary which is three to four times what one can get for a corresponding degree in science or probably a little more in the case of engineering. Since management graduates are the greatest in demand so far as market requirements are concerned you see this happening.

I don't think Indians, with their outlook, should be dictated through policy mechanisms as to whether they should do science or certain type of technology. What is

very much important is to provide a challenge, an area of excitement where one could work and derive satisfaction. There are engineers who switch over to physics and do great things in physics. I also know of physicists who have switched over to engineering or management. So this is happening. What one should look at is that in absolute terms, the activities are going on. So there is no matching input which is coming from this. But on the other hand you have other areas which are expanding. I would call it a kind of an equilibrium system. You have a certain type of a division of themes or areas of expertise which naturally happen and whatever you see is an improvement.

With respect to science education, being myself a physicist, I would say that things have not been very good on that front. By and large, most of the people have gone into management, engineering, medicine and many other areas that are currently very much in fashion and very much in demand. But in science we are suffering. But again this is a phenomenon which is global. If you really look at the importance that is given to science research and to make a career of it -- by career I mean in the holistic sense and not so much in the narrow financial sense-- I think there is much more needed to be done. We are now trying to do something on that front. Besides inculcating a scientific temperament in school children, we are interacting with them through our departments like Space. More importantly, we are even thinking of giving them incentives; catch them young around SSC or PUC, conduct nationwide competition in the four fundamental areas of sciences--physics, chemistry, mathematics and biology--and start giving scholarships to those who want to take science as a career. Scientific departments like the department of Space, Science and Technology, Atomic Energy, CSIR are all planning to do it in their own way. It's not like giving the students money alone. They are brought to the work centres like ISRO, made to spend their vacation there, interact with the scientists and also allowed to go at our expense to attend the academic meetings where the scientists exchange latest research and excitements. The idea is to make them a part of the scientific community sufficiently young, so that they are motivated. If this experiment succeeds, I think in the next 4-5 years we should see a new generation of bright young scientists coming up in this country. That is our hope and we are working for it.

What kind of changes do you visualize in the education system in response to the emerging technologies ?

Today, things are different than what they were when we were school children. One, of course, is that children are also a product of the existing social - economic system and there are problems. You pay the teachers at a certain level and the type of importance that the children give to the teachers has all undergone change. If

you look at it in the larger context of the sociological changes, the same applies to the parent - children relationship too. It is not that it is only between the children and the teacher. There has been an overall transformation. The second thing is that one has to accept that these things are going to undergo changes with the improved communications, information technology and the access to information globally of various types. Today, the children are becoming more and more informed about certain things which we as students never knew. So this is changing the way in which education is being looked upon and, probably, in the years to come the formal education way may give place to an education system which is information technology based. The best of the lessons would be available to the children anywhere in the world through mechanisms of communication, and the teacher-student concept will no longer be the way in which we today look upon it. The next generation may see a total revolution in the way the education takes place. So, we should be prepared for a change; it may start at a higher level but then slowly percolate down to the lower level. The question of the relevance of the existing institutions for learning and whether they will continue to be there is a matter on which I will keep an open mind.

How do you view the American sanctions imposed on India ?

If you look at science and technology, we have got our own niches and directions. But when it comes to technologies, you certainly look at what is available, where it is available, and what is convenient to adopt for ourselves. So we have developed over the years a high bred approach -- technologies from the erstwhile Soviet Union, Europe and America. This has been a pattern and it has grown over the years. So there has been a component of Western technology to start with and an American technology, in particular, which has got infused into many areas. At the same time recognizing that there are strategic areas where one should have a level of self reliance and, therefore, indigenisation, we have been going ahead with it. The idea here is to make dependence in the strategic areas on outside sources less and less. But one should also draw a line here, because there are questions of economics. You can't have a space programme with a few hundred million dollars to sustain a component industry which could be 1 billion dollars or even more. As a result, you try to get it from outside wherever it is cheap and reliable. So we have opened up the markets in Europe, America and other places. When the sanctions come, one has to look

at it in this perspective. One has to now make sure that you try to look at alternate sources; you look at the possibility of indigenisation where it is possible and then relook at some of the ways in which we have developed if there is an American technology in it. So all this will be addressed. Our job is to make sure that we become transparent to any such denials anywhere in the world. I think that is very imperative in the present circumstances and all of us are convinced that we will be transparent not only to the American sanctions but to any sanctions.

What do you see as the role of ISRO in the society ?

Our job as Indian Space and Research Organization is to develop technologies and techniques, which are relevant to the development of the country, primarily in the social sector. These techniques are those which enable us to demonstrate the relevance of a space system for grassroot development. So long as the effect is related to the demonstration of such capability to the country or to the concerned agencies in the govt. or even in the private, our job is on the right track. But once the system is shown to be capable of providing a certain type of service, obviously it has to graduate into that agency or department or institution which provides the services in the conventional sense. So the entire effort of the space programme over the years has been to look into the various areas where the space can impact the societal development and demonstrate the capabilities on an experimental level; transfer that know-how of demonstration at an experimental level which itself is done along with the particular user, who will ultimately use it in the context of the national development and then transfer it to that user agency so that he uses it in an operational sense. If you look at the entire gamut of things today this is how Space is used.

In the area of remote sensing work, agriculture ministries, environment ministry, water resources ministry use the space imageries to develop their own information systems and decision support system. So ISRO's impact is felt through the user agency in the Govt. and also through the non governmental system including private entrepreneurs. So that is the way we'd like to do because ISRO by itself is not a panacea for all the problems of the country and it also cannot get into every operational aspect. In fact, it is not an operational organisation. It can only be an R & D organization. In certain areas because the industrial capability does not exist, we are also forced to set up the operational system like V-sat or satellite building or vehicle building. On the application side we only demonstrate the capability and potential and then transfer it to the user agency to use it. This has been a successful effort so far.

**“IIMA 38TH CONVOCATION, 2003, ADDRESS BY THE CHIEF GUEST,
DR. A. P. J. ABDUL KALAM, THE HONOURABLE PRESIDENT OF INDIA”**



Source: IIMA Archives

**“NATION, CHALLENGES AND LEADERSHIP
‘INSTITUTE SERIES,’ TALK BY DR. A. P. J. ABDUL KALAM, IIMA, 2009”**

Talks & Features

**Nation, Challenges and Leadership
Dr. APJ Abdul Kalam**



I am delighted to be with you all at the Indian Institute of Management Ahmedabad (IIMA). I would like to share a few thoughts on “Nation, Challenges and Leadership,” which is based on my experiences.

On 22nd October 2008, around 7:00 am, a jubilant Madhavan Nair, my friend and Chairman, ISRO, called and informed that Polar Satellite Launch Vehicle, PSLV-C11 successfully launched the 1380 kg Chandrayaan-1 spacecraft. The *Chandrayaan* mission is not just to study the features of moon but there is a much greater purpose. The moon is going to be a source of special materials, minerals and also could be intermediate base for Mars mission.

Messages from 50 years of ISRO

ISRO is the sole agency in the country for space efforts. It is a Government agency. With no competitor, what inspires ISRO to excel? Its programmes are self driven. Its schedules are self drawn. Invariably they are optimistic and success oriented. The ISRO team members consisting of engineers, scientists, technical staff and administrative staff are extremely committed and focused on their goals. Occasional failures don't deter them; they burn midnight candles and arrive at solutions and demonstrate their strength.

The vision and missions for space came out of a quest for national development by its founder Dr. Vikram Sarabhai, who was also your founder. What messages do the ISRO experiences convey? I feel they convey the following messages which are not only applicable to the future ISRO programmes, but also for various national missions for development.

The programmes have been driven by the vision of the founder Dr. Vikram Sarabhai that we must be second to none in bringing the benefits of space technology to the common man. Space Vision is supreme for the ISRO Teams. Whenever the VISION is supreme for the organization, the organization succeeds. The programmes have been given national support cutting across political lines. ISRO has been continuously setting high performance standards on its own and taking responsibility to meet them and exceed them. Transparent review culture is inherent to this.

ISRO has realised that partnership with industries and academic institutions is the only way complex programmes can be run. Risk taking and failures are part of innovative challenges and the organizations have to build resilient methods to prevent failures, but not dither to take up challenges. The missions and programmes have been enabled and have created creative leaders in numbers.

For success in all missions, we need creative leaders. Who is a creative leader? Creative leadership means exercising the vision to change the traditional role from the commander to the coach, manager to mentor, from director to delegator and from one who demands respect to one who facilitates self-respect. For a prosperous and developed India, the important thrust will be on the growth in the number of creative leaders in every institution. The experience of ISRO and other mission mode organizations indeed provide valuable information on generating creative leaders.

Being with a premier institution training creative leaders for the future, let me share with you some of my thoughts on evolution of vision for the nation, setting targets for ambience of nation in 2020 and integrated actions for meeting the vision and missions.

Evolution of India Vision 2020

I was given the task of chairing the Technology Information, Forecasting and Assessment Council (TIFAC). I recollect, that in the first meeting of the Council itself, we took a decision that TIFAC must evolve a plan, how India can be transformed into an economically developed nation by the year 2020. When the suggestion was mooted, everybody was wondering, how we can evolve such a long term mission under the then prevailing economic and social conditions of the

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country. That was the time (1991); the then Prime Minister had announced the economic liberalisation and growth measures for the Indian economy and its impact had started being felt.

In spite of this, the Council, with many young members, jumped into the idea and we discussed for one full day on how we can translate the thoughts into action. At a time when the economy was growing at around 5 to 6% per annum in GDP we had to envisage a growth rate of at least 10% per annum consistently for over 10 years for realizing the development vision of billion democratic people of multi lingual, multi religious and multi cultural characteristics. We debated and arrived at 17 task teams with over 500 members who had consultations with over 5000 people in various sectors of the economy and society. Committees worked for over two years resulting in 25 reports which we presented to the then Prime Minister of India on 2 Aug 1996.

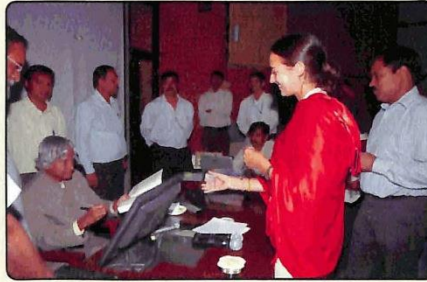
Transforming India into a developed nation implies that every citizen of the country lives well above the poverty line, their education and health is of a high standard, national security assured and core-competence in certain major areas enabled production of quality goods competitively including for exports, bringing all-round prosperity for the countrymen. This event led to the birth of the book "India 2020: a Vision for the New Millennium". Based on various inputs, the government announced in Parliament the vision statement that India will become a developed nation by 2020. Such a statement is very rare, since every government is elected only for a period of five years and thinking of over 20 years time frame is a fresh breeze. With this background, what is our ambience in 2020?

Ambience in 2020

We expect the people below poverty line to come to zero and our literacy must be nearly 100%. Human Development Index of India will be around 50. Every Indian will have either a university degree or quality training with employable vocational skill. 540 million youth will be equipped with skill and knowledge for world needs. India will have at least 5% of fortune 500 companies in its economy; India would get 10% of the

world trade from the present 1.5%. India has already become a platform for multinational companies with Indian human resource for generating global innovation and R&D. We are transforming our R&D institutions as incubator for global innovation.

We are determined to establish a World Knowledge Platform which will be able to synergize the core competence of multiple nations for addressing and solving pressing societal problems. There is resurgence in our interest towards science and we are creating an environment to enthuse the younger generation to work on problems relevant to the sustainable prosperity of one billion people of multi-religion, multi-lingual, and multi-cultural characteristics which will be a trend setter for the whole world to follow. E-governance would be in position for all G2G and G2C transactions making the governance system transparent and corruption free.



Tele-density will reach over 70%. All our villages will be electrified and water shortage will be managed with proper water conservation recycling, harvesting, storage and distribution system. Sanitary facility will reach every home. We will be using more of renewable energy and adding less to the pollution. Through venture capital system and entrepreneurial training both in schools and colleges, we will

have more enterprises leading to large number of employment generators rather than employment seekers.

A pro-active healthcare system in place will provide quality healthcare to all the people of the country including those living in remote areas at an affordable cost through innovative schemes such as Yeshasvini health insurance scheme being practiced in the state of Karnataka. All the students will have an opportunity to take up the courses of their choice in higher education for the reasons number of advanced higher education institutions are being established and the capacities of existing institutions have been enhanced. With our experience in the Information Technology, Communication systems, Automobile technology, consumer durables, micro credits to self-help groups and electronic voting system innovations which have turned out to be unique successful innovative business models, we are proceeding to enlarge the scope to reach all parts

of the country. This will provide entrepreneurial and employment opportunity to the 540 million youth of the nation. Of course, we have to work ceaselessly using creativity and innovation for achieving the goals of these missions.

Integrated Action for developed India

For the mission of transforming India into a developed nation, we have identified five areas where India has a core competence for integrated action: (1) Agriculture and food processing (2) Education and Healthcare (3) Information and Communication Technology (4) Infrastructure: Reliable and Quality Electric power, Surface transport and Infrastructure for all parts of the country and (5) Self-reliance in critical technologies.

These five areas are closely inter-related and if progressed in a coordinated way, will lead to food, economic and national security. During my visits to different parts of the country and during my discussions with many citizens, the results of such integrated efforts have started becoming visible. One of the major missions is the development of infrastructure for bringing rural prosperity. This is through Provision of Urban Amenities in Rural Areas (PURA) involving creation of three connectivities namely physical, electronic, knowledge leading to economic connectivity.

I personally feel that the connotation of sensible investment for development goes beyond the normal business perspective. Innovative processes have to be established to attain the goal of what Plato said 2400 years ago: "Our aim in founding the State was not the disproportionate happiness of any one class, but the greatest happiness of the whole". Similarly, around the same period, Tamil poet Saint Thiruvalluvar said, "the important elements that constitute a nation are: being disease free; wealthy; high productivity; harmonious living and strong defence". We have to find how we can provide all these elements to the citizens of the nation on an equitable basis for happiness for all.

The important missions that will bring societal transformation through competitiveness and propel the vision 2020 missions of India are:

Agriculture and food processing, infrastructure, energy, safe Drinking Water and Water management, healthcare, pharma vision, information and communication technology, aerospace, automobiles, ship building Rail Vision 2030.

PURA Mission: One major aspect of development is the mission for bringing rural prosperity. This is through Provision of Urban Amenities in Rural Areas (PURA) through creation of three connectivities namely physical, electronic, knowledge leading to economic connectivity. The number of PURA for the whole country is estimated to be 7000 covering 600,000 villages where 700 million people live. This will need an investment of around 175 billion dollars. Government is planning to implement 2 PURA's per district across 600 districts in the nation. There are a number of operational PURA in the country

initiated by many educational, healthcare institutions, industry and NGO's.

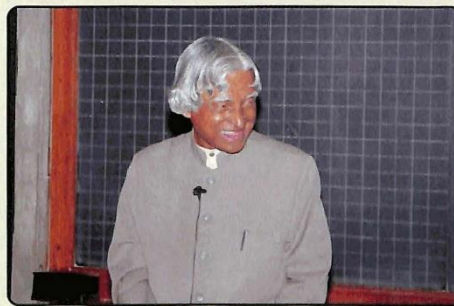
Converting challenge into opportunity

All these programmes which I have mentioned above have social, research and technological content with substantial amount of opportunities for techno-

managerial experts. Enterprises can carve out their own niche areas and prepare themselves for providing quality techno-managerial support which will enable execution of the economic programmes in time and at internationally competitive costs.

As I am with a premier management institution, I would like you to dwell on each of these for their successful fulfillment. That would form the greatest contribution of IIM to the nation at large for which you will be remembered. One of the immediate challenges is to ensure that the current economic dynamics does not result in slow downs. The solution to the dynamics involves in an integrated effort from economists, technologists, industrialists, academicians, alumni of IIM and political leaders. IIM with its core-competence in multiple disciplines and its unique ability to interface with different segments of the society has an opportunity to workout certain out of box solutions for converting this challenge into an opportunity.

I have seen three dreams which have taken shape as
(Cont'd on page 59)



(Cont'd from page-57)

vision, mission and realization. Space programme of ISRO (Indian Space Research Organization), AGNI programme of DRDO (Defence Research and Development Organization) and PURA (Providing Urban Amenities in Rural Areas) becoming the National Mission. Of course, these three programmes succeeded in the midst of many challenges and problems. I have worked in all these three areas. I want to convey to you what I have learnt on leadership from these three programmes:

(a). Leader must have a vision; (b). Leader must have passion to realise the vision; (c). Leader must be able to travel into an unexplored path; (d). Leader must know how to manage a success and failure; (e). Leader must have courage to take decisions; (f). Leader should have nobility in management; (g). Leader should be transparent in every action; (h). Leader must work with integrity and succeed with integrity.

For a sustainable growth of any organization, the important thrust will be on the generation of a number of creative leaders through nurturing the talent, and promoting innovation in every sector and R&D leading to patents. Emergence of such leaders particularly will facilitate global competitiveness and help in transforming any nation as a knowledge society.

(Excerpted from the 'Institute Series' talk by Dr. Abdul Kalam.)



**“DR. A. S. KIRAN KUMAR, THE THEN CHAIRMAN, ISRO,
AT THE RED BRICK SUMMIT (TRBS),
IIMA, SEPTEMBER 29 TO OCTOBER 2, 2017”**



Source: IIMA Archives

PRIVATISATION OF SPACE INDUSTRY AND SCOPE FOR ENTREPRENEURS:

**By Speaker: Dr A S Kiran
Kumar, Chairman, ISRO**

There is immense capacity building required to push launch frequency and scale it up. Therein lies a huge scope for joint-ventures between

private cos. and ISRO to work on newer capabilities. A lot of data is being generated by the satellites and the same can be used to provide consumer-centric solutions and the entrepreneurs can also aim to provide technical solutions to ISRO. Hardware realisation is also another upcoming area. The big data is already being tapped into by the companies to design end products like agri-based solutions etc.

On work culture at ISRO:
We have a great retention rate because we work as a team and the workers are able to envision, realise and see the fruits of their

work being translating into real achievements that changes the life of common man. They can feel the impact on the society. Also, frequently sustained level of results boosts the morale of the teams. If the successes are too intermittent and at long gaps then the motivation fades out. We have leaders that trust and can be trusted...who believe in taking the blame for failures on their shoulders and giving credit for successes to the team members.