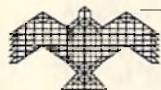


NIAS NEWS



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OCTOBER 2004





Editors' Note

With the passing away of Dr Raja Ramanna in September, the Institute has lost its founding director and the guiding force behind its research and other intellectual activities. Dr Ramanna's contributions to the global society and to our country need no elaboration, but it is in the small projects that he encouraged and touched with his spirit that may remain unknown to most of us. One of these was NIAS News, the original version of which first made its appearance eleven years ago under his able guidance. Since then it has indeed come a long way, but not without his constructive criticisms, always laced with his inimitable humour, and a graceful acceptance for often the most unconventional of ideas. We also continue to call the newsletter by the name that he bestowed upon it. For all of this and more we will always remember him with gratitude, admiration and affection. May he always be with us and guide us.

We would also like to record here our appreciation and gratitude for Major-General M K Paul (Retd), who finally retired as Controller of the Institute in August. As the first editor of NIAS News, Major-General Paul started the newsletter on an exciting journey that continues today, and that, hopefully, has a bright future as well. He has always been a tremendous source of strength and support to us all these years and never failed, in his gentle way, to remind us that we must always be on time! Major-General Paul, thank you very much for your enthusiasm, criticism, help and guidance. NIAS News will always remember you!

Anindya Sinha, Hamsa Kalyani and A Deva Raju,
Editors, October 2004



From the Director's Desk



It is with a deep sense of shock and sorrow that we at the National Institute of Advanced Studies learnt about the sudden demise of Dr Raja Ramanna, the Founder-Director of NIAS. When the news reached us, we refused to believe it because we had seen him cheerful, witty, and brisk as usual on the day of his departure to Mumbai, just a few days ago. Dr Raja Ramanna, needless to emphasise, was a fatherly figure for all of us, the NIAS community.

In addition to the pioneering research he carried out in the field of nuclear physics at the Tata Institute of Fundamental Research in the early years and later in the Bhabha Atomic Research Centre, Raja Ramanna was chiefly responsible for the indigenous development of nuclear technologies that made India at par with the advanced countries. Later, as Advisor to the Defence Minister, he played a key role in modernising and enhancing the technical capabilities of India's defence services. Returning to the Department of Atomic Energy as Chairman of the Atomic Energy Commission, he enhanced India's capabilities in the production of atomic power and in the creation of several additional centres for nuclear research and development.

During the next fifteen years, Raja Ramanna was responsible for the realisation of J R D Tata's dream by growing from scratch and nurturing for more than a decade the National Institute of Advanced Studies (NIAS). NIAS, under his Directorship, became one of the most unique institutions in the country, an institution in which scientists, technologists, social scientists, psychologists and philosophers involve themselves not only in research in multidisciplinary areas but also in imparting integrated knowledge to a wide variety of administrative officers. A variety of

courses were started for senior executives from public and private sectors, Indian Administrative Service officers, college and university teachers, and fresh recruits to the Indian Foreign Service. The towering personality of Raja Ramanna was responsible for attracting to NIAS leading figures from a variety of disciplines to participate in this series of courses organised by it.

For me, the passing away of Raja Ramanna is an immeasurable personal loss. Years ago when I was a young scientist in the Space Department, I was sent to discuss with him (who, at that time, was Scientific Advisor to the Defence Minister), some interesting ideas about space systems. Subsequently, I again met him when he became the Chairman of the Atomic Energy Commission, this time to explore the possibility of developing detector systems that could be deployed in space for monitoring atmospheric nuclear explosions. I vividly recall the details of both these meetings even after two decades, because of the way Raja Ramanna conducted the discussions. His knowledge of the concerned subjects were both extensive and intensive. I was amazed at the depth of the details he could go into, in discussing various scientific and technological aspects of the problem. His incisive mind was ever alert to understand the subtle aspects of the experiments which made me feel as if he has been grappling with these problems on a daily basis.

When I took over as Chairman of the Space Commission, I called on Raja Ramanna to understand some of the intricate issues of managing the space programme. I recall that there are a lot of commonalities between the Space and Atomic Energy Commissions, dealing with the procedures and policies as well as their interface with the government. Raja Ramanna was not only generous with his time but gave me very practical and interesting suggestions, which always kept me on the right track. Just a month before taking charge of NIAS, I called on him in his office at the Institute. He discussed with me his own ideas on the evolution of the Institute and the vision that the late J R D Tata had had about it. He also said



that although space and other activities in this country are not very much known to the people of the Institute, familiarity with these could considerably influence the future directions that the Institute could grow in. He was obviously referring to the social, economic, cultural and philosophical implications of some of these high technology programmes in the country. When I was with the space programme, I often used Prof Satish Dhawan as a sounding board, seeking his wisdom and guidance on some of the difficult and complex issues. When I entered the portals of this Institute, I thought I would do the same using Raja Ramanna as my guide and philosopher. Unfortunately, fate willed otherwise. I was able to have the privilege of a memorable and cherished association with him only for a few months.

Raja Ramana's presence will always be felt at NIAS through the love and warmth he shared with the NIAS faculty. His genius and charisma lay not in his professional excellence alone, but also in the person he was. The eternal optimism and positive attitude that he had will always continue to guide the NIAS family in achieving greater heights in both their professional and personal lives.

K Kasturirangan

January 28, 1925 September 24, 2004

In memoriam

***Dr Ramanna and the National Institute
of Advanced Studies***

The National Institute of Advanced Studies (NIAS) at Bangalore is the brain child of Sri J R D Tata (JRD), whose birth centenary is being celebrated this year. JRD, inspired by the knowledge he had of the influence of the Grand Écoles in France on a variety of developments in France, had dreamed of setting up similar institutions in India which would serve the important purpose of imparting multidisciplinary training to the senior administrators who are the real 'decision makers' in the government, in public and private sectors, and in industries decisions which had direct influence on the future course of science, technology, industry and governance in the country. This grand vision of JRD could fructify only in the late eighties when Dr Ramanna retired as Chairman of the Atomic Energy Commission and agreed to take on the onerous and challenging responsibility of building of the type of institution that JRD had envisioned.

Dr Ramanna, in the true style of Dr Homi Bhabha who had as his motto work first, and buildings and other infrastructure later started organising a series of courses for senior executives with the help of Prof R L Kapur who had joined him as full-time Professor at NIAS. The very first course was held at the Tata Management Centre, Pune and the course lasted for a full month. The topic of the course was "Integrated Approach to Knowledge" and it covered a wide variety of topics in history, economics, philosophy, sociology, psychology, caste, religion, panchayat raj, informatics, security problems of India, education, science and technology, mathematics, all tailored to suit the personnel that attended the course. It may be interesting to mention that lectures were given by personalities like Professors Romila Thapar, K Subramanyan, Freddie Mehta; N Mukunda,



B V Sreekantan, and others. The subsequent three courses were held in Bangalore, Nagarbhavi and Jamshedpur on similar lines. The permanent buildings of NIAS at the Indian Institute of Science (IISc) Campus became available for holding the courses only in 1992 and all the courses since then have been held in Bangalore. Over a period of time both the nature and the duration of the courses have changed and similar, but suitably tailored, courses have been extended to many other sectors officers of the Indian Administrative Service, college and university teachers, Indian Foreign Service recruits, officers of the Indian Space Research Organization and so on.

The towering figure of Dr Raja Ramanna was chiefly responsible for attracting to NIAS many distinguished persons as short-term and long-term visiting faculty and also as lecturers at the various courses. The eminent anthropologist Prof M N Srinivas and the outstanding metallurgist and retired Director of the Indira Gandhi Centre for Atomic Research Prof C V Sundram joined NIAS in 1992 as soon as the new buildings at the IISc Campus were ready. I also joined this team in the same year. Soon, younger scientists, philosophers, psychologists, and social scientists gradually began to gather around the five of us Dr Raja Ramanna, Prof R L Kapur, Prof M N Srinivas, Prof C V Sundram and myself and research activities in various multidisciplinary areas were initiated, adding a new dimension to the scope and activities of NIAS. A new and novel feature that Dr Raja Ramanna introduced to enhance the academic flavour of NIAS was the induction of several leading personalities from different walks of life as Associates of NIAS which gave them the opportunity to attend all the special lectures, panel discussions, and selectively, even national and international conferences organised by NIAS and held in its premises. Over the years, with the construction of the elegantly designed J R D Tata Auditorium and the tastefully developed gardens (thanks to the untiring efforts of our Controller Maj Gen M K

Paul, who retired recently), NIAS became one of the most attractive retreats with a characteristically different intellectual and natural ambience of its own in the garden city. Although Dr Ramanna retired as Director in 1997 he continued his association with NIAS and was present in NIAS on every working day except when he was out of Bangalore. The NIAS faculty had fondly hoped that his benevolent persence and guidance would be available for many more years to come. Alas, this was not to be.

Let me end with these lines of Longfellow:

*Lives of great men all remind us
We can make our lives sublime
And departing, leave behind us
Footprints on the sand of time.*

B V Sreekantan

(Excerpted and modified, with kind permission, from *Current Science* 87: 1150-1151)

Dr Ramanna A personal tribute

The sudden passing away of Dr Raja Ramanna has left in me a great void, one that will be impossible to fill. Dr Ramanna was famed for his unique scientific work especially in the nuclear sciences. He was a remarkable man not only to the scientific community, but also to those who knew him. He was a great teacher, a man extraordinaire, and above all, a perfect gentleman. I consider it a great privilege to have known him and worked with him closely for many years.

What brought us very close was the annual conference of the International Atomic Energy Agency (IAEA), Vienna, in the year 1986. He was then elected as the Chairman of the IAEA Annual General Conference, a very prestigious position. I was in Paris, France and moved to Vienna to assist him at the direction of the Department of Atomic Energy. While I was very happy at the opportunity, I was also a bit nervous since this would be the first time I would be continuously judged by him.



But when I met him in Vienna, he, in his own usual style, made me feel completely at ease and from that day onwards, every moment that I have spent with him has been one of great learning and of remarkable experience. In those days, the most-discussed subject in the IAEA General Conference was that of weapons possession by South Africa and Israel. When the subject came up for discussion, Dr Ramanna handled this serious issue with ease, tact, sharpness, diplomacy and his typical brand of humour, and his final decision was accepted by all the members of the General Conference. I was completely amazed at the skill with which he was able to deal with such a ticklish and sensitive issue.

More recently, while introducing me to a dignitary who enquired about the fracture he had suffered during a fall on his visit to Bangkok, he pointed to me and said "...if he would have been with me, I would not have suffered this fracture". He followed this up by narrating an instance of a similar fall that he had once had in Paris when I was with him. While we were on a shopping spree he suddenly fell and I could not do anything to save him from the fall nor could I lift him by myself. I shouted for help from passers-by who lifted him up. His suit was badly torn at the elbow and at the knee. I pleaded with him to return to the hotel but he just would not listen. He said "we should always complete the job that has been planned". And so we continued our shopping in the famed 'Samaritin'. And I still remember that he bought a portable solar panel and a foldable spectacles! New gadgets always attracted him, whatever be their price. Still in his torn suit, we finally returned to the hotel. I knew his knee was badly hurting him but he pretended to be feeling fine. He would not allow me to call the hotel doctor or the doctor from the Indian Embassy. I was struck by his courage, and have realised many times since then that his determination to fight was extraordinary. Many of us have been witness to this, a particular instance of this

being his recent return to NIAS after his Bangkok visit with a walking stick an object that he otherwise hated to carry!

Dr Raja Ramanna, I will always remember you as a gentle giant, a true gentleman with a great personality and a big heart, quick to understand other people's strengths but generous in overlooking their faults. He did everything that was expected of a sensitive human being, and what is more, he did it with his typical style and gentle humour. The last time I was with him was when he delivered a lecture at the Bharatiya Vidya Bhavan in Bangalore on the 'Future of fast-breeder reactors' just two days prior to his departure for Mumbai, from which he never returned. He invited me to be present, and the face of this towering personality explaining with ease and passion the future of nuclear power in this country is frozen in my eyes. It will never fade away.

S Rajagopal



Research Programmes



The principal areas of research that faculty members of the Institute are currently involved in include consciousness studies; conservation biology; education; energy policy and renewable energy; environmental toxicology; epigraphy; gender studies; history and philosophy of science; Indian history; international and strategic studies; mathematical modelling in non-traditional areas; primate behavioural ecology, communication and cognition; science and technology policy; sociology and social anthropology; and theory of numbers.

More specifically, **Dilip Ahuja** of the Science and Technology Policy Studies Unit has recently initiated a coordinated project on **Evaluation of the Pilot Phase of EDUSAT Project**. A communication satellite dedicated to the cause of education (EDUSAT) was launched by ISRO in September 2004. As a part of the preparatory work for the utilisation of the satellite, a pilot phase was undertaken wherein 100 engineering colleges affiliated to the Visveswaraiah Technological University were given the benefit of distance education. ISRO has asked NIAS to undertake an evaluation study of the pilot phase of EDUSAT to help in the implementation of the semi-operational and the operational phases of this prestigious project. NIAS intends to review the content, delivery and usage of the programmes conducted during the pilot phase. In addition, the institutional and managerial aspects of the pilot phase, including the impacts on teachers and students and their responses will be assessed. From within NIAS, a team consisting of D P Sen Gupta, Dilip Ahuja, A R Vasavi, Padma Sarangapani and Rahul Mukhopadhyaya will participate in the review. Mr D Venugopal of Worldspace Inc, will participate as an external consultant.

Padma Sarangapani of the Sociology and Social Anthropology Unit undertook a project on **Evaluation of the Implementation of the Suvidya Maths Lab by PLAN-Samuha in Raichur and Koppal Districts**. The study involved the designing of instruments to assess children's mathematics learning and also to assess the extent of the implementation of the project and various systemic issues. This project was undertaken in collaboration with Shama Husain.

S Settar served as one of the three members of an expert committee constituted by the Ministry of Human Resource Development, Government of India, and reviewed the NCERT school text books on Social Science; the final report has already been submitted to the Ministry. He has also completed the writing of three text-books on Social Science for students studying in Classes V, VI, VII in the state of Karnataka; these have been prescribed for study from the academic year 2004-2005. This project was sanctioned to NIAS by the DSERT, Government of Karnataka.

Anindya Sinha of the Culture, Cognition and Consciousness Unit has received a research grant (a Rufford Small Grant for Nature Conservation) from the Rufford Maurice Laing Foundation, London, United Kingdom, to conduct a project entitled **Ecology and conservation of a newly discovered primate, the Arunachal macaque *Macaca munzala*, in northeastern India**. This work, to be conducted in collaboration with the Nature Conservation Foundation, Mysore, will be the first research project on the Arunachal macaque, a primate species new to science that was recently discovered and named by a group of wildlife scientists including Anindya Sinha.

Sharada Srinivasan of the Culture, Cognition and Consciousness Unit has received a grant from the India Foundation for Arts, Bangalore, for her research in documenting **Metals in Indian Craft Traditions**.



Publications



BOOKS AND MONOGRAPHS

Balachandra Rao, S. 2004. *Indian Mathematics and Astronomy Some Landmarks*. Revised and enlarged 3rd edition. Gandhi Centre of Science and Human Values, Bharatiya Vidya Bhavan, Bangalore

PAPERS

Radhakrishna, S and Singh, M. 2004. Infant development in the slender loris (*Loris lydekkerianus lydekkerianus*). *Current Science* **86**: 1121-1127

Sarangapani, P. 2004. Universities: The invisible dimension of elementary education. In: *Transformative Links between Basic and Higher Education* (ed. K Chanana), Sage, New Delhi, pp 95-107

Shetty, P K. 2004. Pesticides and questionable practices in agro-ecosystems. In: *Pesticides: Environment and Food Security* (eds. P Dureja, D B Saxena, J Kumar, M Gopal, S B Singh and R S Tanwar), Society of Pesticide Science (India), New Delhi, pp 97-101

CONFERENCE PROCEEDINGS

Shetty, P K. 2004. Plant protection and sustainable agriculture in India. In: *Proceedings of the Twelfth International Conference and Exhibition on Mechanization of Field Experiments*, St Petersburg/Pushkin, Russia, July 2004, pp 247-250

CONFERENCE ABSTRACTS

Menon, S. 2004. *Experience of expression: Instances from Indian dramaturgy and a discussion on 'consciousness'*. Abstract at the International Colloquium on Art/Science/Spirituality Reconnections within Emerging Planetary Cultures, Spanish Melilla, Morocco, <http://www.olats.org/sfMelilla.html>

REPORTS

Sarangapani, P. 2004. Evaluation of Suvidya-Plan Maths Lab at Deodurg. Submitted to PLAN, India

Sinha, A. 2004. In search of the Tawang macaque: A preliminary survey of the status, demography and behavioural ecology of a potentially new macaque species in western Arunachal Pradesh, northeastern India. Submitted to the Wildlife Conservation Society India Program, Bangalore

ARTICLES

Srinivasan, S. Mirror marvel: Kerala's traditional Aranmula mirror gets patent protection with a Geographical Indication tag. *The Week*, September 12, 2004

DOCTORAL PROGRAMME IN NIAS

NIAS is a unique institution that conducts advanced research in multidisciplinary areas that bridge the gap between the natural sciences, technology and the social sciences. Complementing its research programmes, NIAS also offers courses in different areas of research, development and policy for different groups of professionals including teachers, bureaucrats, and executives.

One constraint that NIAS has functioned under so far has been the lack of a doctoral programme whereby young students are trained in the research areas that the Institute has traditionally been interested in. There is, however, an urgent need for such a programme for two principal



reasons. First, the unique multidisciplinary academic culture that NIAS has so carefully been building up over the past years has to be nurtured and not allowed to dissipate with the passage of time. This would require that young, talented, and committed students are identified and absorbed into the organisation they would then serve as torchbearers into the future. Second, much of the research being conducted in the Institute, being of an interdisciplinary nature, requires cooperation between a number of specialists. Groups such as these would definitely benefit from young researchers of different disciplines who can actively academically contribute in their respective areas of expertise.

It must also be noted that there has been, in recent times, increasing awareness and interest in issues relating to the interfaces between the natural sciences, technology and the social sciences among young Indian graduate students. Many of them, in fact, are becoming increasingly attracted to pursuing a research career in these interdisciplinary areas. Very few opportunities, however, exist for such students, who have dared to think differently, to pursue a career of their choice within the country. NIAS has thus begun a doctoral programme in collaboration with the Manipal Academy of Higher Education (MAHE), Manipal, an innovative leader among institutions imparting higher education in the basic and applied sciences in the country. This programme specifically involves the awarding of doctoral degrees by MAHE to students interested to pursue independent research in the areas that NIAS specialises in. For more information, please contact Anindya Sinha (asinha@nias.iisc.ernet.in).

Anindya Sinha

Timothy Poston

(tim@nias.iisc.ernet.in)

Prof Tim Poston, an interdisciplinary scientist with a PhD in Mathematics from Warwick University, England, joined NIAS in August as Sir Ashutosh Mukherjee Visiting Professor. Prof Poston has over seven hundred mentions in the Science Citation and Social Science Citation Indices, and eight issued US patents. His recent consultancy with General Electric's technology centre in Bangalore concentrated on 3D medical scan understanding and on desktop hand-immersive user interaction, in which he is a pioneer. His attitude to Virtual Reality is "Don't stick your head in it; reach into it and get some work done". He is co-author of two texts, one on differential geometry and General Relativity and the other on Catastrophe Theory; these are still in print more than twenty-five years after first publication. He has published in numerous respected journals and proceedings, on subjects ranging from the 5-dimensional geometry of real binary quartics to vibration spectra of crystals, settlement patterns in archaeology, rod buckling, vision (human and machine), 3D medical image analysis, and human-machine interaction.



Honours and Awards for NIAS Faculty



K Kasturirangan

Conferred the ISPRS Brock Medal, jointly by the International Society for Photogrammetry and Remote Sensing (ISPRS) and the American Society for Photogrammetry and Remote Sensing (ASPRS) at the ISPRS Conference, Istanbul, Turkey, July 14

Sindhu Radhakrishna

Awarded the INSA Medal for Young Scientists (2004) by the Indian National Science Academy, New Delhi, on April 18, as a testimonial to the the significance of her doctoral research work on the behavioral ecology of the slender loris, a nocturnal primate found in southern India. She will receive the award during the Anniversary General Meeting of the Academy scheduled at Chennai on December 28, 2004.

Awarded the INSA Young Scientist Fellowship (2004-2007) by the Indian National Science Academy, New Delhi, on June 22. The fellowship has been awarded in recognition of the importance of her doctoral research on the behaviour of a nocturnal primate, and supports her postdoctoral study in a similar area

S Settar

Nominated by the Ministry of Culture, Government of India, to serve for a period of five years as a member of the Sabha (General Council), Executive Committee (one of the three non-official members) and Advisory Board of the Indira Gandhi Rashtriya Manava Sangrahalaya, located at Bhopal

Anindya Sinha

Invited to be a Visiting Faculty at the Indian Association for Cultivation of Science, Kolkata, for a period of three years from April 2004

Nominated as Member of the Board of Studies in Psychology of the University of Mysore for a period of three years from August 2004

Nominated to the Research Advisory Board of the Centre for Wildlife Studies, Bangalore, from August 2004

COURSES TAUGHT BY NIAS FACULTY

Sindhu Radhakrishna

Taught a course on Primatology, consisting of five lectures, at the Post-graduate Program in Wildlife Biology and Conservation, organised by NIAS-Wildlife Conservation Society-National Centre for Biological Sciences-Manipal Academy of Higher Education, Bangalore, September 8-13

Anindya Sinha

Taught a course on Philosophy of Biology and Conservation, consisting of a series of ten lectures, project assignments and several interactive sessions at the Post-graduate Program in Wildlife Biology and Conservation, organised by NIAS-Wildlife Conservation Society-National Centre for Biological Sciences-Manipal Academy of Higher Education, Bangalore, July 19-31



Important Events



Complementing its research programmes, NIAS organises a variety of seminars, workshops, and academic courses each year. Some of the important events that were organised during the period from July to September 2004 included:

THE SECOND COURSE ON SYSTEM OPERATIONAL EFFECTIVENESS: SYSTEMS ENGINEERING AND PROFITABILITY

April 19-24

This course was organised by the International and Strategic Studies Unit at NIAS in association with the Defence Research and Development Organisation (DRDO). The faculty were drawn from Advanced Systems, Supportability Engineering Technologies and Tools (ASSETT) Inc. in USA and the Indian Institute of Management Calcutta in Kolkata.

S Rajagopal

MEETING ON THE POST-GRADUATE PROGRAMME IN ELEMENTARY EDUCATION

June 24-25

This meeting was held to discuss the findings of the feasibility study and the curriculum document for a Post-graduate Programme in Education (Elementary), being organised by the Sociology and Social Anthropology Unit. It was attended by a number of educationists from different parts of the country. This is a part of the activities of the District Quality Education Project at NIAS, funded by the SRTT, Mumbai.

Padma Sarangapani

FIFTH NIAS COURSE FOR SENIOR INDIAN ADMINISTRATIVE SERVICE OFFICERS

July 5-9

The theme for this particular course held at NIAS was "Disaster management". The topics covered in this programme included psycho-social aspects of disaster management, the Indian Space Programme, drought management, national and international plans for disaster management, and the management of earthquakes and their aftermath.

S Rajagopal

DISCUSSION MEETING ON HYDROGEN-BASED FUEL CELL POWER GENERATION SYSTEMS

July 27

Mr Chandan Roy, Director Operations, and Dr R R Sonde, Executive Director (Energy Technologies) from NTPC addressed this meeting on hydrogen-based fuel cell power generation systems at NIAS. NTPC is setting up a New Energy Technologies Centre. Dr Sonde and Mr Roy specifically made presentations on the IGCC Programme in India, which could be a prelude to a hydrogen-based fuel cell power generation system. NTPC expects to develop a complete technological chain involved in coal gasification, hydrogen generation and fuel cell, and a host of other connected technologies. In this connection, they sought joint collaborative projects with Bangalore-based researchers.

Dilip Ahuja

COURSES ON SYSTEMS ENGINEERING

July 31-August 4 and August 16-20

These courses on Systems Engineering for two batches of entry-level scientists of the DRDO were

organised at the Institute of Armament Technology in Pune.



S Rajagopal

TEACHERS' DAY CELEBRATION

September 4

The Sociology and Social Anthropology Unit organised a teachers' day celebration at Chamarajnagar district in Karnataka, the guest of honour for which was Dr K Kasturirangan, Director, IAS. Dr Kasturirangan delivered a speech on the important role of teachers in students' lives and the contributions they make to the society and the nation. Education administrators, district administrators and teachers from several district schools attended the meeting.

A R Vasavi

THE FIFTH ANNUAL ISRO COURSE

September 5-11

This course was organised by the Institute for a select group of 38 senior scientists and engineers from the Indian Space Research Organization (ISRO), who were identified by ISRO as potentially constituting its future leadership. The general theme of this year's course was Indian Space Enterprise: Technology for National Development. Its purpose was to provide the orientation and planning skills needed by this group, and in particular, to offer views of the broader scientific, economic, social and cultural milieu in which the Indian space programme could develop in the coming decades.

Dr. R. Chidambaram, the Principal Scientific Advisor to the Government of India inaugurated the Course and delivered an address on "The

need for coherent synergy in the Indian Science and technology system". As is typical for NIAS courses, the programme consisted of lectures and presentations from several disciplines including science and technology, social sciences, music and the arts. Among the highlights of the course, as identified by the course participants were a visit to Nrityagram and lectures by Drs Kasturirangan, Ramamurthy, Devi Shetty and Shekhar Singh. Shri Madhavan Nair, Chairman, ISRO, delivered the valedictory address. The order of presentations is reproduced below.

1. Inaugural Address:
The Indian science and technology system Need for coherent synergy: R Chidambaram
2. Human-machine interaction:
Design machines that humans can use well! Tim Poston
3. Introduction to international space law: *V S Mani*
4. The relationship between media and politics:
Narendar Pani
5. In praise of smallness: The nano-world: *N Kumar*
6. Different cultures in scientific thinking:
R Narasimha
7. Applications of space technology for management of fishery resources: *K Radhakrishnan*
8. The idea factory: *Rahul Matthan*
9. Scientific and philosophical perspectives on the ultimate reality behind the physical world:
B V Sreekantan
10. Hindustani music Vocal recital: *Kaivalya Gurav*
11. New trends in procurement: *G Anandalingam*
12. Satellites for weather forecasting and climate variability: *J Srinivasan*
13. Lecture-demonstration on Indian classical dance:
Nrityagram
14. Relevance of planning in India today: *L C Jain*
15. Technology, architecture and framework issues relating to tele-education: *N Chandrasekaran*
16. Ethics in public administration: *S Singh*
17. Self-managed development: *S Prabhakaran*
18. Telemedicine: *Devi Shetty*

19. Cost benefit analysis of the Indian space programme: *U Sankar*
20. Interlinking of rivers: *V S Hegde*
21. Promoting equity and excellence: *N R Madhava Menon*
22. Geopolitics of technology denial regimes: *V S Ramamurthy*
23. Nautics and aeronautics: *V Radhakrishnan*
24. Managing India's space programme: *K Kasturirangan*
25. Valedictory Address: *Madhavan Nair*



Dilip Ahuja



Associates' Programme

The Institute maintains a strong outreach with its Associates Programme, organised by P K Shetty. The Associates of the Institute include prominent personalities from widely different backgrounds in the media, arts, policy-making and academia. Associates are invited to a monthly evening lecture series and other important events, and constitute a strong base of ongoing outside support and interactions for the Institute.

The Associates' Programme during the period from July to September 2004 included the following event:

August 24

J R D Tata's legacy to science and higher education

M G K Menon

Dr Vikram Sarabhai Distinguished Professor
Indian Space Research Organization

This lecture was the first of a series of commemorative lectures planned at NIAS to celebrate the birth centenary of one of the most distinguished sons of India, Bharat Ratna Late Sri J R D Tata.

Prof Menon was closely associated with Sri J R D Tata for more than three decades. In this talk, he focussed on an aspect of Sri Tata's life that is not so well-known or talked about the decisive contributions made by him to the promotion and nurturing of science and higher education in India.



Lectures and Seminars



WEDNESDAY DISCUSSION MEETINGS

*The members of the Institute meet every Wednesday morning (and rarely on other mornings too!) for informal academic discussions after a talk delivered by a member of the faculty. These Wednesday meetings, organised by **Sangeetha Menon**, also serve as a forum for invited guest speakers to deliver a special lecture on a subject of their choice. The discussions then continue over the high tea that follow these talks!*

The Wednesday Discussion Meetings during the period from July to September 2004 have included:

August 4

India's legendary wootz steel: Discussion on a book in progress

Sharada Srinivasan

This talk focussed on a book being written by the speaker and S Ranganathan, supported by Tata Steel as part of the death centenary celebrations of J N Tata, founder of Tata Steel. This book is intended to be a popular, rather than a strictly scholarly monograph, which can appeal to a wider audience including students to engage their interest in subjects like materials science and steel research. The book also aims to bring home to a wider audience the need for more support for work on materials and cultural heritage in India, which has generally been a neglected area and which has resulted in several lacunae in our understanding of the history of technology in India with much scope for work in the field of research, documentation and preservation of material culture.

The talk briefly outlined how the book seeks to highlight the fact that India seems to have led the world in developing a high tradition of making high-grade steel in south India, the relevance of which can be seen not only from the tales of its export for making patterned 'Damascus' blades, but also from its pivotal role in developments in 19th century metallurgy, with implications for research even in modern times on advanced materials in the field of superplasticity and on nanomaterials, the material of the future. However, there is a need for support for more systematic archaeometallurgical research to convert the circumstantial evidence for India's primacy and skills in this technology (some of it uncovered by the speaker at some production sites) into hard archaeological evidence. While such Indian traditions declined in the colonial period, India emerged once again as a major producer of steel under J N Tata. The speaker read some excerpts from the book and also touched upon some of the illustrations rendered for the book by Paul Fernandez, well-known illustrator of a book on Bangalore by Peter Colaco.

August 11

Innateness

M G Narasimhan

This talk served as a guided tour of the concept through philosophy, linguistics and cognitive science.

August 18

Art and education

Leena Pascal

The presentation marked an attempt to understand the social context of children's art and how it reflects children's worlds. It also highlighted the importance of art in education and the role of school in promoting art as a part of learning.

August 25

Micro- and nanosystems



VJ Sundaram

Different items may be combined into systems useful to society. Such items may be mechanical, electrical, electronic, optical, acoustic, chemical or even biological. Microsystems and many nanomaterials are well established. Nanotechnology is evolving both by scaling down from micro-levels and scaling up from atoms. Nanobiotechnology has been recognised as a major field by itself. Micro- and nanotechnologies are complementary and can be integrated for utilisation in many applications.

The current status of the field in India was briefly reviewed during the talk and applications in health care indicated. However, the speaker felt that considerable evaluation would be required to ensure safety, while the future would extend to aerospace and quantum computers.

September 15

The work of I M Vinogradov, H Maier and H L Montgomery

K Ramachandra

The speaker attempted to explain the work of these great mathematicians in relatively simple, layman's language.

September 22

Computational efficacy of Samanta Chandrashekara Simha's astronomy

S Balachandra Rao

Samanta Chandrashekara Simha is a celebrated traditional Indian astronomer from Orissa. The Samanta, who flourished towards the end of the nineteenth century, was a self-trained astute astronomer who was completely insulated from Western knowledge. In this talk, the speaker made an attempt to highlight some computational aspects of Samanta's text and compared the

results with those of modern astronomical procedures as also of the popular Karana text, *Grahalaghavam* of Ganesa Daivajna (epoch: 1520 AD). As a test-case, the latest total lunar eclipse was worked out based on the Samanta's procedure.

Special lectures

July 21

Stepchildren of the seven sisters: Ecology and conservation of the primates of northeastern India

Narayan Sharma
Guwahati, Assam

Northeastern India is very rich in primate diversity and represents one of the highest biomass densities of primates anywhere in the world. A total of nine (or ten?) species have made this region their abode. But these primates are facing tremendous threats from various factors ranging from habitat loss in the form of logging and shifting cultivation, habitat fragmentation to wanton killing for meat and aphrodisiacs. A lack of proper scientific studies and well-conceived management plans are also contributing to their dwindling populations. This talk highlighted the present status and the uncertain future of the northeastern Indian primates, with particular reference to research and conservation programmes being developed in NIAS.

July 28

Materialist turn in contemporary science studies: Pickering, Galison and Ihde

Srikanth Mallavarapu
Georgia Institute of Technology
Atlanta, USA

This talk focussed on the concept of incommensurability and its implications for science studies.



NIAS and Raman Research Institute (RRI), Bangalore, have been organising a monthly Seminar on the History of Ideas, meeting usually on the second Friday of every month in NIAS. The organising committee consists of R L Kapur, N Kumar, R Narasimha and M G Narasimhan (Convener). There was one talk in this series, held during the period from July to September 2004:

August 2

The "happening of the stars"

G Srinivasan

Formerly Professor, Raman Research Institute
Bangalore

What are the stars? Although the positivist philosophers had asserted that "it is in the nature of things that we will never know what the stars are", it became clear by the middle of the 19th century that the stars are gaseous blobs, held together by self gravity. Thus began the subject of astrophysics.

But many questions remained unanswered at the dawn of the 20th century: Why do stars shine? How can they be regarded as gaseous when their densities far exceed those of terrestrial solids? What will be their ultimate fate? Interestingly, the answers to these questions had to wait for the advent of quantum physics the physics of the microscopic world of the atoms and their nuclei! By mid 1930s one had achieved a very good understanding of not only what the stars are, but why they are as they are. And during the subsequent four decades, great progress was made in understanding the life history of the stars.

In the first talk of this two-part series, the seminal ideas of Lane, Kelvin, Eddington, Saha, Chandrasekhar and others were traced, and their prescient contributions discussed

with a historical perspective. The second lecture will deal with the path-breaking ideas concerning neutron stars and black holes.

SPECIAL PROGRAMMES

Two public lectures was organised at the Institute during the period from July to September 2004.

Public lectures

September 10

Nautics and aeronautics

V Radhakrishnan

Raman Research Institute

Bangalore

September 30

Deccan traverses: From 'Naked Country' to 'Garden City'

Anuradha Mathur

Department of Landscape Architecture

University of Pennsylvania

Philadelphia, USA

Dilip da Cunha

Parsons School of Design

New York, USA

and

Department of Landscape Architecture

University of Pennsylvania

Philadelphia, USA

In 1800, the heart of the Mysore Tableland was described by more than one traveler as a "naked country". Today, this country is Bangalore, the Garden City of India. This presentation introduced four unique artistic/scientific enterprises instrumental in the transformation from 'naked country' to 'garden city', specifically, surveying, triangulating, picturing and botanising. These enterprises are called traverses. They constructed new images, skills, vocabularies and indeed a 'seeing' that even today underlies administration, education, plans, disciplines, and everyday conversation.

At the time of their initiation in the late 1700s these traverses had the added dimension of pioneering 'useful sciences' that were directed to human 'progress' and 'improvement'. They were plotting elements on the earth's surface, measuring the earth's curvature, visually documenting places and things, and cultivating useful plants. These were pursuits that had universal and global ambitions even as they found local uses. They made Bangalore a key player on the world stage. In addition, the presentation focussed on the starting points and continued presence of these traverses in the making of Bangalore's landscape.



CONSCIOUSNESS DISCUSSION FORUM

The Culture, Cognition and Consciousness Unit, in an effort to increase its activities in consciousness studies and to draw upon other existing sources of knowledge and interest in this area, has initiated a Consciousness Discussion Forum. The Forum has decided to meet once in about two months. Following the exchange of ideas in the first few meetings, an e-group on Consciousness has been formed. Those who are interested in this discussion forum can either log on to www.egroups.com/groups/NIAS-forum-on-CONSCIOUSNESS/ and register themselves or subscribe to the group by sending an email to NIAS-forum-on-CONSCIOUSNESS-subscribe@egroups.com. For more details, please contact **Sangeetha Menon** (prajnana@yahoo.com).

NIAS LITERARY FORUM

This forum has been established in the Institute to pursue and conduct literary activities such as play-reading, reading of poetry (one's own or others'), reading of short stories and the like. These activities are aimed at providing complementary support to the Institute's more regular work. The activities are open to all members of the NIAS fraternity and occasional guests from outside the Institute as well.

Currently, this forum meets on one Wednesday every month. For more details about its activities, please contact **Sangeetha Menon** (prajnana@yahoo.com) or **Sharada Srinivasan** (sharada@nias.iisc.ernet.in).

There were three meetings of the Forum during the period from July to September 2004.

July 7

The tree of verse: Explorations of a poet's consciousness

A reading of poetry

Deepti Diwakar

With poetry transcending daily consciousness and exploring the unknown and perhaps synthesising art and philosophy, the poet unravelled the mystery of her poetic inspirations. As Octavio Paz, the Nobel laureate, has said, poetry is the 'other' voice, far from that of say, marketing. She provided glimpses into a poet's psyche and took the audience on a journey of poetic consciousness while reading from her book 'The Tree of Verse'.

September 1

Politics and the English language

A reading of George Orwell's essay by the same name

Akshay Ahuja

George Orwell, described by Lionel Trilling as the "conscience of his generation", was a pen name for Eric Blair. Born in India in 1903, he served with the Indian Imperial Police in Burma, fought in the Spanish Civil War, and gained worldwide fame for his novels Animal Farm and 1984 before his death in 1950.

Orwell's 1946 essay examined the relationship between sloppy writing and the distortion of political realities. He argued that, in his time, since "political speech and writing are largely the defence of the indefensible," vague and euphemistic language had to be used to blind

both writers and the public to the truth of events.



The reading was followed by a discussion on how valid Orwell's observations are today, and the different ways in which governments use the English language in the service of obfuscation.

September 29

The Legacy

A reading from the book by the same name

Hema Ramakrishna

"The Legacy", written by Ramakrishna herself, is a work of non-fiction, part autobiography, part memoir, an amalgam of two different texts describing the life and death of the two sisters, Rajamma and Saroja. Part 1 deals with the death of the author's mother and the impact it has had on her, the author herself. Part 2 is about the brief life and death of the older sister Rajamma, as narrated by Saroja. Although the major theme of both Parts 1 and 2 is the experience of death itself, we are led by degrees to believe that in this instance, a case for rebirth exists. The book was published in Sri Lanka by Vijitha Yapa Publications.



Meetings Attended and Lectures Delivered by NIAS Faculty

JULY TO SEPTEMBER 2004

Dilip Ahuja

Attended a meeting of the Inter-Academy Council held at the Royal Society of London, August 27-28

B K Anitha

Served as rapporteur for the session on "The status of scheduled castes", a paper prepared for the Human Development Report 2004 in collaboration with the Planning Commission and UNDP in a Regional Consultative Workshop, ADSSIRD, Mysore, August 6

S Balachandra Rao

Delivered two lectures on "Relevance of Aryabhata in modern astronomy" and "Indian astronomy", Indian Institute of World Culture, Bangalore, August 29 and September 2

Malavika Kapur

Conducted a workshop on "Behavioural problems in children" for teachers specialised in specific learning disabilities, Spastic Society of Karnataka, Bangalore, July 16

Addressed the parents and teachers of Class IV of the Sophia High School on "Responsibility building techniques for parents and teachers", Bangalore, July 16

Invited to be a guest faculty at the Workshop on Art of Psychiatry, organised by the Association of Private Psychiatry, and delivered a lecture on "Child mental health", Manesar, Haryana, July 24-25

R L Kapur



Invited to be a guest faculty at the Workshop on Art of Psychiatry, organised by the Association of Private Psychiatry, and delivered a lecture on "Ethical issues in psychotherapy", Manesar, Haryana, July 24-25

K Kasturirangan

Delivered the Inaugural Address at Kuruvila Jacob Birth Centenary celebrations in Chennai, August 3

Delivered the Dharbhari Seth Memorial Lecture on "Environment from the vantage point of space", Tata Energy Research Institute, New Delhi, August 19

Delivered a lecture on "Challenges and excitements of the Indian Space Programme", Calicut University, Kozhikode, September 8

Delivered a lecture on "Managing the Indian Space Programme" at the valedictory function of the Sixth Annual ISRO Course, NIAS, September 11

Sangeetha Menon

Participated in the International Colloquium on Art/Science/Spirituality Reconnections within Emerging Planetary Cultures, organised and sponsored by Al Andalus Foundation, UNESCO DIGIARTS, and Leonardo Global Crossings Project, and delivered a lecture entitled "Experience of expression: Instances from Indian dramaturgy and a discussion on 'consciousness'", Spanish Melilla, Morocco, July 19

M G Narasimhan

Delivered a lecture entitled "From usual to unusual structures of DNA" at the UGC-sponsored State-level Seminar on DNA: Past, Present, Future, held at D V S College of Arts and Science, Shimoga, September 12

Delivered two lectures on "The Einstein-Bohr controversy in foundations of quantum mechanics" at the Twenty-second Refresher Course in Physics, Department of Studies in Physics, University of Mysore, September 20-21

S Rajagopal

Participated in the Conference on Proliferation Security Initiative, organised by the Centre for Security Analysis, Chennai, August 3

Delivered a lecture on "Nuclear safety and security" in a meeting organised by the Delhi Policy Group, New Delhi, August 30

S Settar

Attended the first Executive Committee meeting of the Ministry of Culture, Government of India, New Delhi, September 20

Chaired a session and delivered the Valedictory Address of the National Seminar on India and Asia: Glimpses of Aesthetic Discourse, Indian Institute of Advanced Study, Shimla, October 25-27

Chaired a session and presented a paper on "War and peace: Indian experience through the ages" at the National Seminar on India in the Twenty-first Century and the Ideal of Peace with Reference to Gandhi, Nehru and Marx, Indian Institute of Advanced Study, Shimla, October 27-29

P K Shetty

Participated in the Twelfth International Conference and Exhibition on Mechanization of Field Experiments and presented a paper entitled "Plant protection and sustainable agriculture in India", St Petersburg/Pushkin, Russia, July 5-9

Anindya Sinha

Presented a project proposal entitled "Behavioural ecology and demography of bonnet macaques *Macaca radiata*: A comparative account of the two

subspecies" to the Project Advisory Committee in Animal Sciences of the Department of Science and Technology, Government of India at the Indian National Science Academy, New Delhi, September 10



B V Sreekantan

Delivered a lecture on "Scientific and philosophical perspectives on the ultimate reality behind the physical world" at the Fifth Annual ISRO Course, NIAS, September 7

Delivered the Inaugural Address on "Science and consciousness" at the Golden Jubilee of the National Institute of Mental Health and Neurosciences (NIMHANS): National Workshop on Neuropsychological Assessment and Neuropsychological Rehabilitation, NIMHANS, Bangalore, September 8

Prabhakar G Vaidya

Attended the Experimental Chaos Conference and presented three papers on "Reduction of noise from an experimental data set, using noise-free samples from the same source", "Obtaining low-dimensional autonomous equations from ECG and EEG data" and "Synchronizability of stable limit cycles under the influence of small disturbances", Florence, Italy, June 14-17

Delivered a lecture entitled "Synchronizability of heart cells, analysis and feedback control of complex systems", Central Electronics Laboratory, Research Center Juelich, Germany, June 22

Delivered two lectures on "Some speculations on the dynamics of heart attacks" and "Some ideas about data compression and noise reduction in signal and image processing", Institute of Sound and Vibrations Research, University of Southampton, England, July 2

Presented a paper entitled "Some applications of topological entropy to signal and image processing" at the ICTP 40th Anniversary: Summer School and Conference on Dynamical Systems, Abdus Salam International Centre for Theoretical Physics, Trieste, Italy, July 18-August 6

Delivered a lecture entitled "Some applications of chaos and nonlinear dynamics", at the Workshop on Mathematical Modelling, conducted by C-MMACS, MES College, Bangalore, September 2

VISITS BY THE NIAS FACULTY

P K Shetty

Visited the St Petersburg Agrarian University, St Petersburg and University of Moscow, Moscow, in Russia, July 5-9



Upcoming Events



The Science and Technology Policy 2003 seeks to integrate scientific knowledge with insights from other disciplines and to progressively increase the rate of generation of high quality skilled human resources at all levels. The large pool of scientific and technical manpower in government and government-sponsored institutions have not had the benefit of either induction training or a system of regular in-service training that are available to other cadre-based services. As a result, NIAS is organising, with support from the Department of Science and Technology of the Government of India, the **First Programme on Multidisciplinary Perspectives on Science and Technology for a very select group of senior scientist-administrators** from various scientific organisations in the country during the fortnight of **November 15-27 2004**. Its purpose is to offer views of the broader scientific, economic, social and cultural milieu in which the Indian scientific enterprise could develop in the coming decades. Consistent with the mission of NIAS, this course too emphasises the development of leadership qualities through the integration of multidisciplinary knowledge. Senior science-administrators (with at least 20 years of experience) who manage large scientific programmes are eligible to attend this programme. Apart from the cost of travel to and from Bangalore, there is no cost to the sponsoring organisation. Participation in this programme will be, however, limited to 20 senior scientists. For more information, please contact Dilip Ahuja(dahuja@nias.iisc.ernet.in).

The Sociology and Social Anthropology Unit is holding a **Consultation on Employment Policies in the IT and ITES Sector on December 3, 2004**, to discuss the question of whether there is a need to evolve a comprehensive employment policy for the IT

and ITES industries in India. This consultation is being organised as part of their ongoing research project entitled 'Indian IT professionals in India and the Netherlands: Work, culture and transnationalism', funded by the Indo-Dutch Programme on Alternatives in Development (IDPAD). The purpose of this consultation is to develop policy recommendations to be submitted to the Government of India. Representatives of IT and ITES companies, industry bodies (NASSCOM, CII), and government representatives (Labour and IT Ministries) are being invited to share their views. The researchers from NIAS will also disseminate some of the results of their ongoing research project at this meeting. Please contact Carol Upadhyaya (cupadhyaya@vsnl.com) for more information.

The 19th Course for Senior Executives will be held at NIAS from **January 24-29, 2005**. The theme for the course is "Leadership in Excellence". Please contact Sangeetha Menon (smenon@nias.iisc.ernet.in) for more information.

The Eighth UGC-sponsored NIAS Orientation Course on An Integrated Approach to Knowledge and Information for University and College Teachers will be held in NIAS from February 10 to March 2, 2005. Please contact Anindya Sinha (asinha@nias.iisc.ernet.in) for more information.



An Appeal for Funds



Building and sustaining the intellectual and social foundations of a transforming civilisation

About NIAS

India has several fine institutions, in the natural sciences, in engineering and technology, and in the social sciences. But these institutions harbour different cultures, and, indeed, are often worlds unto themselves. And there are too few bridges between and among them. The most interesting and challenging problems of the coming century probably lie in the interfaces between these cultures and disciplines—interfaces that are studied far too little in our country. It is in these no man's lands that I believe the future of NIAS lies—in subjects that do not belong to the tidy little pigeon holes that the current knowledge system of the world has created artificially, and for technical or bureaucratic convenience, not because that is the way the world operates. How to build these bridges, how to bring different intellectual and social communities together, and how to look at the future of our nation and the world with the greatest possible intellectual integrity as well as public and social confidence—it is the pursuit of these aims that NIAS is taking up as its mission.

If we have to achieve these goals it is necessary for us to bring together the best in the natural and social sciences. The late JRD Tata, who conceived of this institution, saw the great need in India to form a new kind of leader—he envisioned an institution that could harness creativity and commitment, mathematics and management. With my distinguished colleagues on the faculty of NIAS, and the eminent persons we count among our Associates, I am hopeful that we can carve a unique niche for ourselves in the public and intellectual life of this country

and the world, moving in the direction that our founders so clearly saw as essential for the future health of our nation.

The appeal

The pursuit of our goals demands a measure of autonomy. We need financial support from diverse sources to ensure and sustain that autonomy. The early generosity of the House of Tatas and the Government of Karnataka has given us some splendid facilities. We now need to build on this foundation, diversify our sources of income and carry out programmes that are sensitive, at one and the same time, to public and national needs as well as to the demands of uncompromising intellectual rigour.

We solicit your contributions to help us to realise our goals. Bequests can be made to the NIAS Endowment Fund in the manner described below.

K Kasturirangan

Director, NIAS, and
Chairman, NIAS Endowment Committee

HOW TO MAKE CONTRIBUTIONS TO THE NIAS ENDOWMENT FUND

All contributions made to NIAS or its Endowment Fund are tax deductible under Section 35, Subsections (i) and (ii) of the Indian Income Tax Act of 1961.

NIAS is registered under the Foreign Contributions (Regulation) Act, 1976, and is entitled to receive contributions from abroad directly (Register number 094420614, Account No. 0100005000200, State Bank of India, Indian Institute of Science, Bangalore 560 012). Contributions must be made by cheques drawn in favour of the National Institute of Advanced Studies; the cheques may be sent directly to NIAS, or credited to the State Bank of India account mentioned above with independent intimation to NIAS.



The Institute welcomes contributions of any amount. Typical sums and the purposes for which they can be used and the forms in which acknowledgements can be made are shown below.

1. *Books*

Can be donated as books or as funds to be utilised for purchase of books

Every book donated or purchased out of donation funds will carry a label indicating the name of the donor

2. *Objects of art* (paintings, sculpture etc.)

Rs 10,000/ and above

Will carry a small plaque indicating the name of the donor

3. *Annual Endowed Lecture* (speaker residing in India)

Rs 2.5 lakh or US \$ 6,000

May be named with concurrence of donor

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Rs 5 lakh per room

Room will carry a plaque indicating the name of the donor

5. *Visiting Professor* (from India or abroad)

Rs 10 lakh or US \$ 25,000

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6. *Lecture Hall*

Rs 20 lakh or US \$ 50,000

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7. *East Wing, Main Building*

Rs 40 lakh or US \$ 100,000

May be named with concurrence of donor

8. *West Wing, Main Building*

Rs 50 lakh or US \$ 125,000

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9. *Endowed Doctoral Scholarship*

Rs 10 lakh or US \$ 25,000

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10. *Endowed Fellowship*

Rs 30 lakh or US \$ 70,000

May be named with concurrence of donor

11. *Endowed Professorship*

Rs 40 lakh or US \$ 90,000

May be named with concurrence of donor

12. *Endowed Research Unit*

Rs 80 lakh or US \$ 187,500

May be named with concurrence of donor



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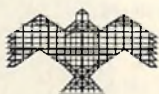
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The National Institute of Advanced Studies (NIAS) was conceived and initiated by the late Mr. J R D Tata, who sought to create an institution which would conduct advanced research in multidisciplinary areas, and also serve as a forum to bring together administrators and managers from industry and government, leaders in public affairs, eminent individuals in different walks of life, and the academic community in the natural and social sciences. The intention has thus been to nurture a broad base of scholars, managers and leaders who may contribute to tackling the complex problems facing contemporary India in a more informed and effective manner.

The philosophy underlying NIAS is given shape by its research teams, which are drawn from a variety of disciplines in the natural and social sciences. The Institute is unique in its integrated approach to the study of intersections between science and technology and social issues.



Sangeetha Menon



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