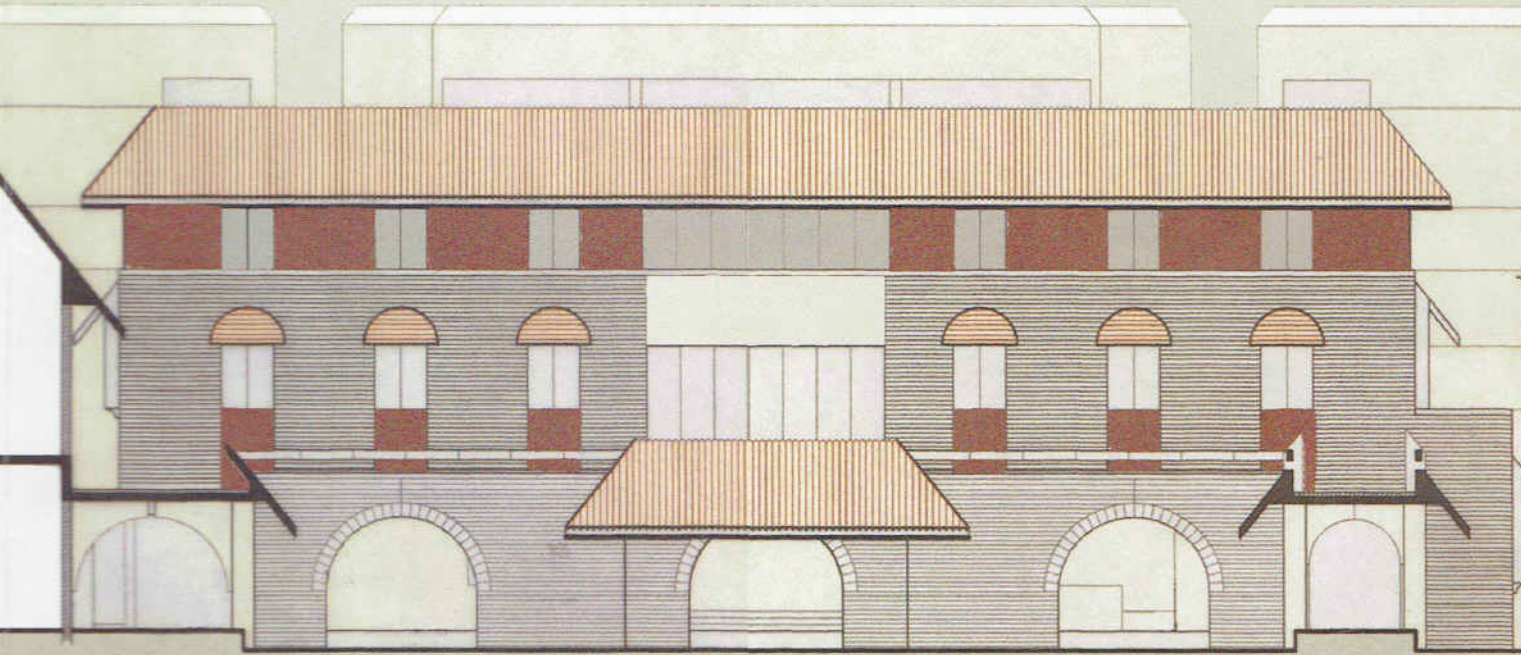


# Annual Report

2005 - 2006



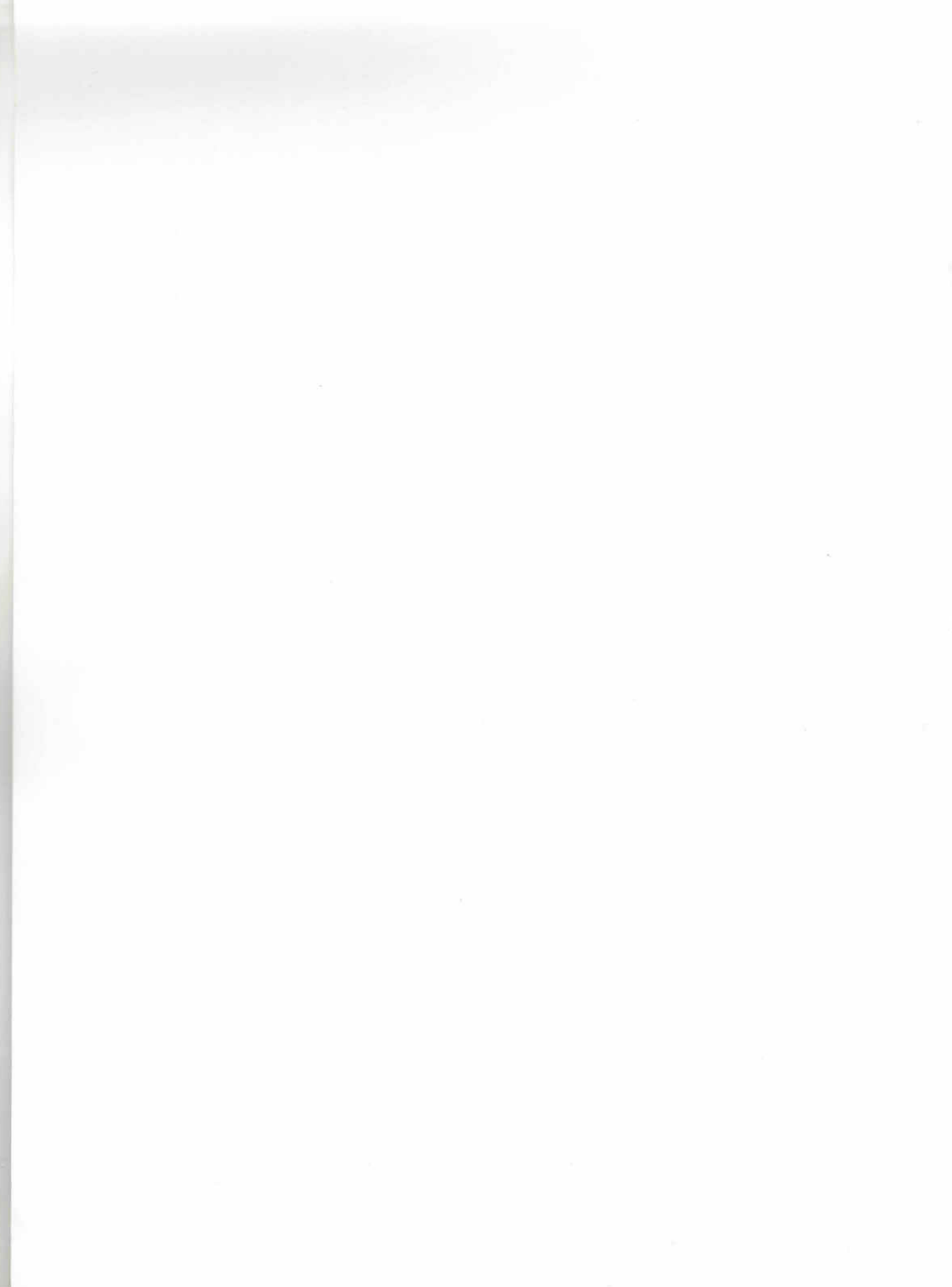
NATIONAL INSTITUTE OF ADVANCED STUDIES

Bangalore, India

Cover: Front Elevation of the Centenary Faculty Block,  
Courtesy: Mr. Rahul Manohar, Patell Batiwala Manohar and Associates, Mumbai.

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*April 2005-March 2006*

## **DIRECTOR'S REPORT**

I am pleased to present this brief report of NIAS's activities for the year 2005-2006. This second year of my association with NIAS continued to be both challenging and satisfying. Faculty members published several books, filed the first ever-patent applications filed by NIAS faculty, successfully organized courses and several conferences. As in years past, we were fortunate in having several outstanding visitors to NIAS who also gave outstanding talks. This was also the year when global terrorism caught up with the open atmosphere of the Indian Institute of Science on whose campus NIAS is located. There was a senseless attack outside the J. N. Tata Auditorium on the evening of 27 December 2005, which appears to be random. There was tragic loss of life and our colleague Prof. Vijay Chandru, Honorary Professor at NIAS for the last 6 years was critically injured. Prof. Chandru is thankfully on his way to a complete recovery. Only two weeks prior to this incident, NIAS had organized a talk by Archbishop Desmond Tutu at the same venue. We have no option but to tighten security arrangements during important campus events, conferences and seminars.

### **Highlights of Research Activities of the Institute:**

**School of Humanities:** Prof. S. Settar's book on "Inviting Death" has been translated into Kannada. Prof. Sundar Sarukkai has written a book titled "Indian Philosophy and Philosophy of Science". It is about the relevance of Indian

philosophy to contemporary philosophy of science and explores the possibility of drawing upon Indian philosophical traditions, particularly its rationalistic ones, to understand the nature and foundations of science. Dr. Sangeetha Menon has completed a paper on Hinduism and Science for a Handbook to be published this fall by the Oxford University Press.

A Centre for Philosophy with the objective of enabling, supporting and sustaining philosophy research and education throughout the country has been created at the Institute and Prof. Sarukkai will head this Centre. Prof. Richard Sorabji, well-known Philosopher from Oxford and London University, inaugurated the Centre on 20 January 2006.

**School of Natural and Engineering Sciences:** Professors Prabhakar G. Vaidya and Tim Poston have applied for a patent to use non-linear embedding methods to personalize voice patterns to tune filters that ferret out the signal from background noise. Prof. Poston has also registered a patent application for his invention of a 3-D Mouse in which the rotational dimension brings in extra information. Since these were the first patents that were being filed from NIAS, we would look at the I. I.Sc. IPR Policy before adopting one of our own. Prof. Anindya Sinha is very active in the research of the Arunachal Macaque, a species he co-discovered last year. His team has initiated a long-term project that will explore the demography, behavioral ecology and conservation status of this monkey in the Tawang

and West Kameng districts of Arunachal Pradesh. His most recent findings about the wild bonnet macaques in southern India concern the appearance of behavioural tradition and cultural evolution within the population. Prof. P. K. Shetty has completed his "National Survey on the use and misuse of pesticides in India" and recommends that in addition to testing pesticides before use, the country also monitor their use and cases of poisoning and deaths.

**School of Social Sciences:** Dr. Padma M. Sarangapani's book titled "Improving Government Schools: What Has Been Tried and What Works", a collection of 24 case studies, was recently published by Books for Change. At the request of ISRO headquarters, Bangalore, Professors Dilip R. Ahuja, A. R. Vasavi and D. P. Sengupta undertook a review of the integrated performance of the EduSat programme during its pilot phase in the engineering colleges of Vishweshwaraya Technological University, Karnataka. Prof. Vasavi and Dr. Carol Upadhyia completed a research project entitled 'Indian IT Professionals in India and The Netherlands: Work, Culture, and Transnationalism'. The project was a sociological and ethnographic study of employees of the information technology and IT-enabled-services industries in Bangalore and abroad, focusing on the social and cultural transformations that have been brought about by the rapid rise of this global industry in India. The project was funded by the Indo-Dutch Programme for Alternatives in Development, a joint programme of the Government of India and the Royal Dutch government. Prof. Dilip Ahuja has been appointed as a Special Advisor to the InterAcademy Council based at the Royal Netherlands Academy of Arts and Sciences, Amsterdam for its study on Transitions to Sustainable Energy Systems.

**International Strategic and Security Studies Programme:** The ISSS Programme continues to make independent assessments of various issues impacting on national security and this year completed a comprehensive study on "An Assessment to Pakistan's Ballistic Missile Programme" as a competence building exercise. DRDO headquarters in New Delhi has commissioned a similar study on "Chinese Ballistic and Cruise Missiles". The programme organized a Conference on the "Changing Contours of Indo-US Relations" during 9-10 February 2006. It intends to continue CISAC-NIAS Dialogues; the next dialogue is scheduled to be held in September 2006.

## NIAS Doctoral Programme:

With the entry of nine more students, we now have 16 full-time doctoral students. The student community has added a refreshing dimension to the academic environment in NIAS. Several courses have been offered to equip students with the necessary knowledge and the tools to undertake research. Guides for them have already been identified. First batch students have cleared the qualifying examination. The formalities for registering NIAS faculty with Manipal Academy of Higher Education and University of Mysore have been completed and a letter has been sent to Jawaharlal Nehru University for registering in certain research areas.

## Flagship NIAS Courses:

Participants in NIAS courses have the opportunity to hear lectures from several eminent speakers, covering a broad set of themes, emphasizing social sciences, culture and management. NIAS courses are unique in that besides imparting broad-based knowledge, they make possible intense interaction between the participants and the speakers, and between the participants themselves. Further, the participants are encouraged to provide critical feedback about their assessment of the course and the types of improvements required in future courses.

The Second and Third DST-NIAS Programmes on "Multidisciplinary Perspectives on Science and Technology" were held from 24 July to 6 August and 6 to 19 November 2005 respectively. These programmes were sponsored by DST with the purpose of providing scientific, social, economic, and cultural perspectives on the science and technology enterprise in the country. Prof. Ahuja coordinated these programmes. The second course was partly held at the Orange County Resort and the third course was partly held at the Kabini River Jungle Lodge. Next year onwards with more accommodation possible at NIAS, both the courses would be merged into a single course, to optimize the use of resources and selection of speakers.

The Sixth Annual ISRO Course on "Indian Space Enterprise: Achieving Social Impact" was held between 29 September and 5 October 2005. Thirty mid-level scientist-engineers drawn exclusively from ISRO attended the Course. Dr. P. S. Goel, Secretary, Department of Ocean Development, inaugurated the Course.

Mr. Madhavan Nair, Chairman, ISRO also interacted with the participants and wanted them to examine issues relating to future manned space exploration. Prof Ahuja coordinated this Course. There is a discussion to have biennial courses both for ISRO and DRDO.

The Ninth NIAS Course on **“Education, Research and Universities”** for University and College Teachers was held from 28 December 2005 to 17 January 2006. The Course was co-sponsored by University Grants Commission, ISRO and JNCASR. Dr. B. K. Anitha coordinated this Course. The aim of the Course was to actively engage selected university teachers from across the country in discussions about the major problems facing the country.

The Twentieth NIAS Course for Senior Executives on **“Excellence in Leadership”** was conducted from 22 to 29 January 2006. The Course was attended by 27 participants from public and private sectors. Dr. Kiran Mazumdar-Shaw inaugurated the Course and Dr. Suresh Prabhu gave the valedictory address. Many well-known figures, such as Mr. N. N. Vohra, Dr. Sam Pitroda, Mr. Mohandas Pai and Professor V. I. Mathan, drawn from a variety of national endeavours delivered talks in this Course. Dr. Sangeetha Menon coordinated this Course. The Course was very well received by the participants.

## Conferences Organized:

The Institute had a busy year organizing several conferences, many of which are open to students and citizens of Bangalore. Reports are produced for many of these conferences and their recommendations widely circulated to stakeholders. NIAS is especially a good venue for providing a neutral platform for such discussions.

A one-day discussion meeting on **“Six Months After Tsunami”** was held at the Institute on 16 June 2005 to discuss the tsunami that struck the region on 26 December 2004. The objective of the meeting was to discuss the scientific knowledge of the phenomenon, its historical, sociological, psychological and behavioral dimensions. The meeting brought together scientists, government officials, historians and social groups.

A Workshop on **“Space Inputs to Archaeology”** was organized on 5 July 2005. It was jointly organized by NIAS, ISRO and NRSA. The participants included archaeologists, historians,

space scientists and NIAS Faculty. The aim of this Workshop was to produce a Discussion Paper and Develop a Future Plan of Action to undertake a multi-disciplinary research programme at NIAS.

As a part of the Indo-Dutch Programme for Alternatives in Development, a Conference on **“New Global Workforces and Virtual Workplaces”** was held on 12 and 13 August 2005. The aim of the Conference was to bring together scholars from different countries who are engaged in research on the new forms of work and categories of global workers that are emerging in the ‘new’ economy, specifically in the information technology and IT-Enabled-Service sectors. Work on bringing out an edited volume of selected conference papers is under way.

A Conference on **“India’s Competitiveness and Preparedness in Science and Technology for the Coming Decades (Issues, Challenges and Strategies)”** was held on 26 and 27 October 2005. Mr. Kapil Sibal, Minister for Science and Technology inaugurated the Conference and Prof. C. N. R. Rao presided over the Conference. Besides the members of the Scientific Advisory Committee to the Prime Minister, Government of India, senior scientists and scientific administrators, and promising young scientists attended this Conference. A comprehensive report of the conference proceedings is being published as a NIAS Report.

A three-day Workshop on the **“Foundations of Sciences”** was held as part of the project of History of Indian Science, Philosophy and Culture undertaken by the Centre for Studies on Civilization, Kolkata, from 2 to 4 February 2006. Papers presented at this Conference were designed to fill gaps in an earlier Conference in February 2004 and included overviews of Foundations of Science and Pre-early modern science, ancient science, new developments in Astronomy and Cosmology and Life Theories and the Role of Chaoplexity. Papers from both conferences will be the basis of a volume on “Foundations of Sciences” being edited by Prof. B. V. Sreekantan.

A two day Conference on **“Consciousness, Experience and Ways of Knowing: Perspectives from Science, Philosophy and the Arts”** was held from 6 to 7 February 2006. Over a hundred scholars, students, engineers and doctors attended this Conference. The Conference

addressed consciousness studies, developments in cognitive sciences, and the distinct ways of knowing and experiencing in science, philosophy and the arts. Professor Sreekantan and Dr. Sangeetha Menon organized this Conference. A highlight of the Conference was a presentation by Dr. Mrinalini Sarabhai on The Concept of Beauty in Indian Aesthetics.

A Conference on **“Changing Contours of Indo-US Relations”** was held on 9 and 10 February 2006. The aim of this Conference was to take stock of the political, economic, military, high technology and legal dimensions of Indo-US relations and to attempt to integrate these dimensions into a holistic appraisal and to foresee the likely contours of future relationship. This major event was organized jointly with the Indian Space Research Organization. Preliminary report of the Conference is ready and provided to the highest levels in Government for use in policy formulation and decision-making. In a month’s time, a detailed report is expected to be published. An idea to conduct similar meetings annually is being debated.

A Joint Indo-German research workshop, on **Will Competition for Land and Water Hinder Energy Development in India?** was held on 7-8 March 2006 to identify critical research questions concerning the availability of land and water in promoting future energy development in India and to exchange information about the latest modeling and other tools available for studying these questions. Twenty-three participants from India and Germany participated in the Workshop. The two major outputs of the Workshop were consensual outlines of major research questions that need to be undertaken in India about the Integrated Assessment of Liquid Biofuels Development, and on the Impact of Large-scale Electricity Production on Land and Water.

**Seminar on Science, Technology and Society** was held at the Institute on 25-27 March 2006 in collaboration with the Indian Institute of Advanced Studies, Shimla. The seminar highlighted efforts that can be made through the use of science-based high technologies to tackle chronic societal problems in the fields of health, education, water, electric power, environment, communications, and transportation. The participants included teachers from various educational institutions in Bangalore and social workers.

## Visiting Professors and Visitors to NIAS:

Prof. K. P. Vijayalakshmi, School of International Studies, Jawaharlal Nehru University, helped in organizing the Conference on “Changing Contours to Indo-US Relations. Prof. Joseph Alcamo, Director, Centre for Environmental Systems Research, University of Kassel, Germany, taught a Course to NIAS doctoral students. He organized an Indo-German Workshop on “Will Competition for Land and Water Hinder India’s Energy Developments on 7 and 8 March 2006. Professor Frits Staal, Professor of Philosophy, University of California, Berkeley was a Visiting Professor at NIAS during the month of March 2006.

The Institute had several distinguished visitors visiting NIAS for discussions and lectures. Among them, Prof. W. E. Bijker, Maastricht University, Netherlands gave a talk on “Democratization of Technological Culture: The Role of Science and Technology for Development” and Dr. Stephen Cohen, Senior Fellow, Brookings Institution spoke on “The Prospects for the Indo-US Nuclear Agreement”.

## Other on-going NIAS Outreach Programmes:

Several on-going programmes were continued during this period, chiefly the Memorial Lectures, History of Ideas Series, Public Lectures, Associates’ Programme, Consciousness Discussion Forum, Literary Forum and Wednesday Discussion Meetings.

**J. R. D. Tata Birth Centenary Lecture Series:** Under this series, Prof. Ashish Bose gave a talk on “Demographic Future of India”. The President of India - Dr. A. P. J. Abdul Kalam presented his “Vision for Aeronautics Mission” and the lecture series concluded on 12 December 2005 with a talk by Archbishop Desmond Tutu “Is There Hope for Humanity?” In all there were seven lectures in the series, which would be published in a volume.

**Annual Memorial Lecture Series:** There are now three endowed annual lecture series in NIAS. These lectures were held in conjunction with Flagship NIAS Courses. The M. N. Srinivas Memorial lecture was given by Prof. Rajendra Chenni on “State and Identity: Case of Karnataka”, the first annual Shri. Mohandas Moses Memorial



Lecture was given by Mr. N. N. Vohra on "Future of Bureaucracy in Changing Times" and the first annual Dr. Raja Ramanna Memorial Lecture was delivered by Dr. C. V. Sundaram on "Personal Reminiscences of Dr Raja Ramanna".

## Construction of the Centenary Faculty Block

I am happy to inform that Dr. J. J. Irani, Director, Tata Sons Limited and a Member of the NIAS Governing Council laid the Foundation Stone for the Centenary Faculty Block on 2 July 2005. The architectural style would complement existing buildings. Apart from the building contractor, the Institute has appointed a construction management consultancy group to ensure the quality of construction. Besides the faculty block, several additions and alterations to the existing

building will be made. Though there were minor problems that have delayed the project to a certain extent, the work on the whole is progressing well and the Centenary Faculty Block is expected to be ready for occupation in September 2006.

## Financial Status of NIAS:

At present the Institute's financial situation is satisfactory. Rental rates for NIAS facilities have been increased. It is satisfying to note that even though the hiring usage of NIAS facilities by outsiders has been reduced, thereby enabling increased usage by NIAS, the total revenue has not been affected. The Institute has been able to improve the financial situation thanks to the generous one-time grant given by Department of Science and Technology.



Dr. J. J. Irani at the Centenary Faculty Block Foundation Stone Laying Ceremony, 2 July 2005



Prof. S. Rajagopal, Dr. K. Kasturirangan, Prof. M. S. Swaminathan, Mr. H. R. Khusrokhhan and Dr. J. J. Irani, 2 July 2005

With the increased accrual of revenues from renting out facilities, the interest earned from the corpus fund, and from other programs, there is a reasonable saving this year that will be used for construction activities. Under the proposed budget estimates for 2006-2007, the revenue is expected to be Rs.191.11 lakhs and expenditure Rs.179.92 lakhs.

### **Concluding Remarks:**

We still have a long way to go. This year marks the promotion of several of the younger faculty of the

Institute to professorial level. I do hope that in addition to performing at a higher level in their research, I can count on them for their increased role in Institute's diverse activities. The Institute would also like to induct Post-doctoral Fellows based on internationally competitive selection; very selectively increase recruitment; create more visiting faculty positions at different academic levels; provide infra-structural support; and create a few flourishing Institute Centers of world quality. I look forward to working with everyone at NIAS in realizing our shared vision of a more dynamic and vibrant NIAS.

### MEMBERS OF THE SCHOOL

Prof. B. V. Sreekantan, Visiting Professor and Dean  
Prof. S. Settar, Radhakrishnan Visiting Professor  
Prof. S. Ranganathan, Visiting Professor  
Prof. Sundar Sarukkai, Professor  
Dr. Sangeetha Menon, Fellow  
Dr. M. G. Narasimhan, Fellow  
Dr. Sharada Srinivasan, Fellow

#### Doctoral Students

Ms. Meera Baidur  
Ms. Swarnali Majumder  
Mr. Arun Murthi  
Ms. M.B. Rajani

### INTRODUCTION

The School of Humanities encompasses subjects such as Philosophy, Literature and the Fine Arts. Research in the School currently focuses on the philosophical foundations of sciences including mathematics; on scientific and philosophical studies of consciousness; and on the history and philosophy of science. Work is also underway on the analysis of ancient metals, and on translations of Kannada Literary Classics into English.

### RESEARCH CARRIED OUT

#### Prof. B. V. Sreekantan

Prof. B. V. Sreekantan's research interests have continued in the areas of philosophy of science, consciousness studies and high-energy astrophysics. During the year 2005-2006 he has spent considerable time in the editorial work on the book "Foundations of Sciences" for which he has already garnered about 500 pages of very valuable material from the participants of the earlier workshop organized in February 2004. Yet another workshop on the same subject to cover

areas, which were not done in the earlier workshop, was held in February 2006. The work on the book is expected to be completed by September-October 2006.

He continues to provide overall guidance for the Ph.D. programme of the Institute.

#### Prof. Sundar Sarukkai

Prof. Sundar Sarukkai has written a book on "Indian Philosophy and Philosophy of Science" which was published by CSC and distributed by Motilal Banarsidass, New Delhi. ISBN: 81-87586-22-2 Hardback pp. xiii + 268.

#### A Brief Summary of the Book

Philosophy of science draws upon different traditions in Western philosophy, starting from the ancient Greek. However, there is a conspicuous absence of nonWestern philosophical traditions, including the Indian, in philosophy of science. This book argues that Indian rational traditions such as Indian logic, drawn from both Buddhist and Nyâya philosophies, are not only relevant for philosophy of science but are also intrinsically concerned with scientific methodology. It also suggests that the Indian logical traditions can be understood as requiring that logic itself be scientific. This explains their engagement with ideas such as valid inference, invariable concomitance, the use of the empirical in logical analysis, the move from observations to statements about these observations and so on. The essential relation between some Indian philosophical traditions and science is further illustrated by the semiotic character of Indian logic, its explanatory structures which are similar to those of scientific explanations, Indian theories of knowledge and truth, the pragmatic nature of truth and its relation to action which is essential to Nyâya and to science, and finally the importance of the effability thesis which is central to Nyâya, Bharthari and Modern Science.

This book introduces the reader to important themes in Indian logic, epistemology and philosophy of language as well as philosophy of science. Relationships between these various traditions are also explored thereby suggesting how Indian philosophy can engage with contemporary philosophy of science. This introductory book will be valuable for students, professional philosophers as well as those interested in Indian philosophy and its significance to contemporary thought.

#### **Dr. Sangeetha Menon**

The book Dr. Sangeetha Menon is writing, on "Consciousness, Memory, Agency and Spiritual Experience: Scientific Discussions and the Indian Discourse" as part of the GPSS Award programme has progressed substantially. It will be submitted to the press by this year-end. This book will examine the current discussions on consciousness, different forms of experience, the nature and role of agency in contributing to neural progress as well as higher forms of experience, and finally present some theses in the context of current discussions in neurobiology and the Indian discourse.

Another book entitled "Consciousness in the Bhagavad Gita and the Indian Discourse" that was also the theme for her Ph.D. thesis has also reached its final stage. It will be through the press in a few months time. This book will present an exhaustive discussion on the concept of consciousness as discussed in the *Bhagavad Gita* with particular emphasis on action, freedom and meditation. This book will also have a comparative account of other theories in Indian philosophy.

An introductory book with a translation and commentary on the *Patanjali Yoga Sutras* with focus on consciousness has reached the first draft.

Other completed works include a chapter on 'Hinduism and Science' for a Handbook by the Oxford University Press to be through the Press in Fall 2006; 'The Transpersonal Psychology in the Bhagavad Gita' for a volume on Indian Psychology; 'What is Indian Psychology' for the Journal of Transpersonal Psychology. She presented papers at conferences and gave lectures presenting her research work on consciousness and mind studies in the context of current discussions and the Indian discourse.

#### **Dr. M. G. Narasimhan**

Currently engaged in studies related to concepts like Innateness Complimentarity, Universal Grammar and Thought Experiments in Sciences. He is interested in tracing the emergence and evolution of such concepts within the framework of interdisciplinary studies.

He is also working as the Coordinator for the Ph.D. programme of the Institute.

#### **Dr. Sharada Srinivasan**

##### **History of Science and Technology Projects Taken Up**

3 year project supported by DST-Young Scientist Nurture Scheme on 'Archaeometallurgy of newly uncovered Harappan sites such as Dholavira'. Preliminary literature and field surveys and scientific investigations begun related to the project.

Infinity Foundation book project on textures of wootz steel; scientific investigations undertaken on making of traditional swords including swords used in martial art form of Kalaripayattu from Kerala.

#### **Dr. Veena Rao**

##### **J. B. S. Haldane's Indian Period**

This project is funded by the History of Science section of the Indian National Science Academy (INSA) and is being carried out by Dr. Veena Rao as Honorary Research Associate of NIAS. She has been able to elicit valuable information from Nobel Laureates who knew Haldane well: Prof. Ernst Mayr, and Prof. Blumberg and Dr. Siniscalco, who was a colleague of Haldane at Cornell University, M. S. Swaminathan and Prof. Edwards of University of Cambridge. Recently she made a trip to London on the INSA-Royal Society Exchange and had the opportunity to collect valuable material on the life and works of Haldane.

#### **OTHER ACTIVITIES**

##### **Prof. B. V. Sreekantan**

Organised Workshop on "Foundations of Sciences" from 2-4 February 2006.

Along with Dr. Sangeetha Menon organised a two day National Conference on "Consciousness, Experience and Ways of Knowing: Perspectives from Science, Philosophy and the Arts" from 6-7 February 2006.

Organised a National Seminar on "Science, Technology and Society" from 26-28 March 2006 in collaboration with Indian Institute of Advanced Studies, Shimla.

#### **Prof. Sundar Sarukkai**

Taught a Course on "Philosophy of Mathematics", 3 credit course, August to December 2005. (Students from IAS, IISc and RRI took this course.)

Was Visiting Professor, Institut Nicod, Paris, June 2005.

Wrote and directed the play "Not an Ordinary Man" staged on 9 and 25 January 2006.

Conducted Workshop on "Knowledge Management" at Gandhigram Trust – 17-18 February 2006.

#### **Dr. Sangeetha Menon**

Coordinated the 20th IAS Course for Senior Executives, on "Excellence in Leadership". 22-28 January 2006.

Along with Prof. B. V. Sreekantan organised a two day National Conference on "Consciousness, Experience and Ways of Knowing: Perspectives from Science, Philosophy and the Arts" from 6-7 February 2006.

Co-organised with Dr. K. Kasturirangan and Prof. Roddam Narasimha, a one-day meeting entitled "Six months after Tsunami" on 16 June 2005.

Organised the in-house seminars for the IAS Discussion Forum for "Consciousness".

Organised weekly IAS Faculty and guest lectures for "Wednesday Discussion Meetings" and bimonthly lectures for the "IAS Literary Forum".

Coordinated and oversaw the publication of the major lectures given at the 19th IAS Course for Senior Executives, the one day meeting entitled *Six months after Tsunami*, Lectures given at IAS Forum for Consciousness, in professional DVD format, and other IAS publications in print format (all available in the IAS Library).

One of the Chief Editors for a series of books on Indian Psychology for undergraduate students.

Guest Lecturer for the Department of Architecture, Manipal Institute of Technology, to give lectures on Indian psychology and theories of mind and consciousness, as part of an elective course on psychology for graduate students, in 2006.

#### **Dr. M. G. Narasimhan**

Organised a half-day Seminar on "Einstein: The Philosopher Scientist" in collaboration with Indian Physics Association, Bangalore Chapter, and Bangalore Association for Science Education – 30 September 2005. The occasion was Einstein Centenary Year and International Year of Physics.

#### **Dr. Sharada Srinivasan**

Field visit to Swamimalai, Tamil Nadu for documentation of techniques of making bronze statues by lost wax casting and interview on the same for documentary series on Sculpture of India for Prasar Bharti, Doordarshan – 22 January 2006.

Invited as expert on ancient technology to join excavation by Cambridge University of Neolithic settlement at Sanganikallu, Karnataka – February 2006.

Invited to Technology Gallery, Nehru Museum, Mumbai to advise on display and content of exhibition of ancient Indian technology.

## SCHOOL OF NATURAL AND ENGINEERING SCIENCES

### INTRODUCTION

This School covers research in the field of engineering and mathematics, agriculture, ecology and conservation biology. Current research interests of the faculty members include various aspects of signal processing; artificial intelligence; soft computing, language engineering; mathematical modelling of complex chaotic systems; studies on agro-ecology; natural resource conservation particularly soil and water conservation; pesticide stewardship; conservation of wildlife; primate behaviour; and cognition.

### MEMBERS OF THE SCHOOL

Prof. Prabhakar G. Vaidya, *Dean*  
Prof. Timothy Poston, *Sir Ashutosh Mukherjee Visiting Professor*  
Prof. K. Ramachandra, *Visiting Professor*  
Prof. P. K. Shetty, *Professor*  
Prof. Anindya Sinha, *Professor*  
Dr. Sindhu Radhakrishna, *Visiting Associate Fellow*  
Dr. M. B. Hiremath, *Research Assistant*

#### Doctoral Students

Mr. Kishor G. Bhat  
Mr. Mayukh Chatterjee  
Mr. M. Murugan  
Mr. Nithin Nagaraj  
Mr. Narayan Sharma

Ms. P. S. Sajini Anand,  
*Junior Research Fellow*

### RESEARCH CARRIED OUT

#### Prof. P. G. Vaidya

Continuing analysis and modeling of ECG data, an interesting result about mechanism of the synchronization of cardiac cells. This is crucial to avoid arrhythmia. A hypothesis about the beneficial effect of the variability of the intervals between the heartbeats will be presented at a conference in May 2005. Some of the earlier work in this area was presented at a conference Italy in June 2005.

#### Prof. Timothy Poston

Filed two patent applications – *Computer Input Device Enabling Three Degrees of Freedom and Related Input and Feedback Methods* with Manohar Srikanth (Indian Patent Office 1928/CHE/2005), and *A Method and System for Personalized Noise Reduction* with Prof Vaidya (Indian Patent Office 1929/CHE/2005).

The first describes a mouse which reports its turning as well as its lateral motion, while still interoperable with a standard mouse, together with ways to use it that range from better map navigation to easier manipulation of 3D displays. It also details innovative algorithms for the necessary rotation detection. Work is continuing on its development and commercialization, and Prof. Poston hopes to set up a '5D Lab' in NIAS to explore user-friendly 3-and-higher-dimensional interfaces and their use in a range of fields, from medical imaging to pure mathematics to space-based archeology.

The second proposes that personal devices such as cell phones and hearing aids include noise reduction schemes adapted to the person speaking, which can be more effective than generalized 'human voice' separators; it describes both linear algorithms to achieve this, and a more

powerful scheme (for which personalisation is essential) exploiting high-dimensional dynamical embedding logic.

With Niu Yan, an ex-Singapore colleague now returned to China, Prof. Poston published *Using an Oriented PDE to Repair Image Textures* (in Proc. 3rd International Workshop on Variational, Geometric, and Level Set Methods in Computer Vision, Springer), exploiting short-wavelet data to guide variational replacement of longer wavelet packets that can severely degrade image communication.

The US Patent and Trademarks Office has approved the application Prof. Poston filed some years ago with Raghunath Raghavan, for a 'presentation engine' that makes it easier for a user to guide a search process for a particular kind of item (not a specific item), allowing the user to control flexibly how items are grouped (not forcing a single grouping scheme, like Dewey or Linnaeus). Implementation and merger discussions are under way with a literature metasearch company in Germany.

#### **Prof. Anindya Sinha**

#### **Social Relationships, Communication and Cognition in Wild Bonnet and Rhesus Macaques**

In continuation of a long-term research project on bonnet macaques, which has been investigating social relationships and social cognition in wild groups of this species, significant progress has been made in exploration of three further problems in its social behaviour: (1) the appearance of phenotypic flexibility, behavioural traditions and cultural evolution within populations, (2) the temporal persistence of social relationships within troops, and (3) the developmental patterns of infant-mother relationships (with Mr. Mayukh Chatterjee and Mr. Albin Anthony).

Also recently initiated a field study on the demography and behavioural ecology of wild rhesus macaques in the states of Andhra Pradesh and Maharashtra. Two important components of this project are: (1) delineation of the distribution boundary of the rhesus and the bonnet macaques in peninsular India, and (2) studies on the behavioural ecology, demography and conservation status of mixed troops of the two species in selected sites in Andhra Pradesh and Maharashtra (with Mr. Rishi Kumar).

#### **Demography, Ecology and Social Evolution in Wild Bonnet Macaques**

This long-term project, proposed to continue for twenty years, is investigating the demographic structure and ecology of a population of wild bonnet macaques in the Bandipur National Park – Mudumalai Wildlife Sanctuary complex in the states of Karnataka and Tamil Nadu. During the last year, our monitoring of twenty-two troops of the species and has continued detailed behavioural observations on four of these groups initiated (with Mr. Mayukh Chatterjee, and Dr. Kakoli Mukhopadhyay).

#### **Ecology, Behaviour and Conservation of Macaques in Northeastern India**

Prof. Anindya Sinha's team was responsible for the recent discovery of a primate, called the Arunachal macaque (with the scientific name *Macaca munzala*), which is a species of macaque new to science. During 2005, initiated a long-term project that will explore its demography, behavioural ecology and conservation status of this monkey in the Tawang and West Kameng districts of western Arunachal Pradesh.

Also recently developed a research programme that will investigate the behavioural ecology of primate communities, particularly consisting of macaques, in two areas of northeastern India: (1) a community of four macaque species – the Assamese macaque *Macaca assamensis*, the pigtailed macaque *M. leonina*, the rhesus macaque *M. mulatta* and the stumptailed macaque *M. arctoides*, together with the hoolock gibbon, the capped langur and the slow loris – in several fragments of low-lying tropical rainforests of the Brahmaputra Valley in Assam and (2) the community of the Arunachal macaque *M. munzala*, the Assamese macaque *M. assamensis* and their hybrids in the high-altitude subtropical forests of western Arunachal Pradesh (with Mr. Narayan Sharma, Dr. M. D. Madhusudan, Mr. R. Suresh Kumar, Ms. Uttara Mendiratta and Mr. Charudutt Mishra).

#### **Molecular Genetics of the Arunachal Macaque, the Tibetan Macaque and the Sinica Group of the Genus *Macaca***

This collaborative project, initiated in January 2006, aims to explore the molecular phylogeny of the *sinica* group of the genus *Macaca*, consisting of five species, in general and those of the newly-

discovered Arunachal macaque *Macaca munzala* (Sinha *et al.* 2005), in particular. Specific nucleotide sequences from the nuclear genome and mitochondrial DNA are being amplified, sequenced and compared across these species in order to determine the exact phylogenetic position of the Arunachal macaque and the Tibetan macaque from Taksing, Arunachal Pradesh (Kumar *et al.* 2005) within the genus (with Mr. Debapriyo Chakraborty and Ms. Uma Ramakrishnan).

### **Ecology, Behaviour and Conservation of the White-Bellied Shortwing in the Western Ghats Mountains**

The white-bellied shortwing *Brachypteryx major* is a threatened bird of the Western Ghats Mountains. There have been very few sightings of this bird and very little information is available on its biology. The bird is now known to be limited to a particular habitat, the montane evergreen forests. These forests are being lost at a rapid rate and the encounters rates of the species in some areas are were low, causing immense concern for the survival of this species.

This study has been investigating various aspects of the biology of the short wing, including its population, foraging and breeding biology in natural forests and along a disturbance gradient. During this year, a specific project investigating the acoustic structure and its variation in the calls of the species has been completed. Overall, we hope to understand and demonstrate how the species is adapted to its particular habitat and understand its biology in order to develop a sound conservation plan. Focus is currently being laid on developing the species as a flagship indicator species for the conservation of the entire montane evergreen forest habitat of the Western Ghats (with Mr. Robin Vijayan, Ms. Aditi Sancheti and Dr. Jean-Marc Thiollay).

### **Behavioural Ecology and Conservation of Flying Squirrels in the Western Ghats Mountains**

The Western Ghats, a global biodiversity hotspot, is a region faced with complex human-induced pressures with many taxa, particularly small mammals, requiring urgent conservation action. Flying squirrels are nocturnal, arboreal small mammals, distributed largely in the fast disappearing tropics of south and Southeast Asia. India has upto 11 species of flying squirrels, and two of these are distributed in the Western Ghats: the endemic and vulnerable Travancore flying

squirrel *Petinomys fuscocapillus fuscocapillus* and the Indian giant flying squirrel *Petaurista philippensis*. Flying squirrels in India are under threat due to shrinking forest cover, disturbed and fragmented habitats, and illegal hunting. Knowledge of the ecology of species in their intact environments, their patterns of co-existence with other species in the nocturnal mammalian assemblage, and the response of species to habitat disturbance in the light of inter-specific competition are important to frame conservation plans targeted towards such species.

This study is attempting to determine if the two species of flying squirrels are sympatric across different forest types and altitudes, and over this year we have recorded their natural abundance levels in such habitats. Attempts are also being made to study the basic behavioural ecology of these virtually unstudied mammals with the hope that the results that will be obtained from this study can be used to frame conservation strategies for these highly endangered nocturnal squirrels (with Ms. Nandini Rajamani and Dr. F. Stephen Dobson).

### **Dr. Sindhu Radhakrishna**

### **Development of Social Relations in the Slender Loris**

This project proposes to study the development of social relations in a primarily solitary species, the gray slender loris. More specifically, the aims of the study are (i) to compare interactions of juvenile males and adult males with those between juvenile females and adult males, and (ii) to investigate the use of vocalisations in mother-infant interactions. The results of such a study will not only produce vital perspectives into the development of social behaviour and communication in a primarily solitary species, but will also reveal the significance of subtle behaviours in maintaining social networks and systems in a nocturnal primate species.

### **Distribution and Conservation of the Purple-Faced Langur (*Semnopithecus Vetulus*), the Toque Macaque (*Macaca Sinica*) and the Slender Loris (*Loris Lydekkerianus* and *Loris Tardigradus*) in Sri Lanka**

Sri Lanka is global biodiversity hotspot, where over 90% of the primates are endemic and threatened. We propose to implement a collaborative primate conservation programme in



Sri Lanka that will focus on population surveys and demographic patterns of its least-known taxa and conservation-oriented studies of its highly threatened taxa. As a first phase of this study, we aim to conduct a pilot study in Sri Lanka in order to identify key areas of primate conservation in Sri Lanka, assess the logistics of launching such a conservation programme and to strengthen collaborative links with Sri Lankan scientists. This pilot study will thus provide a conservation action plan that will outline areas where primate conservation efforts should be focused in Sri Lanka and facilitate the implementation of a conservation programme for primate taxa in Sri Lanka (with Prof. Anindya Sinha).

#### **Population Survey and Conservation of the Bengal Slow Loris in West Bengal**

The Bengal slow loris is one of the two nocturnal prosimian primate species found in India. Very little is known about the species, primarily because of its small size, nocturnal lifestyle and cryptic behaviour. This study aims to survey the forests of West Bengal in order to assess the presence of the species in these areas. Surveyed areas will also be examined with reference to habitat disturbance and fragmentation in order to evaluate the survival threats to the species. The results of the study will, thus, not only define the precise distributional limits of the Bengal slow loris, but will also provide essential information on factors affecting the long-term survival of the species (with Prof. Anindya Sinha).

## **OTHER ACTIVITIES**

### **Prof. Anindya Sinha**

Has been instrumental in initiating, in collaboration with several other institutions, a Post-graduate Programme in Wildlife Biology and Conservation in Bangalore in July 2004. Housed at the National Centre for Biological Sciences and recognized by the Manipal Academy of Higher Education in Manipal, this programme, which also happens to be the first one of its kind in southern India and only the second such course in the country, aims to award a Master's degree to a batch of 15 students every two years. As part of this programme, he developed, coordinated and taught a three-credit course, consisting of lectures, seminars, project assignments and fieldwork training, on *Behavioural Ecology* during January – February 2005.

Taught a short three-lecture course on *Animal Behaviour* and conducted a training session on *Biology – Theory and Practice*, consisting of a series of theoretical and practical sessions for the Indian Biology Olympiad Team, Homi Bhabha Centre for Science Education, Mumbai, June-July 2005.

### **Dr. Sindhu Radhakrishna**

Coordinated the Foundation Course, NIAS Doctoral Programme, August - November 2005.

### MEMBERS OF THE SCHOOL

Prof. Dilip R. Ahuja, *ISRO Professor and Dean*  
Prof. N. Shantha Mohan, *Professor*  
Prof. A. R. Vasavi, *Professor*  
Dr. Anitha, B. K., *Fellow*  
Dr. Carol Upadhya, *Visiting Fellow*  
Dr. Padma M. Sarangapani,  
*Visiting Associate Fellow*

#### Doctoral Students

Ms. Anu Joy  
Ms. K. Latha  
Mr. Rahul Mukhopadhyay  
Ms. Leena Pascal  
Mr. Sailen Routray  
Ms. Sahana Udupa  
Ms. Indira Vijaysimha

### INTRODUCTION

This School has the broad objective of studying the two-way interaction between society and culture on the one hand and science and technology on the other. The current research interests of the faculty include areas related to systemic education reforms, sociology and social anthropology. Faculty is also engaged in the study of social and cultural transformations in India, especially the consequences of globalisation and economic development. In addition, the faculty has a strong foundation in gender studies and decentralized governance.

### RESEARCH CARRIED OUT

#### Prof. Dilip R. Ahuja

Review of the VTU-EDUSAT pilot project. This review was made at the request of the Indian Space Research Organisation (ISRO), Bangalore, regarding the functioning of the EDUSAT lectures

beamed to the engineering colleges from September 15th to end of December 2004. As per the 'Terms of Reference', the review was to investigate the technical, institutional, managerial and academic aspects of the Pilot Project. Detailed suggestions and guidelines were developed with which ISRO/VTU could fine-tune the functioning and utilisation of EDUSAT. The team that worked on the Review of the VTU-Edusat Pilot Project, consisting of Dr. A. R. Vasavi, Prof. D. P. SenGupta, Mr. D. Venugopal, Ms. R. S. Kumaran and Prof. Dilip Ahuja, made a final presentation on the findings of the project at the ISRO headquarters to officials of the Vishweshwara Technological University and ISRO on 25 August 2005.

#### Prof. N. Shantha Mohan

The Government of India ratified the United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) in 1993 as a consequence of which it is mandatory for the Government to report to the CEDAW Committee once in four years. The second and third periodic reports with regard to all the articles as referred to in the Convention have been prepared based on secondary data analysis using the Substantive Equality Framework.

#### Prof. A. R. Vasavi

Project (District quality education Project) related fieldwork, advocacy, development of materials, training, and overall administration of team of 18 persons.

Support for project on IT Industry in Bangalore. Although much of the work has been supervised by Dr. Carol Upadhya, Dr. Vasavi has been engaged with providing advisory support for it. Have reviewed and provided inputs for the three ethnographic films. Working on an essay, "ITES

and the making of the international youth workforce". Dr. Vasavi is also co-editing a volume with Dr. Carol Upadhya.

Dr. Vasavi completed two key essays on agrarian conditions in contemporary India and on the agrarian crisis.

Dr. Vasavi is preparing final version of edited volume, "Vernacular Voices: Translations from Kannada writings on society and culture", approved for publication by The Book Review Publications, New Delhi.

#### **Dr. B. K. Anitha**

She is currently engaged in research on issues related to equity and quality of higher education. Specifically, she has been exploring the promotion of women in higher education particularly in the fields of science and engineering. Increased representation of women in science and engineering can be argued on the basis of proportional representation in the general population within the social justice and rights framework. The current research work that she is engaged in is to examine the gender question within the framework of diversity. The attempt is to move beyond student participation to faculty composition and organizational factors that may effect the contribution of women to Indian science and technology. Evolving indicators of Performance for academic leaders within the institution and its relation to the institutional excellence is been yet another research interest.

#### **Dr. Carol Upadhya**

Principal Researcher for the ongoing project 'Indian IT Professionals in India and the Netherlands: Work, Culture, and Transnationalism'. Sponsored by the Indo-Dutch Programme for Alternatives in Development, September 2003 – March 2006. Fieldwork continued to September 2005 and data analysis and write-up began thereafter and completed by end March 2006.

#### **Dr. Padma M. Sarangapani**

"Assessment of Utility and Usage of Soliga Siddhi Textbooks Developed for Soliga Tribal Ashram Shalas of Chamarajanagar District" submitted to Sarva Siksha Abhiyan, Karnataka. With Indira Vijaysimha and Revathi Sampath Kumaran (research coordination), December 2005.

"Report on Karnataka State" for CAGE Committee on Regulatory Mechanisms for Textbooks and Parallel Textbooks Taught in Schools Outside the Government System, 2005.

### **OTHER ACTIVITIES**

#### **Prof. Dilip R. Ahuja**

Chaired the viva-voce examination of Ms. R. Uma for IIT Delhi doctoral dissertation on "Measurement and Assessment of Air Pollutants from Biomass Gasifier Based Systems", 8 July 2005, New Delhi.

Chaired the Doctoral thesis (titled—Energy Efficiency and Economic Performance in small-scale clusters: An analysis of influencing factors, barriers and drivers) Defense Committee of Mr. Nagesh at the Department of Management Studies, Indian Institute of Science, 19 January 2006.

Course Coordinator for The Second DST-NIAS Programme on Multidisciplinary Perspectives on Science and Technology, 24 July to 6 August 2005, The Sixth Annual ISRO Course: Indian Space Enterprise: Achieving Social Impact, 29 September to 5 October 2005 and The Third DST-NIAS Programme on Multidisciplinary Perspectives on Science and Technology, 6-19 November 2005.

Along with Prof. Joseph Alcamo organised Joint Indo-German Research Workshop: Will competition for land and water hinder energy development in India?, 7-8 March 2006.

#### **Prof. A. R. Vasavi**

Teaching: Completed two courses: Sociology of Education (March–June 2005); Anthropological Studies of Development (September to December 2005). Currently designing a reading course on "Rural Studies" and "Social Theory" for NIAS Ph.D. students.

Advocacy: Support to three organizations, SAMAVESH (Madhya Pradesh); Centre for Excellence (Kerala), and Green Foundation (Karnataka).

Evaluation Studies: Completed with other NIAS Faculty a study of the EDUSAT programme at VTU.

Research Advisor: Was a research advisor for a study cum advisory report on the Adivasi of Kerala, Government of Kerala.

Coordinator: For the Rajasthan Education Mission, headed by Dr. K. Kasturirangan.

Internship Advisor: Supervised four UNICEF internees who completed a case study of the DQEP project (June-July 2005).

School Textbook Revisions: Supported the revision and editing of three social science textbooks for the government of Karnataka (Jan-May 2005). Developed an outline for the Sociology textbook for NCERT, 2006.

Interviewed by Hugh Sykes for the BBC (Radio) series, "Globalisation and the new economies in China and India", 4 November 2005.

#### **Dr. B. K. Anitha**

Coordinated and organized the National Conference on India's Competitiveness and Preparedness in Science and Technology for the Coming Decades – Issues Challenges and Strategies, 26-27 October 2005.

Designed and coordinated a 3 credit course on Research Methodology in interdisciplinary Studies for the Ph.D. Students of NIAS. The advisors for the course were Prof. Tim Poston and Prof. S. Chandrashekar. The course comprised of 32 sessions covering around 50 hours and was held from 1 August to 30 November 2005.

Taught topics related to Introduction to Research Processes. Elements in Social Science research. Relevance of Review of Literature and qualitative methods. Evaluated students on the working papers / draft proposals that was the core part of evaluating students in the presentations and written forms.

Designed, organized and coordinated the Ninth NIAS Course for University and College Teachers on "An Integrated Approach to Knowledge and Information." The theme for the course was Education, Research and Universities, 28 December 2005 – 17 January 2006.

#### **Dr. Carol Upadhya**

Organised International Conference on "New Global Workforces and Virtual Workplaces:

Connections, Culture, and Control", as part of IDPAD programme, 12-13 August 2005.

Organised Dissemination Workshop under IDPAD project, for IT industry, employees and other interested persons, 21 January 2006; presented Draft Dissemination Report and screened one of 'Coding Culture' films.

Co-taught (with A.R. Vasavi) paper, Anthropology of Development for Ph.D. students (September - October 2005).

Currently teaching first unit of Social Theory paper for Ph.D. students (January-March 2006).

Hosted group of visiting faculty from University System of Georgia (U.S.A.) on Faculty Development Seminar in India; made presentation of work, 'Social and Cultural Impact of IT Industry in Bangalore'; 6 July 2005.

Completed production of film series, "Coding Culture: Bangalore's Software Industry", as part of IDPAD project output, and organised several screenings at different venues.

#### **Dr. Padma M. Sarangapani**

Collaborative Post Graduate Programme in Education (CPG Edu) involving six institutions was successfully taken to the implementational stage, with the completion of course development for all ten courses, acceptance by the Governing Council of TISS and the Academic Council of TISS, Mumbai of the both the collaborative structure as well as the academic content of the programme. Additional funding was secured from the Sir Ratan Tata Trust. The launch of the programme was fixed for the coming academic year, beginning 15 May 2006. She will continue as co-coordinator for the programme and as member of the collaborative academic committee set up by TISS to oversee the programme.

Participated in the drafting of the new curriculum framework for teacher education being reformulated by the National Council for Teacher Education.

Continue as Managing Editor of Contemporary Education Dialogue.

## RESEARCH PROJECT: 'INDIAN IT PROFESSIONALS IN INDIA AND THE NETHERLANDS: WORK, CULTURE AND TRANSNATIONALISM'

The research project entitled 'Indian IT Professionals in India and The Netherlands: Work, Culture, and Transnationalism' was completed in March 2006. The project was a sociological and ethnographic study of employees of the information technology (IT) and IT enabled services (ITES) industries in Bangalore and abroad, focusing on the social and cultural transformations that have been brought about by the rapid rise of this global industry in India. It was directed by Prof. A. R. Vasavi with Dr. Carol Upadhyas as Principal Researcher and Ms. Sarita Seshagiri and Ms. Sahana Udupa, Research Associates, in collaboration with Prof. Peter van der Veer of the University of Utrecht, The Netherlands, and funded by the Indo-Dutch Programme for Alternatives in Development (IDPAD), which is a joint programme of the Government of India and the Dutch government. While the social impact of the IT industry has been widely commented upon, there have been few in-depth sociological studies of this phenomenon nor of the industry's most crucial resource, its workforce. One objective of the IDPAD study was to fill this gap by documenting the new cultures of work that have emerged in the IT and ITES sectors and the impact of working in this sector on the employees, their families, and the wider community. Another aim was to go beyond the popular images of software engineers and call centre employees by carrying out critical empirical research on the nature of work in these industries and analysing the social contours of their workforces. The study covered a period of almost two and a half years, starting in November 2003, including eighteen months of fieldwork in Bangalore and four months in Europe (the Netherlands, Belgium and Germany). It has generated a large database of interview transcripts, observation notes, and documents

that is still being analysed. Outputs will include a volume of papers from the International Conference that was held at NIAS in August 2005, a series of academic papers, and an ethnographic monograph. The final project report and other papers will be made available on the NIAS website soon.

## FILM SERIES: 'CODING CULTURE: BANGALORE'S SOFTWARE INDUSTRY'

An important output of the IDPAD project is a series of three ethnographic films, entitled Coding Culture: Bangalore's Software Industry, which explore the cultures of work that have emerged in India's software outsourcing industry and the moulding of a new global workforce. Each film was shot inside a different company, representing one of the major types of software companies found in Bangalore, and each revolves around a distinct theme. The films are: The 'M' Way: Time + People = Money, Fun@Sun: Making of a Global Workplace, and July Boys: New Global Players. They are packaged together on a single DVD along with a booklet highlighting their sociological significance, and are available from NIAS. Please visit the NIAS website for more information.



A. Still from the film 'July Boys: New Global Players'

## INTERNATIONAL STRATEGIC AND SECURITY STUDIES PROGRAMME

### MEMBERS OF THE PROGRAMME

Prof. S. Chandrashekar, *Visiting Professor*  
Prof. S. Rajagopal, *Visiting Professor*  
Prof. K. P. Vijayalakshmi, *Visiting Professor*  
Mr. Arvind Kumar, *Associate Fellow*  
Dr. Sonika Gupta, *Post-Doctoral Fellow*

### INTRODUCTION

The International Strategic and Security Studies (ISSS) Programme was established at NIAS in 1996 with a broad objective of conducting academic and policy research in the field of national and international security issues. Over the last ten years, the ISSS programme has established a fair degree of capability in the area of security and strategic studies.

The current objectives of the programme are:

- to conduct and promote research on issues related to national and international security;
- to make an independent continuing assessment of various issues impacting national security; to review existing policies in the light of these changes and suggest new courses of action/policy;
- to advise various national and other entities on matters related to and affecting national security; and
- to disseminate through publications and other means knowledge and information related to national and international security.

The ISSS programme completed a research study entitled "An Assessment of Pakistan's Ballistic Missile Programme" as a competence building exercise. The study pioneered some new approaches for analysis, looked at new sources of data and developed new methodologies for

looking at strategic problems through a technical lens. The study uses publicly available information, images and data on the Pakistani missile programme to make an independent assessment of Pakistan's missile capabilities. The study also addresses organizational issues and the implications of the emerging Pakistani missile capabilities for Indian strategy. The study has been reviewed and will be published both as an internal NIAS report as well as in technology and security related international journals. A summary of the major findings of the study will be published in the forthcoming publication "India's National Security Annual Review 2006"

The ISSS programme has recently received a grant from DRDO-HQ, New Delhi to conduct a comprehensive research study on Chinese Ballistic and Cruise Missiles. Research on "Understanding Pakistan and China" by integrating and linking economic, political, technological and strategic dimensions will continue as a major underlying theme.

### OTHER ACTIVITIES

The ISSS programme initiated dialogues on Biosecurity Issues with a team from Sandia National Laboratories, New Mexico, and USA.

Two dialogues with the members of strategic community from Taiwan were organised during May and December 2005. The focus of the dialogue was to look for ways and means to improve cooperation between the two countries. Wide-ranging discussions were held on how relations between India and Taiwan can be improved through cooperation in the economic and S&T domains.

A discussion meeting was held with Dr. Stephen Krasner, Director, Policy Planning, Department of State, USA who visited NIAS on 19 June 2005.

Dr. Krasner works at the Office of the Secretary of State and is one of Secretary Rice's closet advisors. Wide ranging issues relating to the emerging trends in Indo-US relations formed the major part of the discussion. Matters related to expanding civilian cooperation in the nuclear and space fields were also discussed.

Dr. Vincent Chen, Associate Professor, Institute of International Relations, National Political University, Taipei, Taiwan visited NIAS on 29 June 2005. The focus of the discussion meeting with him was to exchange views on the India-China-USA triangular relationship and identify areas of convergence for future cooperation.

The ISSS programme also organized a National Workshop on "Changing Contours of Indo-US Relations" during 9-10 February 2006. This was a major event scheduled to take place just before the visit of the President of the US, George W. Bush, to India. This Workshop was organised jointly with the Indian Space Research Organisation (ISRO). Participants of the Workshop included some of the best strategic thinkers in India. Inputs from the Workshop were provided to the highest levels in the Government for use in policy formulation and decision-making.

Two brainstorming sessions with Dr. Stephen P. Cohen were held during September 2005 and January 2006. The purpose of these meetings was to identify possible themes for future NIAS-CISAC dialogues.

Dr. Srikanth Kondapalli, Research Fellow, IDSA, New Delhi gave a talk on "Chinese Force Structure and Military Modernization" at NIAS on 31 December 2005

A one-day programme on "Key Strategic Issues Facing India" was conducted for UGC course participants at NIAS on 6 January 2006.

A discussion meeting with Prof. Michael Krepon on the theme "International Code of Conduct For Space Activities" was held on 11 January 2006.

Mr. Arabinda Acharya, Manager (Strategic Projects), Institute for Defence and Strategic Studies, Nanyang Technological University, Singapore gave a talk on "Terrorist Financing and Terrorism in South East Asia" on 20 February 2006.

Professor Theodore Postol and Dr. Geoff Forden from the Massachusetts Institute of Technology (MIT) visited NIAS on 30th March 2006. Taking advantage of their visit a Workshop on "Observing Missile Launches from Space: The Science, Technology, and the US-Soviet Experience with Early Warning Satellites" was organised by the ISSS programme.

Mr. Arvind Kumar visited Nepal during 3 to 23 March 2006 in connection with a research project on "Implications of Domestic Politics and Foreign Policy of Nepal for India". He interacted with the members of academia, key policy makers and people belonging to Royalist School of thought. His findings would be incorporated in his research paper on Nepal.

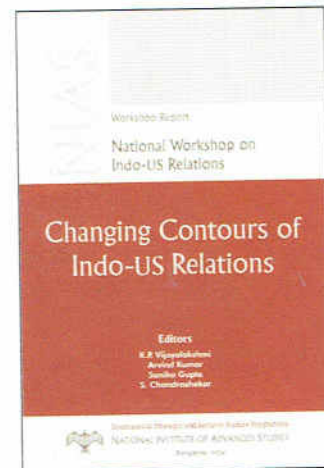
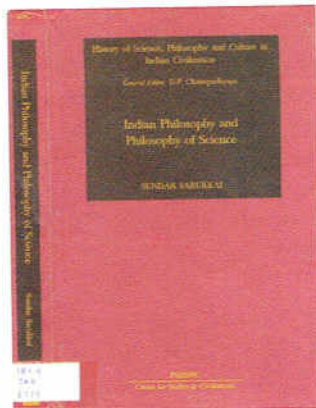
The ISSS programme has initiated internships for two post-graduate students of the Department of International Studies of Stella Maris College, Chennai. Two students worked on projects of interest to the programme in 2005. Two more students are scheduled to do projects at NIAS during the summer of 2006.

## PRINCIPAL S. R. GROVER LIBRARY

The library collection has increased significantly during the last year. The collection today stands at 7220 books, 50 journals, 1217 bound volumes of journals, 110 CDROMS and 1100 tapes containing lectures delivered at NIAS. About 640 books and 8 new journals have been added during the last year. The current subscription also includes two Kannada journals namely Deshakaala and Sankalana.

The library has interlibrary loan arrangements with the libraries of IISc, RRI, NCBS, ISRO, NAL, ISEC and IIM, Bangalore.

The library is planning to host on its website an institutional repository of publications of the faculty and courseware using eprints software.





**The Second DST-NIAS Programme on “Multidisciplinary Perspectives on Science and Technology” held at NIAS and at Orange County Resort (24 July to 6 August 2005)**

The Programme was inaugurated by Professor C. N. R. Rao and was attended by 20 senior

participants from various scientific institutions in the country. Prof. V. S. Ramamurthy, Secretary, the Department of Science and Technology, delivered the valedictory address. Its purpose, as in the first programme, was to provide scientific, social, economic, and cultural perspectives on the S & T enterprise in the country.



Prof. C. N. R. Rao inaugurating the Second DST-NIAS Programme, 25 July 2005



Prof. V. S. Ramamurthy delivering the Valedictory Address at the Second DST-NIAS Programme, 6 August 2005

**The Sixth Annual ISRO Course on “Indian Space Enterprise: Achieving Social Impact” (29 September to 5 October 2005)**

The Institute organized this Course for 30 mid-level scientist-engineers from the Indian Space Research Organization (ISRO), who were identified by ISRO as potentially constituting its future leadership. Its purpose, as in the previous years, was to offer views of the broader scientific, social, economic, and cultural milieu in which the Indian space programme could develop in the coming decades.



Mr. Madhavan Nair interacting with the participants of the Sixth ISRO Course, 4 October 2005



Participants of the Sixth ISRO Course with NIAS Faculty, 29 September – 5 October 2005



Participants of the Third DST-NIAS Programme with NIAS Faculty, 6-19 November 2005

**The Third DST-NIAS Programme on “Multidisciplinary Perspectives on Science and Technology” (6-19 November 2005)**

This Course, sponsored by the Department of Science and Technology, Government of India was held at NIAS and at the Kabini River Jungle Lodge. The Programme was inaugurated by Mr. Narasim Shenoy, the former Chairman and Managing Director of Asea Brown Boveri and attended by 17 senior level participants from scientific institutions from across the country. Among the highlights of the Programme, as

evaluated by the participants themselves were lectures by Dr. Nagarajan on the green revolution, Dr. K. Kasturirangan on Managing the Indian Space Enterprise, Professor Narasimha on the Evolution of S & T policy in India and Dr. Shekhar Singh on Ethics in Public Life. The participants also appreciated and rated highly their stay at the Jungle Lodge, their visit to Nrityagram and the Panch Sitar Concert by the Khan Brothers. The purpose of the Programme, as on previous occasions, was to offer scientific, social, economic, and cultural perspectives on the science and technology enterprise in the country.



Mr. Narasim Shenoy inaugurating the  
Third DST-NIAS Programme,  
6 November 2005

**The Ninth NIAS Course on “An Integrated Approach to Knowledge and Information” for University and College Teachers**  
(28 December 2005 to 17 January 2006)

The theme that had been chosen for this year’s course was “Education, Research and Universities”. The course, ninth in the series was co-sponsored by the University Grants Commission (UGC), New Delhi, the Indian Space Research Organization (ISRO), Bangalore and the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore.

The Course in particular is an opportunity that NIAS takes to interface with the Universities, which it believes is the backbone of higher education in this country. The primary objective of this course, as in the previous years, was to invite university and college teachers of varied disciplines from different states of the country for a three week period and expose them to emerging disciplines and new advances in various fields of knowledge, while making sure that they are kept in touch with India’s socio-cultural roots. Given this broad premise, the course aims at actively engaging the selected university teachers in discussions on major problems facing the country. This was achieved through lectures, panel discussions, lecture demonstrations, participatory dialogues, Drama, group projects and educational tours.

Accordingly, the programme focussed on central issues in the field of education, frontier areas of research in broader areas of Natural Sciences, Humanities and Social Sciences. The programme was designed in the context of the challenges the country faces in this fast changing world with expansion in knowledge on the one hand to the real problem of building a strong human resource base to harness the advantage as India emerges as one of the world leaders. The relevance of broad basing the knowledge to be able to draw from disciplines of Natural Sciences, Humanities and Social Sciences Literary and Performing Arts was reiterated in this course.



Participants of the Ninth NIAS Course for University and College Teachers  
with NIAS Faculty, 28 December 2005 – 17 January 2006

The course was very well received and appeared to have met some of its principal objectives.

**The Twentieth NIAS Course for Senior Executives on "Excellence in Leadership" (22-28 January 2006)**

The Course was inaugurated by Dr. Kiran Majumdar-Shaw, Chairperson, Biocon Limited. The valedictory address was given by Sri Suresh Prabhu, MP. 27 participants from public and private sector offices attended the Course. The Course speakers included Prof. B. V. Sreekantan, Prof. P. Balram, Dr. Arcot Ramchandran, Dr. Gururaja, Sri. N. N. Vohra, Prof. V. I. Mathan, Prof. Sourav Mukherji, Sri. T. V. Mohandas Pai, Dr. Sam Pitroda, Dr. Bob Hoekstra, Dr. K. Kasturirangan, Dr. S. S. Meenakshisundaram, Prof. C. V. Sundaram and Dr. Shekhar Singh.



Dr. Kiran Mazumdar-Shaw, Chairperson, BIOCON Limited, inaugurating the Twentieth NIAS Course for Senior Executives, 22 January 2006



Participants of the Twentieth NIAS Course for Senior Executives with NIAS Faculty, 22-28 January 2006

### MEETINGS AND SEMINARS

#### Meeting on "Bio-Security Issues" (21 April 2005)

Two experts on biosecurity issues, Dr. Susan B. Rivera and Lauren T. Hickok from Sandia National Laboratories visited NIAS and the ISSS programme organized an interactive session with them. The purpose of the meeting was to exchange views on matters related to biological weapons and dangers associated with it in the existing milieu. It was felt that the rapid advances made in life sciences and biotechnology has provided an impetus for the non-state actors to access biological weapons easily. The challenges to securing biological agents also formed a major part of the debate. How to make the Biological and Toxin Weapons Convention (BWTC) a more stringent regime was also discussed at length. The need to have an additional protocol to the BWTC for having a verification and inspection regime seems to have become an urgent necessity in the post 2001 world.

#### Meeting on "India – Taiwan Relationship" (18 May 2005)

A delegation comprising of Dr. Chen-en Ko, Dr. I-Chung Lai and Ms. Yun-wen Sung from the Taiwan Think Tank (TTT) visited NIAS in May 2005. The ISSS programme had organized a discussion meeting with them. The TTT is the Brains Trust of the ruling Democratic Progressive Party of Taiwan. Dr. I-Chung Lai, Director of the Department of Foreign Policy Studies at the TTT made a presentation on "The cross-strait relations, the emerging India-Taiwan relations and the evolving Taiwanese strategies towards India and China". This was followed by a presentation on "Issues relating to the need to establish relations between India and Taiwan" by Dr. Chen-en Ko, who is currently the Vice President of the TTT and also the Economic Policy Advisor to Taiwan's President Mr. Chen Shui-Bian. Wide-ranging

discussions were held on security relations and how India and Taiwan can enhance cooperation.

#### Seminar on "Sensors: Chemical and Biological Agents" (30 May 2005)

This Seminar was on the subject of Sensors, their development and application in dealing with threats associated with weapons of mass destruction. The Seminar will focus on Science and Technology aspects with emphasis on chemical and biological agents. Two eminent Professors conducted the Seminar from the University of Missouri, Columbia, USA, Dr. Mark A. Prelas and Prof. Dabir S. Viswanath.

#### One-Day Meeting on "Six Months After Tsunami" (16 June 2005)

A one-day discussion meeting was held to discuss the unexpected tsunami that struck the shores of south India and other neighbouring countries on 26 December 2004. The objective of the meeting was to discuss different aspects of the tsunami, including our scientific knowledge of the phenomenon, its environmental, historical, sociological, psychological and behavioural dimensions, and the most appropriate action that the country might take so that the large losses in human life and property that accompanied the December 2004 tsunami will not be repeated. The meeting brought together scientists, representatives from the Government, historians and the social groups that have been involved in tackling the consequences of the disaster. There were about fifty participants: twenty of them speakers (including six from outside Bangalore) and the rest invitees.

#### Workshop on "Space Inputs to Archaeology" (5 July 2005)

Archaeology aims to reconstruct the human culture in retrospect. Advances in Geo-spatial

technology can be effectively used in synergy with conventional surveys for better understanding, prospecting and documentation. The Workshop aims to provide an excellent platform for exploring the best of the both worlds for evolving a common strategy for space inputs in archaeological applications. The Workshop focused on the use of Indian earth observation capabilities especially with the availability of IRS – 6 (Resourcesat) and the high resolution IRS-P5 Cartosat data.

**International Conference on “New Global Workforces and Virtual Workplaces: Connections, Culture and Control”** (12-13 August 2005)

This Conference brought together scholars from different countries who are engaged in research on the new forms of work and categories of global workers that are emerging in the ‘new’ economy, specifically in the information technology (IT) and IT Enabled Services (ITES) sectors.

**National Conference on “India’s Competitiveness and Preparedness in Science and Technology for the Coming Decades (Issues, Challenges and Strategies)”** (26-27 October 2005)

The Conference was organised by NIAS and JNCASR and supported by the Department of Science and Technology. The members of the Scientific Advisory Committee to the Prime Minister Government of India attended the Conference. The other distinguished participants were leaders in science, senior scientists scientific administrators and young promising scientists from different parts of the country. In all there were around 80 participants. The Conference was inaugurated by Mr. Kapil Sibal, Honourable Minister for Science and Technology, Government of India.

Three reports were prepared as the part of the Conference:

1. An Executive Summary Report that was submitted to Prof. C. N. R. Rao, Chairman, Scientific Advisory Committee, Government of India.
2. A Comprehensive Report of the Conference Proceedings (to be published as a NIAS Report).
3. A Commentary of the Conference submitted to Current Science for publication.

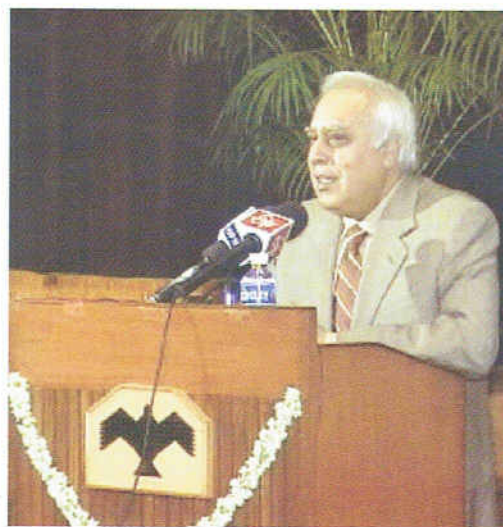
**“India-Taiwan Dialogue”** (13 December 2005)

The ISSS Programme organised a discussion meeting with the representatives from Taiwan think tanks and universities. India-Taiwan Relations, Economy, Trade & Commerce and Science and Technology Cooperation formed a major part of discussions. There was a consensus among Indian and Taiwanese participants that the potential for cooperation in trade and commerce and science and technology exists and one has to find ways and means for exploiting this existing potential.

**Dissemination Workshop for NIAS-IDPAD research project on “IT/ITES Workforce”** (21 January 2006)

The School of Social Sciences, over the last two years, been carrying out a 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). As a final activity in this programme, a Dissemination Workshop was held in order to share the results of our research with the companies and individuals who participated in the project, user groups, and other interested parties, and to seek feedback.

At the Workshop research findings and proposed recommendations were presented and an open discussion with participants were held, and also screening the films in the series that we have produced on the IT industry, ‘Coding Culture’.



Mr. Kapil Sibal inaugurating the Conference on "India's Competitiveness and Preparedness in Science and Technology for the Coming Decades (Issues, Challenges and Strategies)".

**Workshop on “Foundations of Sciences”** (2-4 February 2006)

Papers presented at this Conference were designed to fill gaps in an earlier Conference in February 2004 and included overviews of Foundations of Science and Pre-early modern science, ancient science, new developments in Astronomy and Cosmology and Life Theories and the Role of Chaoplexity.

The topics covered in the Workshop were (i) Overviews on Foundations of Sciences and Pre-early Modern Science (ii) New Developments in Astronomy and Cosmology and Life Theories: Dark Energy and aspects of Black-hole Entropy; Principle of Universality in Science, Intelligent life in the Universe (iii) Role of Chaoplexity: Periodicity, chaos and randomness, Computation methods and future paradigms of science, emergence and the qualitative sciences (iv) Ancient science: Indian Numeral systems; Transmodern linguistics and its puuryapakshas; Sino-Indian interactions in ancient astronomy, some insights into foundations of ancient Indian Metallurgy.

**National Conference on “Consciousness, Experience and Ways of Knowing: Perspectives from Science, Philosophy and the Arts”** (6-7 February 2006)

Over a hundred people, including scholars, students, engineers, doctors, attended the Conference. The Conference addressed the persistent puzzles and attempted solutions in consciousness studies, developments in cognitive

sciences, and the distinct ways of knowing and experiencing in science, philosophy and the arts in the context of the Indian discourse. Dr. K. Kasturirangan made the opening remarks and Dr. Sangeetha Menon gave an introduction. The invited speakers included Dr. Mrinalini Sarabhai, Drs. B. V. Sreekantan, K. Ramakrishna Rao, S. Mahadevan, Sumantra Chattarji, Shatavadhani R. Ganesh, C. S. Unnikrishnan, Nataraja Sarma, M. Srinivasan, R. L. Kapur, Narayanan Srinivasan and Sharada Srinivasan.

**National Workshop on “Changing Contours of Indo-US Relations”** (9-10 February 2006)

The objectives of the Workshop were to exchange views and generate opinion on a wide spectrum of issues relating to Indo-U.S. relations.

The themes for the debate and discussion included:

- Perceptions and misperceptions in Indo-U.S. relations,
- Indo-U.S. economic relations: emerging dynamics,
- Changing security environment and implications for Indo-U.S. cooperation in defence,
- Prospects for Indo-U.S. cooperation in high technology,
- The U.S. and Indian legal systems and its implications for Indo-U.S. relations.

The participants for the Workshop were drawn from the members of academia, strategic community, scientists, technologists, diplomats, practitioners and members from services.



Dr. K. Kasturirangan, Prof. K. P. Vijayalakshmi, Ambassador Arundhati Ghose, Ambassador Vijay Nambiar and Dr. Anil Kakodkar at the National Workshop on Changing Contours of Indo-US Relations, 9 February 2006

The various sessions revealed the linkages and connections between the political, military, economic, strategic, technological and legal issues that animate the landscape of Indo-U.S. relations. The major focus of the Workshop was to critically assess the changing paradigms that are shaping the new understanding between the two countries. The proposed agreement on civilian nuclear cooperation was the key issue that anchored and connected the various themes of the Workshop into an integrated whole. Inputs and findings from the Workshop were provided to the highest levels of policy formulation and decision making in the Government.

**Joint Indo-German Research Workshop on “Will Competition for Land and Water Hinder Energy Development in India?” (7-8 March 2006)**

A Joint Indo-German research Workshop, with funding from the BMBF, was held to identify critical research questions concerning the availability of land and water in promoting future energy development in India and to exchange information about the latest modeling and other tools available for studying these questions. Twenty-three participants from India and Germany participated in the Workshop.

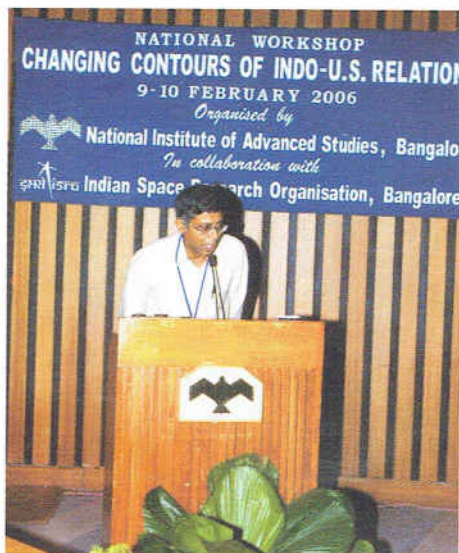
The Workshop was designed to allow discussions of the latest tools of state-of-the-art scenario analyses, remote sensing, continental-scale crop modeling, and continental scale modeling of water resources and how these new tools can be used for detailed assessments of the feasibility of

different energy pathways in India. Particular emphasis was placed on the examination of how these tools can be used to assess the extent to which the given availability of water and/or land in India supports the development of different energy carriers.

The two major outputs of the Workshop were consensual outlines of major research questions that need to be undertaken about:

1. Integrated Assessment of Liquid Biofuels Development in India
2. Impact of Large-scale Electricity Production on Land and Water in India

Dr. S. L. Rao, the first Chairman of the Central Electricity Regulatory Commission and Director General of the National Council of Applied Economic Research, New Delhi gave the Inaugural Address at the Workshop. Dr. Rao reiterated the fact that India needs over 100,000 additional MWs of power by 2012 and a soft government policy is that 10% of these additions should come from renewables. He forecast that most future hydro projects would be run-of-the-river projects and most of the thermal power stations would be come up along the coastlines, sometimes using imported coal. He encouraged the participants to estimate how much land is actually required for power projects as even relatively benign forms, such as wind, were displacing farmers. He emphasized the role of prices as signals in influencing behavioral shifts, such as changing cropping patterns.



Prof. S. Chandrashekar at the National Workshop on Changing Contours of Indo-US Relations, 9 February 2006.



Indian Giant Flying Squirrel (Petaurista philippensis)



#### **Fourth International Tree Squirrel Colloquium and the First International Flying Squirrel Colloquia (22 – 29 March 2006)**

NIAS hosted the Fourth International Tree Squirrel Colloquium and the First International Flying Squirrel Colloquia in Periyar Tiger Reserve, Kerala. For the last decade, the International Tree Squirrel Colloquia have provided researchers studying tree squirrels a platform for discussions, interactions and exchange of ideas. However, the previous squirrel colloquia have been held in either Europe or North America, and this was the first time this colloquium was held in Asia. Our aim in hosting this event in India was to encourage more research and attention to the sciurids of the tropics, particularly South and Southeast Asia. We also aimed at diverting more research and conservation attention to the flying squirrels, a fascinating subfamily of nocturnal gliders.

The Colloquia were accompanied by the Conservation Priorities Workshop, which was held on 25 March 2006. The IUCN Rodent Specialist Group was a partner to this event and the Kerala Tourism Development Corporation (KTDC) and the Periyar Foundation were co-hosts to this event. The event was conducted with the complete support and co-operation of the Kerala Forest Department.

The Colloquia were attended by 100 delegates from 16 countries, with a majority of international participants. Sixty talks and nine posters were presented over five days. Twelve plenary talks

were delivered by leading scientists and managers. The session topics were conservation, taxonomy, diversity and distribution, sociobiology, foraging ecology and habitat relationships of squirrels. All sessions were chaired by students from different parts of the world.

#### **National Seminar on “Science, Technology and Society” (26-28 March 2006)**

The Seminar was held in collaboration with the Indian Institute of Advanced Studies, Shimla. The Seminar highlighted efforts that can be made through the use of science-based high technologies to tackle chronic societal problems in the fields of health, education, water, electric power, environment, communications, and transportation. The participants included teachers from various educational institutions in Bangalore and social workers.

The following topics were covered through a series of talks:

- \* Applications of Space Technology
- \* Genetics and Biotechnology
- \* Health and Medicare
- \* Education - Higher and Technical
- \* Environmental Concerns
- \* New Technologies - High Tech Electronics, Communications, IT
- \* Applications of Nuclear Technology
- \* Energy Options and Alternatives



Shri. M. V. Rajasekharan, Honourable Minister of State for Planning, Government of India, Shri. T. N. Chaturvedi, His Excellency the Governor of Karnataka, Dr. K. Kasturirangan, Prof. B. V. Sreekantan and Prof. S. Rajagopal at the National Seminar on Science, Technology and Society, 26 March 2006

## J.R.D. TATA MEMORIAL LECTURE SERIES

### **Dr. Sundar Sarukkai**

NIAS

*Fourth J. R. D. Tata Birth Centenary Lecture –  
“The Idea of Trusteeship in Gandhi and  
J. R. D. Tata”*

27 May '05

### **Dr. A. P. J. Abdul Kalam**

His Excellency The President of India

*Fifth J. R. D. Tata Birth Centenary Lecture –  
“Vision for Aeronautics Mission”*

20 Aug. '05



Dr. A. P. J. Abdul Kalam, His Excellency the President of India delivering the Fifth JRD Tata Birth Centenary Lecture of his “Vision for Aeronautics Mission”, 20 August 2005

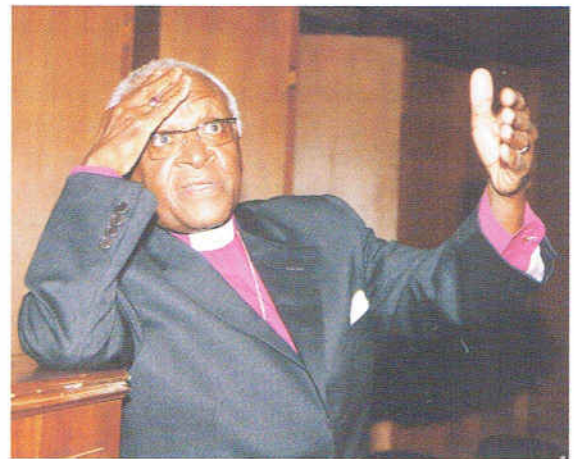
### **Archbishop Desmond Tutu**

Nobel Laureate

Cape Town, South Africa

*Seventh J. R. D. Tata Birth Centenary Lecture –  
“Is There Hope for Humanity?”*

12 Dec. '05



Archbishop Desmond Tutu delivering the Seventh JRD Tata Birth Centenary Lecture on “Is There Hope for Humanity”, 12 December 2005

### **Prof. Ashish Bose**

Hon. Professor, Institute of Economic Growth

*Sixth J. R. D. Tata Birth Centenary Lecture –  
“Demographic Future of India”*

30 Sept. '05

## ASSOCIATES' PROGRAMMES

### **Prof. Sydney Brenner**

The Salk Institute, San Diego  
*The Architecture of Biological Complexity*

24 Apr. '05

### **Prof. Frits Staal**

Emeritus Professor of Philosophy &  
South and Southeast Asian Studies  
University of California, Berkeley  
*What Euclid is to Europe,*  
*What Panini is to India – Or Are They?*

6 May '05

### **Dr. Rakesh Mohan**

Deputy Governor  
Reserve Bank of India, Mumbai  
*What Next for Economic Reforms?*

5 Aug. '05

### **Dr. Stephen Cohen**

Sr. Fellow, Foreign Policy Studies,  
The Brookings Institution, Washington D.C.  
*Prospects for the US – India Nuclear Agreement*

19 Sept. '05

### **Mr. P. Sainath**

Development Writer and Author  
*Agrarian Crisis and the Role of Media*

10 Nov. '05

### **Prof. Rajendra Chenni**

Professor and Head,  
P. G. Department of Studies in English  
Kuvempu University, Shimoga  
*The Sixth M.N. Srinivas Memorial Lecture –*  
*“State and Identity: The Case of Karnataka”*

18 Nov. '05

### **Dr. Simon Singh**

Scientist, Writer and Broadcaster, U. K.  
*The Mathematics of Luck, Risk and Gambling*

9 Dec. '05



Dr. Simon Singh speaking on  
“The Mathematics of Luck, Risk and Gambling”,  
9 December 2005

### **Ms. Anita Nair**

Novelist  
*Dancing with the Gods – An Insight into*  
*Creative Writing*

6 Jan. '06

### **Prof. Tony Watts**

National Institute for Careers Education  
and Counselling Cambridge, England  
*Higher Education and Career Development*

9 Jan. '06

**Prof. Richard Sorabji**

Fellow, Wolfson College Oxford and Emeritus  
Professor, King's College, London  
*Inaugural Lecture of Centre for Philosophy –  
"Being True to Yourself:  
The Individual Self Versus the Universal"*

20 Jan. '06

**Prof. C. V. Sundaram**

Former Director, IGARC &  
Former Homi Bhabha Visiting Professor, NIAS  
*The First Dr. Raja Ramanna Memorial Lecture –  
"Dr. Raja Ramanna"*

27 Jan. '06

**Dr. Norman Neureiter**

Director of the Centre for Science,  
Technology and Security Policy of the  
American Association of  
Advancement of Science  
*Science and Technology for  
Safety and Security*

24 Feb. '06

**Dr. Amit Chatterjee**

Tata Steel, Jamshedpur  
*Have We, As India's,  
Actually Delivered What We Are Capable Of*

1 Jun.'05

**Mr. Leo Saldanha**

Coordinating Environment Support Group  
*Mega Ambitions  
Mega Projects, Mega Impacts*

22 Jun.'05

**Prof. S. Ramaswamy**

Visiting Professor  
Allagappa University, Karaikudi  
*Lax-Milgram Theorem and  
Applications to Partial Differential Equations*

18 Jun.'05

**Prof. Mihir Chakraborty**

Department of Mathematics  
Calcutta University  
*Proof as a Mathematical Artifact*

1 Sept.'05

**Mr. Anand Vaidya**

Oliver Wendell Holmes Middle School  
New York  
*Remembering Nature: Indian Nature,  
Indian Nationalism, Conservation Biology  
and the Problem of the Park*

2 Sept.'05

**Dr. Supriya Roy Choudhury**

Institute for Social and Economic Change  
Bangalore  
*Globalization, Labour and Activism:  
A Political Economy Perspective*

28 Sept.'05

**Mr. Ashok Panikkar**

Director, Meta-Culture  
*Conflict Transformation and Dialogue*

26 Oct.'05

**Dr. Wim Hordijk**

Visiting Researcher  
Karunya Institute of Technology & Sciences  
Coimbatore  
*An Introduction to Evolutionary Computation*

7 Dec.'05

**Prof. S. Ramaswamy**

Visiting Professor in Mathematics  
Allagappa University, Karaikudi  
*An Introduction to Hilbert Spaces*

27 Dec.'05

**Prof. Satish Saberwal**

Professor of Sociology  
Centre for Historical Studies  
Jawaharlal Nehru University  
New Delhi  
*India's Long Road to Partition*

18 Jan.'06

**Mr. Arabinda Acharya**

Manager, Strategic Projects  
Institute of Defence and Strategic Studies  
Nanyang Technological University  
Singapore  
*Changes in the Organisational Structure of  
Terrorist Groups in Southeast Asia*

20 Feb.'06

**Dr. Gautam Chatterjee**

*The Ethical Foundations of Economic Science*

30 Nov. '05

**Dr. Kamalini Martin**

*Synthetic Intelligence*

15 Dec. '05

**Dr. Mrinalini Sarabhai**

The Concept of Beauty in Indian Aesthetics  
Darpana Academy of Performing Arts  
Ahmedabad

7 Feb. '06

**SEMINAR ON THE HISTORY OF IDEAS**

**Mr. Alan Nazareth**

Ambassador of India (Retd)

*Genesis, Evolution and Flowering of the  
Concept of Ahimsa*

22 Sept. '05



Dr. Mrinalini Sarabhai demonstrating the  
Concept of Beauty in Indian Aesthetics,  
7 February 2006

**Prof. U. R. Anantha Murthy**

Former President, Kendra Sahitya Academy  
*Indian Literatures*

26 Jul. '05

**Prof. J. Srinivasan**

IISc  
*Science of Climate Change*

29 Jul. '05

**Prof. K. VijayaRaghavan**

Director - NCBS, TIFR Bangalore  
*Genes and Behaviour*

2 Aug. '05

**Dr. Alessandra Lopez Y Royo**

School of Oriental and African  
Studies, University of London  
London  
*Dance, Archeology and Architecture:  
Multidisciplinary Frontiers*

4 Aug. '05

**Dr. Wiebe E Bijker**

Maastricht University  
The Netherlands  
*Democratisation of Technological  
Culture – The Role of Science and  
Technology for Development*

16 Aug. '05

**Ms. Shashi Deshpande**

Writer  
*Place of Literature in Our Lives*

29 Sept. '05

**Dr. Kirit S. Parkh**

Member, Planning Commission  
New Delhi  
*What Next for Economic Reforms*

3 Oct. '05

**Mr. Ramesh Ramanathan**

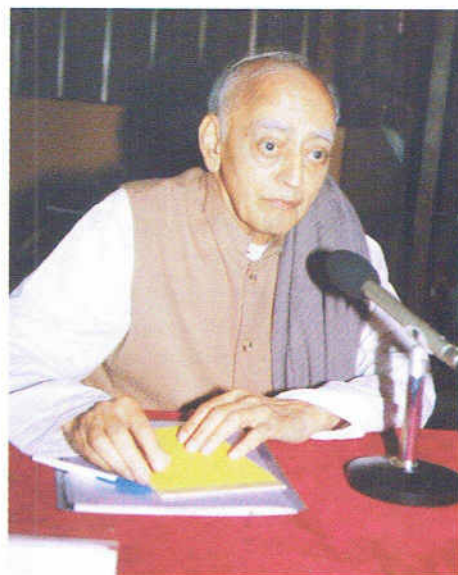
Campaign Coordinator  
Janaagraha  
*Urban Citizenship in  
Democracy*

4 Oct. '05

**Dr. L. C. Jain**

Former Planning Commission Member  
*Relevance of Planning*

7 Nov. '05



Dr. L. C. Jain speaking on the "Relevance of Planning in India Today", 7 November 2005

**Prof. U. R. Ananthamurthy**

Former President  
Sahitya Academy  
*Being a Writer in India*

8 Nov. '05

**Mr. C. P. Gopinathan**

Chennai  
*Idea Management*

9 Nov. '05

**Prof. M. S. Valiathan**

Honorary Adviser,  
Manipal Academy of Higher Education  
*India's Medicinal Heritage – Ayurveda*

12 Nov. '05

**Mr. Ramesh Ramanathan**

Campaign Coordinator Jannagraha  
Urban Life and Democracy

17 Nov. '05

**Dr. Abdul Quader Shaikh**

Senior International Economists  
US Department of Commerce  
*WTO and Trade Issues*

10 Jan. '06

**Dr. Vijayendra Rao**

Development Research Group  
The World Bank, Washington D. C.  
*Equity and Development:  
A Presentation of the 2006  
World Development Report*

13 Jan. '06

**Mr. N. N. Vohra, IAS (Retd)**

Government Interlocutor for J&K  
New Delhi  
The First Mohandas Moses Memorial Lecture –  
*"The Future of the  
Bureaucracy in Changing Times"*

23 Jan. '06



Mr. N. N. Vohra delivering the First Mohandas Moses Memorial Lecture on the "Future of Bureaucracy in Changing Times", 23 January 2006

**Prof. Ralph H. Abraham**

Professor of Mathematics  
University of California, Santa Cruz  
*Agent Based Modelling for the  
Social Sciences: Conflict and Trade*

24 Jan. '06

**Mr. K. Subrahmanyam**

Chairman, Taskforce on  
Global Strategic Developments  
Government of India  
Chair: Mr. G. Madhavan Nair  
Chairman, ISRO  
*Challenges and Prospects for Indo-US Relations*

9 Feb. '06

**Prof. Frits Staal**

Professor of Philosophy  
University of California, Berkeley  
*Dharma and Cakra*

31 Mar. '06



## WEDNESDAY DISCUSSION MEETINGS

**Prof. Prabhakar G. Vaidya**

*Can Heart Attack Be Predicted?*

6 Apr. '05

**Ms. Indira Vijaysimha**

*Reading the Classroom  
(Into the Black Box)*

20 Apr. '05

**Prof. Timothy Poston**

*How to Put Our Hands into  
Virtual Reality, Not Deep into Our Pockets*

27 Apr. '05

**Speaker – Mr. Gautam Sonti**

Chair – Dr. Carol Upadhya  
*Little Republics: A Series of 3 Films –  
Film Screening and Discussion*

4 May '05

**Dr. H. K. Anasuya Devi and team**

*A Software Product on Optical  
Character Recognition for Ancient Scripts*

25 May '05

**Dr. B. K. Anitha**

*Gender Equity Programme for Science  
and Technology*

27 May '05

**Mr. Arvind Kumar**

*India and East Asia*

8 Jun. '05

**Dr. Sharada Srinivasan**

*Unravelling the Making of  
Kalaripayattu Martial Art Weapons:  
Some Preliminary Archaeometallurgical  
and Historical Insights*

15 Jun. '05

**Dr. Sangeetha Menon**

*By the Consciousness Couch: Odd,  
Regular and Inexplicable Experiences*

29 Jun. '05

**Dr. A. R. Vasavi**

*Involution in Rural India?  
Understanding Contemporary Conditions*

13 Jul. '05

**Prof. K. Ramachandra**

*We and the Prime Members*

20 Jul. '05

**Prof. Malavika Kapur**

*Scaring the Living Daylights  
Out of You: An Analysis of  
Our Fascination With Horror!*

10 Aug. '05

**Dr. M. G. Narasimhan**

*On Universal Grammar*

17 Aug. '05

**Mr. Nithin Nagaraj**  
*Parrondo's Paradox*

14 Sept. '05

**Prof. S. Ranganathan**  
*Nanotechnology:  
The Second Industrial Revolution*

21 Sept. '05

**Dr. Sundar Sarukkai**  
*Indian Philosophy and Philosophy of Science*

19 Oct. '05

**Dr. P. K. Shetty**  
*Genetically Modified Crops and the  
Future of Indian Agriculture*

23 Nov. '05

**Dr. Sonika Gupta**  
*The Internet and Democracy in China*

30 Nov. '05

**Prof. Joseph Alcamo**  
*The Many Dimensions of Water  
Scarcity in India and the World*

14 Dec. '05

**Ms. Indira Vijaysimha**  
*Creating an Educational Alternative –  
Poorna*

21 Dec. '05

**Mr. Kishor G. Bhat**  
*Bertrand's Postulate*

15 Feb. '06

**Prof. K. Ramachandra and  
Mr. Kishor G. Bhat**  
*Primes, Primes and Primes*

22 Feb. '06

**Prof. Timothy Poston**  
*Three Dimensions from Two:  
Reinventing the Mouse*

1 Mar. '06

**Dr. Carol Upadhyia and  
Mr. Gautam Sonti**  
*Taylorism in the New Economy*

8 Mar. '06

**Prof. Malavika Kapur**  
*From Unteachable to  
Enabled Learners: An Innovative  
Approach to Learning Through  
Play Among the Tribal School Children*

15 Mar. '06

**Prof. S. Chandrashekar**  
*Pakistan Missile Programme*

22 Mar. '06

**Ms. M. B. Rajani**  
*Some Thoughts on Western Classical  
and Later Geographer's Perspective of India*

29 Mar. '06

**Prof. Naureen Aziz**

Lecturer, Department of English  
Jyoti Nivas College  
Bangalore  
*Short Stories of Bohumil Hrabal*

13 Apr. '05

Reading and Discussion by

**Smt. Hema Ramakrishna**

*The Mirror Cracked from Side to  
Side .... Decoding a Myth!*

27 Jul. '05

**Ms. Anjum Hasan**

*Poetry of the Everyday*

31 Aug. '05

**Dr. John Marr**

Hon. General Secretary  
Bharatiya Vidya Bhavan  
U. K. Centre

*The Tamil Sangam – Reality and Myth*

1 Feb. '06

**DISCUSSION FORUM  
FOR CONSCIOUSNESS**

**Dr. Sangeetha Menon**

Fellow, NIAS

*Beside the Stream of Consciousness:  
A Survey of Old and Recent Bridges*

31 May '05

**Dr. Shobini L. Rao**

Professor

Department of Clinical Psychology  
NIMHANS, Bangalore

*Brain Architecture and Processes  
Mediating the Consciousness of Self*

9 Jun. '05

**Mr. Kishor G. Bhat**

Ph.D. Student, NIAS

*What is so Funny?: An Inquiry into  
the Philosophical Underpinnings of Laughter*

21 Oct. '05

**Mr. Roger Nelson**

Director

Global Consciousness Project  
Princeton

*The Global Consciousness Project:  
Meaningful Patterns in Random Data*

20 Dec. '05

## MUSIC CONCERTS

**Pandit Vinayak Torvi**

*Hindustani Classical Music Concert*  
28 Jul. '05

**Pandit Rajashekhar Mansur**

*Hindustani Classical Music Concert*  
2 Oct. '05

**Ustad Bale Khan and Brothers**

*Panch Sitar Sangam*

13 Nov. '05

## PLAYS AND PUPPETRY SHOW

**Ordinary People Theatre Group**

*Stage Reading of "Not an Ordinary Man"*

7 Jan. '06

A Puppet Yakshagana Performance

by **Bhaskar Kogga Kamath** and

Members of **Mr. Ganesh**

Yakshagana Gombe Mandali

Udupi District

*Lanka Dahana (Burning of Lanka)*

22 Jan. '06

A Play on Einstein by

**Ordinary People Theatre Group**

*Not An Ordinary Man*

25 Jan. '06

## SELECTED VISITORS TO NIAS

**Dr. Stephen Krasner**, Director, Policy Planning, Department of State, United States of America, visited the Institute on **19 June 2005**. Dr. Krasner works in the office of the Secretary of State and is one of Secretary Rice's closest advisors. The International Strategic and Security Studies Programme organised a discussion meeting on the emerging trends in Indo-US relations and how the various tenets of the next Indo-US steps in strategic partnership will move forward. The matters related to expanding cooperation in civilian nuclear and civilian space activities also formed a major part of the discussion.

**Dr. Vincent Chen**, Associate Professor, Institute of International Relations, National Political University, Taipei, Taiwan, visited the Institute on **29 June 2005**. The International Strategic and Security Studies Programme organised a discussion meeting with him, the purpose of which was to exchange views on the India-China-USA triangular relationship and examine areas for future cooperation. Dr. Chen also made a formal presentation on the subject. There was an overall consensus among the group who participated in the discussion meeting that forging triangular relationship among three major countries may not be viable because of existing asymmetry between India and China on one hand, and between China and the US on the other.

**Prof. Wiebe Bijker** from The Netherlands visited NIAS between **14 and 19 August 2005**. He delivered a talk on "Democratizing Technology: The Role of Science and Technology in

Development" on 16 August 2005 at NIAS. The event was jointly organised by NIAS and the Institute of Social and Economic Change, Bangalore.

**Mr. Arabinda Acharya**, Manager, Strategic Projects and Associate Research Fellow at the Institute of Defence and Strategic Studies, Nanyang Technological University, Singapore, visited NIAS and delivered a talk on **20 February 2006**. Mr. Acharya spoke on "Changes in the Organizational Structure of Terrorist Groups in Southeast Asia".

**Prof. Joseph Alcamo**, Director of the Centre for Environmental Systems Research at the University of Kassel, Germany, was a Visiting Professor at NIAS during the period **18 October 2005 and 31 March 2006**. During his stay at NIAS, he sought to establish joint Indo-German research collaboration addressing the question: Will competition for land and water affect energy developments in India?

**Prof. Frits Staal**, Professor of Philosophy, University of California, Berkeley visited NIAS during **March 2006**. He delivered a talk on "Dharma and Cakra" on 31 March 2006. Prof. Staal believes in universals and the progress, not necessarily linear, of scientific knowledge. He has written about 150 articles and 15 books. He is interested in its foundations as expressed through artificial languages or classical languages such as Arabic, Chinese, Greek or Sanskrit.

## HONOURS AND AWARDS RECEIVED BY NIAS FACULTY

### **Dr. K. Kasturirangan, Director**

Conferred 'Balvantbhai Parekh Gold Medal 2005' for Lifetime Achievements in Space Science by The Indian Planetary Society, Mumbai on 14 April 2005.

Conferred 'Aryabhata Award 2003', instituted by Astronautical Society of India at Satish Dhawan Space Centre, Sriharikota on 21 September 2005.

Conferred 'Lifetime Achievement Award' of the Asia-Pacific Satellite Communications Council, Singapore on 27 September 2005.

Elected as the President, India-Cyprus Parliamentary Friendship Group in January 2006.

Conferred 'Honorary Fellowship' by the Cardiff University, UK on 21 February 2006.

### **Prof. Dilip R. Ahuja**

Appointed Special Advisor to the Inter Academy Council's study on Transitions to Sustainable Energy Systems.

### **Prof. N. Shantha Mohan**

Elected as a Member of the Governing Board of India Water Partnership, the country organization of the Global Water Partnership, New Delhi.

Member of the Editorial Committee, Karnataka Development Report.

### **Prof. P. K. Shetty**

Invited as Guest speaker at the Pesticide Stewardship Conference organized by The Pesticide Stewardship Alliance, USA, to be held between 13 and 15 February 2006, Austin, USA.

### **Dr. B.K. Anitha**

Nominated as the Executive Committee Member of Mahila Samakhya, Karnataka, a Government of India Project working in nine districts in Karnataka.

Member of the Third World Organisation For Women in Science (TWOWS), Trieste, Italy.

### **Dr. Sharada Srinivasan**

Materials Research Society of India Medals 2006.

Nominated to the International Advisory Committee of the International Conference on "Beginnings of the Use of Metals and Alloys" (BUMA).

### **Mr. Arvind Kumar**

Appointed Academic Advisor to the Post Graduate Department of International Studies at the Stella Maris College, Chennai for 3 years.

Continued to be an Invited Examiner and a Resource Person for setting the examination papers for M.A. and M.Phil. (Political Science and International Studies) at Pondicherry Central University.

**SCHOOL OF HUMANITIES**

**Menon, S.** 2006. "Basics of Consciousness" **In:** *Consciousness, Society and Values* (A. V. Afonso Ed.). Shimla: Indian Institute of Advanced Study, pp 27-37.

**Menon, S.** 2006. What is Indian Psychology: Transcendence In and While Thinking, *The Journal of Transpersonal Psychology*, **37(2)**: 83-98.

**Menon, S.** 2005. Understanding the 'What' and 'Where' of Consciousness: Revisiting the Bhagavad Gita to Ask a Few More Questions, *Omega: Indian Journal of Science and Religion*, **IV(2)**: 88-99.

**Menon, S.** 2005. "Being and Wellbeing in the Upanishadic Literature". **In:** *Towards a Spiritual Psychology* (K Ramakrishna Rao and Sonali Bhatt Marwaha Eds.), Delhi: Samvad India Foundation. pp.72-96.

**Menon, S.** 2005. "Cognition, Consciousness and Experience: Towards a New Epistemology". **In:** *History and Philosophy of Science PHISPC-CONSSAVY*, 2(VI), Indian Council of Philosophical Research.

**Menon, S.** 2005. "Experience of Expression: Instances from Indian Dramaturgy and a Discussion on Consciousness". *Leonardo Electronic Almanac* 13(9), <http://lea.mit.edu>, The MIT Press.

**Menon, S.** 2005. "Spiritual Healing". *Heritage Amruth*, magazine published by Foundation for Revitalisation of Local Health Traditions **1**: 38-40.

**Menon, S.** 2005. "Self and Self-Transcendences in the Bhagavad Gita". **In:** *Self, Society and Science: Theoretical and Historical Perspectives*, Vol XI

Part 2 of History of Science, Philosophy and Culture in Indian Civilization, (D. P. Chattopadhyaya Ed.), New Delhi: Centre for Studies in Civilizations, pp 217-229.

**Menon, S.** 2005 and Narasimha, R. Papiya Bhattacharya and M. B. Rajani, "Six Months After the Tsunami", *Current Science*, **89(9)**: 1459-1461.

**Menon, S.** 2005. Book Review of "Cit: Consciousness" by Bina Gupta. (New Delhi: Oxford University Press, 2003) *Journal of Indian Council of Philosophical Research*, **XXI.1**: 279-287.

**Menon, S.** 2005. Book Review of "Psychology of Human and Social Development: Lessons from Diverse Cultures" Edited by John W Berry, RC Mishra and RS Tripathi. (New Delhi: Sage Publications, 2004) *Summerhill: IAS Review*. **X (1 & 2)**: 95-98.

**Sarukkai, S.** "Space and Emptiness", National Seminar on 'Shunyata', Nalanda Mahavidyalaya, Nalanda, 10 December 2005.

**Sarukkai, S.** "Language, Knowledge and the Structure of Absence", National seminar on "Still Boundaries, Dynamic Centres: Literature as Knowledge System", Department of Comparative Literature, Jadavpur University, 5-7 December 2005.

**Sarukkai, S.** "Philosophy and Relativity", National Seminar on Einstein's Centenary Year, Department of Physics, University of Mysore, 19 November 2005.

**Sarukkai, S.** "Science and the Public Sphere", National Seminar on 'The Idea of the Public Sphere', IIT, Delhi, 20-22 March 2006.

**Sarukkai, S.** "Theories and Meaning", National Seminar on Science, Language and Cognition,



Department of Philosophy, University of Hyderabad, 23-25 March 2006.

**Sarukkai, S.** "Is Su-doku Mathematics?" *Sunday Times of India*, Mumbai, 11 September 2005.

**Sarukkai, S.** "The Use of Symbols in Mathematics and Logic" In: *Essays on the Foundations of Mathematics and Logic*, Ed. Giandomenico Sica, Italy: Polimetrica, pp. 99 – 120.

**Sarukkai, S.** "Matter and Space" In: *Landscape of Matter*, (S. Ananthamurthy et al. Eds.). Bangalore: Prasanga, Bangalore University, 2005, pp. 143 – 162.

**Sarukkai, S.** 2005. "Indian Philosophy and Philosophy of Science". New Delhi: Project of History of Indian Science, Philosophy and Culture, Centre for Studies in Civilizations (Distributed by *Motilal Banarsidass*).

**Sarukkai, S.** 2005. "Explaining the Obvious: The Place of Mathematics in the Science". *Current Science* **88(3)**: 327-28.

**Sarukkai, S.** 2005. Revisiting the "Unreasonable Effectiveness" of Mathematics. *Current Science* **88(3)**: 415-423.

**Settar, S.** 2005. Inviting Death (translated into Kannada entitled 'Saavige Ahvaana' by Sadanand Kanavali). Bangalore: Kannada Pusthaka Praadhikaara.

**Sreekantan, B. V.** 2005. Dr. Raja Ramanna (28 January 1925 – 23 September 2004), Biographical Memoirs of Fellows of the Indian National Science Academy, **28**: 209-203.

**Srinivasan, S.** 2005. "Shiva in the International Year of Physics". In: *Modern Reading: A Miscellany*, (S. Rao and S. Ponnamma Eds.). Bangalore: Select Books, pp 180-184.

**Srinivasan, S.** 2005. "Cultural and Artistic Significance of India's Metals Heritage" Into the Future with Knowledge from our Past', Sri Tirunarayana Trust, Bangalore.

**Srinivasan, S.** "Investigating Martial Arts Swords in Kerala" presented at International Conference at British Museum, London on 'Metallurgy: A Touchstone for Cross-Cultural Interactions', 28-29 April 2005, Felicitating Contributions in

Archaeometallurgy of Dr. Paul Craddock, British Museum.

## SCHOOL OF NATURAL AND ENGINEERING SCIENCES

**Poston, T.**, Dhanik, A., Burdet, E., and Teo., C. L. 2005. Haptics of Buckling. *Proceedings of the First Joint Eurohaptics Conference and Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems*, WHC 2005, pp 299-307.

Mullick, R., Hardy, C., Raghu, K., Darrowand, B., and **Poston, T.** VizDrive: A Novel Hand-Immersed Paradigm for Interactive Medical Image Acquisition, *Medicine Meets Virtual Reality*, Long Beach California.

Niu, Y., and **Poston, T.** 2005. Using an oriented PDE to repair image textures. *Proceedings of the Third International Workshop on Variational, Geometric, and Level Set Methods in Computer Vision* (in conjunction with ICCV'05), LNCS 3752, pp 61-72.

Wang, F., Burdet, E., Dhanik, A., **Poston, T.** and Teo, C. L. 2005. Dynamic Thread for Real-time Knot-tying. *Proceedings of the First Joint Eurohaptics Conference and Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems*, WHC 2005, pp 299-307.

Jeyapalina, S., Lim, K. M., Chen, C.Y, Chew, C. M., Lim, K. H., Ho, H. N., **Poston, T.**, Selvanayagam, C., and Lim, B, H. 2005. A finite element model for estimating skin flap shrinkage. *Proceedings of the Twelfth International Conference on Biomedical Engineering*, Singapore, December 2005, on CD.

Ho, H. N., Rappel, J. K., Burdet, E., Teo, C. L., **Poston, T.**, and Lim, B. H. 2005. Measurement of wound and skin flap geometry in reconstructive surgery. *Proceedings of the Twelfth International Conference on Biomedical Engineering*, Singapore, December 2005, on CD.

Jeyapalina, S., Lim, K. H., Ho, H. N., **Poston, T.**, Chew, C. M., Chen, P. C. Y., Rappel J. K., and Lim, B H. 2005. Directional dependent in vivo mechanical behaviour of human skin. *Proceedings of the Twelfth International Conference on Biomedical Engineering*, Singapore, December 2005, on CD.

- Gopalakrishnan, G., **Poston, T.**, Nagaraj, N., Mullick, R. and Knoploch, J. 2005. Implicit Function-Based Phantoms for Evaluation of Registration Algorithms, *Proceedings of SPIE* 5747: 1310-1316.
- Radhakrishna, S.** 2005. Midnight's Children? Solitary Primates and Gregarious Chiropterans. *Current Science* **89**: 1208-1213.
- Radhakrishna, S.** 2005. Status and Conservation of the Slender Loris in Southern India. Abstract in *Proceedings of the Indo-US Workshop for Indian Primates: National Action Plan*, Jodhpur, September 2005, p 25.
- Shetty, P. K.** 2005. Commercial Farming and Ecological Disaster – Lessons from Bidar Syndrome. *Journal of Ecotoxicology and Environmental Monitoring* **15** (1): 7-15.
- Shetty, P. K.** 2005. Impact of Agrochemicals on Sustainability of Agricultural Development. In: *Sustainable Agricultural Development in India*. (Ramesh R.S., Venkateshappa K.S., and Suryaprakash S Eds.). Bangalore: A Southern Economist Publication. pp 77-80.
- Sinha, A.** 2005. Not in Their Genes: Phenotypic Flexibility, Social Traditions and Cultural Evolution in Wild Bonnet Macaques. *Journal of Biosciences* **30**: 51-64.
- Sinha, A.**, Datta A, Madhusudan M D and Mishra C. 2005. *Macaca munzala*: A New Species from Western Arunachal Pradesh, Northeastern India. *International Journal of Primatology* **26**: 977-989.
- Sinha, A.** Mukhopadhyay K, Datta-Roy A and Ram S. 2005. Ecology Proposes, Behaviour Disposes: Ecological Variability in Social Organization and Male Behavioural Strategies Among Wild Bonnet Macaques. *Current Science* **89**: 1166-1179.
- Sinha, A.** 2005. Of Mice and Men: Ethical Issues in Animal Exploitation. In: *Self, Society and Science: Theoretical and Historical Perspectives* (D. P. Chattopadhyay Ed.), Project of History of Indian Science, Philosophy and Culture, Centre for Studies in Civilizations, New Delhi, pp 416-424.
- Sinha, A.** 2005. Animal Minds: Cognition in Wild Bonnet Macaques. Abstracts of the Indo-French Workshop in Neurosciences, Manesar (Haryana), February 2005.
- Sharma, N. and **Sinha, A.** 2005. Stepchildren of the Seven Sisters: The threatened primate diversity of northeastern India. Abstracts of the Fifth Göttinger Freilandtage – Primate Diversity: Past, Present and Future, Göttingen, Germany, December 2005.
- Kumar, R. S., Mishra, C. and **Sinha, A.** 2005. Discovery of the Tibetan Macaque *Macaca Thibetana* in Arunachal Pradesh, India. *Current Science* **88**: 1387-1388.
- Mallapur, A. **Sinha, A.** and Waran, N. 2005. Influence of Visitor Presence on the Behaviour of Captive Lion-Tailed Macaques (*Macaca silenus*) housed in Indian zoos. *Applied Animal Behaviour Science* **94**: 341-352.
- Mallapur, A., Waran, N. and **Sinha, A.** 2005. Factors Influencing the Behaviour and Welfare of Captive Lion-Tailed Macaques in Indian Zoos. *Applied Animal Behaviour Science* **91**: 337-353.
- Mallapur, A., **Sinha, A.** and Waran, N. 2006. Use of Enclosure Space by Captive Lion-Tailed Macaques (*Macaca Silenus*) housed in Indian zoos. *Journal of Applied Animal Welfare Science* **8**: 175-186.
- Ram, S. and **Sinha, A.** 2005. Food for Thought: Behavioural Strategies Adopted by Wild Bonnet Macaques to Reduce Social Tension During Provisioning. In: *Wildlife Conservation, Research and Management* (Y. V. Jhala, R Chellam and Q. Qureshi Eds.), Technical Publication No. RR-05/001, Wildlife Institute of India, Dehradun, pp. 135-144.
- Krishna, Y. C. and **Sinha, A.** 2005. A review of the book *Losing a Lost Tribe: Native Americans, DNA, and the Mormon Church* by Simon G Southerton (Signature Books, Salt Lake City, Utah, USA, 2004). *Current Science* **89**: 567-568.
- Vaidya, P. G.**, Nagaraj, N. and Vaidya, V. Revisiting the One-Time Pad. <http://arxiv.org/abs/cs/0508079>, August 2005.
- Vaidya, P. G.** and Anand, S. Cryptography based on Chaotic Synchronization: Round III <http://eprint.iacr.org/> *Cryptology ePrint Archive*, Report 2005/273.

## SCHOOL OF SOCIAL SCIENCES

**Ahuja, D. R.** Making Energy Systems More Sustainable – A Report prepared for the Academy of the Sciences for the Developing World (TWAS), Trieste, Italy.

Sen Gupta, D. P., **Ahuja, D. R.**, Venugopal, D., Revathi S. K. and **Vasavi, A. R.** The review of the VTU-EDUSAT Pilot Project. Report submitted to ISRO, Bangalore, June 2005.

**Anitha, B. K.** 2005. Engendering Science and Technology Education for All in India, In: *International Conference on Women's Impact on Science and technology in the New Millennium, Book of Abstracts*, Volume I Pp: 1PAP 7, 21- 25 Nov 2005.

**Anitha, B. K.** 2005. Quality and the Social Context of Rural Schools In: *Contemporary Education Dialogue III (1)*: 28-60.

**Anitha, B. K.** 2006. India's Competitiveness and Preparedness In: *Science and Technology in the Coming Decades – A Meeting Report in Current Science* 90(3): 281-282.

**Anitha, B. K.** 2005. Baseline Report to study the impact of agricultural technologies on the income and working patterns among small and marginal farmers and it's subsequent impact on the relative status of women in these households in Tumkur District. Baseline report submitted to the India Development Enterprise, Bangalore.

**Sarangapani, P.** (Kannada) Ingalish Bhodisi Kannada Madhyama Ulisi. Usha Kiran 19 April 2005.

**Sarangapani, P.** and Vijayasimha, I. 2005. Assessment of Utility and Usage of Soliga Siddhi Textbooks Developed For Soliga Tribal Ashram Shalas study and report submitted to SSA Karnataka, December 2005.

**Sarangapani, P.** 2005. Quality in Education: A view from the South of its history and debatable effects. Conference on Researching Quality of Education for All in the South: Main Research Issues and Current Gaps. Organised by University of Amsterdam, AMIDSt and Netherlands Ministry of Foreign Affairs Cultural Cooperation, Education and Research Department. 29-30 August 2005.

Joy, A, Ramkumar, N., Manjeshwar, H., Reddy, C., Udupa, S., Latha, K. and **Sarangapani, P. M.** 2005. Interim Report to the "CABE Committee on Regulatory Mechanisms for Textbooks and Parallel Textbooks Taught in Schools Outside the Government System".

Kumar, M. and **Sarangapani, P. M.** 2005. Improving Government Schools: What Has Been Tried and What Works. New Delhi: Books for Change.

**Shantha Mohan.** 2005. Government of India's II and III Periodic Report on the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), 1997-2005, Department of Women and Child Development, Ministry of Human Resource Development, Government of India.

**Shantha Mohan.** 2005. Assisting Governments to Develop Expertise to Prepare Reports to the CEDAW Committee, Session 7: How to provide assistance in the preparation of reports on the domestic implementation of CEDAW In: *Consultation on Updating of Skills on Application of CEDAW*. Kuala Lumpur: IWRAWAsiaPacific (18-21 September 2004). pp 50-60.

**Shantha Mohan.** 2005. Indian Case Study In: *Consultation on Updating of Skills on Application of CEDAW*. Kuala Lumpur: IWRAWAsiaPacific (18-21 September 2004). pp 60-64

**Upadhyaya, Carol.** 2005. Community Rights in Land in Jharkhand. *Economic and Political Weekly* 40(41): 4435-38.

**Upadhyaya, Carol.** Review of "Community and Public Culture: The Marwaris in Calcutta" by Anne Hardgrove. *Contributions to Indian Sociology (N.S.)* 39(2), 2005.

**Vasavi, A. R.** 2005. Correcting Social Disadvantage. A review of the book *Affirmative Action in the United States and India: A Comparative Perspective* by Thomas Weisskopf (New York: Routledge, 2004). *Economic and Political Weekly* 40: 1963-1965.

**Vasavi, A. R.** 2005. A review of the book *Regional modernities: the cultural politics of development in India* edited by K Sivaramakrishnan and Arun Agrawal (New Delhi: OUP, 2003). *Contributions to Indian Sociology* 39(1): 165-168.

**Vasavi, A. R.** "Caste Indignities and Subjected Personhoods" Feshchrift paper in honour of Prof. A. H. Kalro, Special Publication of the Centre for Excellence, Kozhikode.

**Vasavi, A. R.** "The Making of Agrarian Distress", Submitted to GAPS, Hyderabad.

**Vasavi, A. R.** "Educational Regimes in Contemporary India" in The Book Review, October 2005.

## INTERNATIONAL AND STRATEGIC STUDIES PROGRAMME

**Gupta, S.** 2005. Chinese Strategies for Resolution of the Taiwan and the South China Sea Disputes" in special issue titled "China's Foreign and Security Policy" International Studies 42 (3&4): 247-264.

**Gupta, S.** 2005. India-China Relations In: Encyclopedia of India (Stanley Wolpert Ed.), Charles Scribner's Sons.

**Kumar, A.** Indo-US Civilian Nuclear Cooperation: Myths or Realities. Deccan Herald. 6 August 2005.

**Kumar, A.** 2005. India and Nuclear Weapons in the Indian Ocean. Journal of Indian Ocean Studies 12: 390-403.

**Kumar, A.** 2005. Nuclear Dimension in India-China Relations In: China and India: Political and Strategic Perspectives (Isabelle Saint – Mezard and James K. Chin, eds.), Hong Kong: Centre of Asian Studies: The University of Hong Kong. pp 149-164.

**Kumar, A.** 2005. India's Strategic and Security Interests in Southeast Asia, APISA Working Paper, Malaysia.

**Kumar, A.** 2005. Nuclear Weapons and Missile Defenses: The Maritime Dimension in the Asia Pacific. Institute of Defence and Strategic Studies, Singapore.

## OTHERS

**Anasuya Devi, H. K.** 2005. Creation of graphical user interface for identification of Brahmi script. Journal of Ancient Sciences and Archaeological Society of India 1: 153-160.

**Anasuya Devi, H. K.** 2005. Feature extraction of Brahmi script. Journal of Ancient Sciences and Archaeological Society of India 1: 172-179.

**Anasuya Devi, H. K.** 2005. Automated recognition of ancient Indian scripts. In: Into the Future with Knowledge from Our Past (ed Sri Tirunarayana Trust), Bangalore: Sri Tirunarayana Trust, pp 13-16.

**Anasuya Devi, H. K.,** Karthik, K. S. and Ramya Rao, B. 2005. Artificial intelligence-based data caching (heuristic approach). Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

**Anasuya Devi, H. K.** and Kotekar, N. 2005. Gabor filters: Image analysis and segmentation methods. Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

**Anasuya Devi, H. K.** and Dhamyanthi, S. 2005. Recognition of handwritten characters using neural networks. Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

**Anasuya Devi, H. K.,** Salgar, M., Kumar R and Deepakumar. 2005. Emergency management decision support system. Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

**Anasuya Devi, H. K.** and Manikandan, S. 2005. pH control in sugar industry using fuzzy logic controller. Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

**Anasuya Devi, H. K.** and Vartak, M. 2005. Knowledge-based neural PID. Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

**Anasuya Devi, H. K.** and Grewal, A. 2005. Multi-agent map resolver. Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

**Anasuya Devi, H. K.** and Sivaprasad, G. 2005. Case-based reasoning in expert systems. Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

**Anasuya Devi, H. K.** and Vidya N. M. 2005. Evolutionary robotics case study: A stepper motor-based sensor. Proficiency Course on Artificial Intelligence and Expert Systems Development, Indian Institute of Science, Bangalore.

## LECTURES DELIVERED BY NIAS FACULTY

### **Dr. K. Kasturirangan, Director**

10 April 2005 – First Dr. P. A. Verghese Memorial Oration on "Health Care for All - Translating the Vision of Dr. Verghese" at Medical Trust Hospital, Cochin.

14 April 2005 – "India in Space" on receiving the Balvantbhai Parekh Gold Medal 2005 at Indian Planetary Society, Mumbai.

31 May 2005 – 37th Convocation Address at Indian Institute of Technology, Kanpur.

11 June 2005 – As Chief Guest addressed the students at the Valedictory Function of the International Mathematical Olympiad 2005, Homi Bhabha Centre for Science Education, Mumbai.

24 June 2005 – "India's Space Programme" at the International Workshop on 'Humans and Space: The Next Thousand Years', Foundation for the Future, Seattle, USA.

31 June 2005 – "Space in the Next Millennium" at Bangalore Science Forum, National College, Bangalore.

4 August 2005 – "Managing Indian Science" at the Second NIAS-DST Programme on 'Multidisciplinary Perspectives on Science and Technology' at NIAS.

7 August 2005 – "Space for Sustainable Agriculture and Rural Development" at the M. S. Swaminathan Foundation during the 80th Birthday of Prof. M. S. Swaminathan.

1 September 2005 – Indira Gandhi Memorial Lecture on "Science and Technology: A Unique

Instrument for National Integration" at the Asiatic Society, Kolkata.

5 September 2005 – Annual Convocation Address at Sikkim Manipal Institute of Technology, Majitar, Sikkim.

15 October 2005 – Satish Dhawan Memorial Lecture on "New Excitement in Astronomy" at Sriharikota.

16 November 2005 – Annual Convocation Address at Northeastern Hill University, Shillong, Meghalaya.

26 December 2005 – M. S. Ramaiah Memorial Lecture on "Exploring the Frontiers of Astronomy" at Gokula Education Society, Bangalore.

30 December 2005 – IISC Golden Jubilee Memorial Lecture on "Broadband Space Observatory - A Unique Tool to Explore the COSMOS" at Indian Institute of Science, Bangalore.

24 January 2006 – Aryabhata Lecture on "21st Century Space Astronomy – Some Exciting Prospects" at DRDL, Hyderabad.

27 January 2006 – "Managing India's Space Programme – Some Personal Experiences" at the Twentieth NIAS Course for Senior Executives at NIAS.

2 February 2006 – Welcome Address at the Workshop on "Foundations of Sciences" at NIAS.

6 February 2006 – Opening Remarks at the National Conference on "Consciousness, Experience and Ways of Knowing" at NIAS.

10 February 2006 – “Prospects for Indo-US Cooperation in High Technology” during National Workshop on ‘Changing Contours of Indo-US Relations’ at IAS.

26 March 2006 – “Space Technology Applications for Society” at the National Seminar on ‘Science, Technology and Society’ at IAS.

## SCHOOL OF HUMANITIES

### Prof. B. V. Sreekantan

14 August 2005 – “Oneness and Reality” at School of Ancient Wisdom, Bangalore.

18 August 2005 – “Sixty Years of the Tata Institute of Fundamental Research, 1945-2005: The Role of Young Men in the Creation and Development of this Institute” at J.R.D. Tata Birth Centenary Events organized by the TIFR Alumni Association, Tata Institute of Fundamental Research, Mumbai.

2 January 2006 – “Constituents of the Universe” at the Ninth IAS Course for University and College Teachers at IAS.

23 January 2006 – “The Ever Ascending Science – Technology Spiral” at the Twentieth IAS Course for Senior Executives.

2 February 2006 – “Overview on Foundations of Sciences” at Workshop on ‘Foundations of Sciences’ at IAS.

7 February 2006 – “Science, Reality and Consciousness” at the National Conference on ‘Consciousness, Experience and Ways of Knowing: Perspectives from Science, Philosophy and the Arts’ at IAS.

### Prof. Sundar Sarukkai

14 April 2005 – “Science and Language”, Vignana Jignasa, Heggodu.

15-16 April 2005 – Four sessions on Philosophy (in Kannada), Ninasam, Heggodu.

4-6 May 2005 – Three lectures on Philosophy of Language and Philosophy of Space, Colloquium on ‘Philosophy of Language and Space’, NEHU, Shillong.

30 May 2005 – “The Idea of Trusteeship in Gandhi and JRD Tata”, Fourth JRD Tata Memorial Lecture, IAS.

30 September 2005 – “Philosophical Ideas in General Relativity”, Einstein Centenary Celebration, IAS.

10 October 2005 – “Science and Violence”, Ninasam, Heggodu.

19 November 2005 – “Philosophy and Relativity”, National Seminar on ‘Einstein’s Centenary Year’, Department of Physics, University of Mysore.

10 December 2005 – “Space and Emptiness”, National Seminar on ‘Shunyata’, Nalanda Mahavidyalaya, Nalanda.

6 December 2005 – “Language, Knowledge and the Structure of Absence”, National Seminar on ‘Still Boundaries, Dynamic Centres: Literature as Knowledge System’, Department of Comparative Literature, Jadavpur University.

1 December 2005 – “Is There a Conflict Between Religion and Modern Science?”, Rotary Club.

2 January 2006 – “Indian Traditions and Contemporary Thought”, Ninth IAS Course for University and College Teachers, IAS.

27 January 2006 – “Philosophy, Science and Arts”, SMS College, Brahmavar.

7 February 2006 – “Postmodernism and Architecture”, Urban Habitat Group, Department of Architecture, BMS College of Engineering, Bangalore.

March – April 2006 – “Topics in Philosophy of Science”, Six Lectures, one every week, in Management Studies, Indian Institute of Science, Bangalore.

21 March 2006 – “Science and the Public Sphere”, National Seminar on ‘The Idea of the Public Sphere’, Indian Institute of Technology, Delhi.

24 March 2006 – “Theories and Meaning”, National Seminar on ‘Science, Language and Cognition’, Department of Philosophy, University of Hyderabad.

### Dr. Sangeetha Menon

6 May 2005 – “Blind Dancer and the Stunned Onlooker: Nature, Consciousness and Two Ways of Knowing in Samkhya-Yoga”, invited lecture for

the National Seminar on Nature and Culture, Discussion Meeting of History of Indian Science, Philosophy and Culture, IAS.

15 July 2005 – “Brain and Being: The Science and Spirituality of Consciousness” at the International Meeting of the Awardees of the ‘Global Perspectives on Science and Spirituality Award’ programme, Mont Royal Chateau, Paris, organised by the Interdisciplinary University of Paris, Elon University.

18 August 2005 – “Ways of Knowing and Being”, Foundation Course Lecture for IAS Ph.D. Scholars.

19 August 2005 – “The Place of Philosophy and Psychology in Multidisciplinary Research in the Context of Consciousness Studies” Foundation Course Lecture for IAS Ph.D. Scholars.

1 October 2005 – “Consciousness, Experience and Wellbeing: Classical Indian Views and Current Discussions in Science”, invited plenary lecture for the National Symposium at Dayalbagh Educational Institute, Agra, on ‘Education for Better Worldliness’. 26 October 2005 – “Consciousness, Karma and Well-being” at Sri Aurobindo Aradhana Trust, Bangalore.

9 November 2005 – “Cognitive and Experiential Foundations of Consciousness and ‘Spiritual Agency’: Towards a New Epistemology” at the National Seminar on ‘History of Science and Philosophy of Science’, Indian Council of Philosophical Research, New Delhi.

3 January 2006 – “The Rain Clouds of Mental Limitations and the Shower of Transcendence: Yoga and Samadhi in Patanjali Yoga Sutra” invited lecture at the International Conference on ‘Yoga and Parapsychology’, Andhra University and the Institute for Human Sciences and Services.

12 January 2006 – “Brain and Consciousness: Views and Challenges” at the Ninth IAS Course for University and College Teachers.

7 February 2006 – “Brain and Being” at the National Conference on ‘Consciousness, Experience and Ways of Knowing: Perspectives from Science, Philosophy and the Arts’ at IAS.

10 March 2006 – “Brain, Experience and Consciousness: Puzzles and Challenges”, public lecture at Manipal Institute of Technology.

10 March 2006 – “Indian Theories of Mind and Consciousness: Perspectives from Art, Psychology and Philosophy” at Department of Architecture, Manipal Institute of Technology.

#### **Dr. M. G. Narasimhan**

16 December 2005 – “Bohr – Einstein Debate” at the Seminar on ‘Einsteinian Physics: A Retrospect’ at Department of Physics, JSS College for Women, Mysore.

24 December 2005 – “The Role of Thought Experiments in Science: A View from the Cognitivist Approach in Philosophy of Science” at the Seminar on ‘Language, Science and Cognition’ at University of Hyderabad.

#### **Dr. Sharada Srinivasan**

24 July 2005 – “Dialogue Between Science and Religion: A Case Study of the Hindu Nataraja Bronze” at the 22nd International Conference of History of Science, Beijing.

2 September 2005 – “Megalithic High-Tin Bronzes” presented at the National Seminar on ‘History of Science and Technology in India’, Hyderabad.

12 September 2005 – “Cultural and Artistic Aspects of India’s Metals Heritage” at Sri Tirunarayana Trust, Bangalore.

10 December 2005 – “Indian Wootz Steel” at C. P. Ramaswamy Aiyer Indological Foundation, Chennai.

14 December 2005 – “Revisiting an Exercise on Authentication of South Indian Metal Icons from Asian and Global Perspectives” at International Seminar on ‘Authentication at Government Museum’, Chennai.

15 December 2005 – “Megalithic High-Tin Bronzes: Archaeometallurgical and Ethnoarchaeological Insights on Possible Artistic or Musical Significance” for Annual Seminar of Indian Society for Pre-historic and Quaternary Studies at Central College, Bangalore.

4 February 2006 – “Some Insights on Foundations of Ancient Indian Metallurgy” for Seminar on ‘Foundations of Sciences’ at IAS.

7 February 2006 – “Art and Archaeometallurgy of Nataraja bronzes” at the Conference on



'Consciousness, Experience and Ways of Knowing: Perspectives from Science, Philosophy and the Arts' at NIAS.

14 February 2006 – "Phases and Faces of Bronze: Archaeometallurgical Insights" at Materials Research Society of India Medals Lecture 2006, Materials Research Society of India Annual General Meeting, Lucknow.

## SCHOOL OF NATURAL AND ENGINEERING SCIENCES

### Prof. P. G. Vaidya

10 May 2005 – "Separating the Influence of Brain Signals from the Dynamics of Heart" 346, WE-Heraeus-Seminar, Cardiovascular Physics - Model Based Data Analysis of Heart Rhythm, at Physikzentrum Bad Honnef, Germany.

10 May 2005 – "Synchronizability of Cardiac Cells", 346-WE-Heraeus-Seminar, Cardiovascular Physics - Model Based Data Analysis of Heart Rhythm at Physikzentrum Bad Honnef, Germany.

2 June 2005 – "Cryptanalysis an ECG Signal and Other Narratives", Harvard Medical School.

20 June 2005 – "Some Applications of the Methods of Nonlinear Dynamics to Signal and Image Processing" at Department of Mathematics, University of Manchester.

16 January 2006 – "Can Mathematics be Made Easy?" at the Ninth NIAS Course for University and College Teachers at NIAS.

3 February 2006 – "Periodicity, Chaos and Randomness" at the workshop on 'Foundations of Sciences', at NIAS.

10 February 2006 – "Coding Theory Cryptography" at the workshop on 'Number Theory and Cryptography', IISc Mathematics Initiative (IMI), Department of Mathematics, Indian Institute of Science.

10 May 2005 – "Stochastic Variety in ECG Data", 346, WE-Heraeus-Seminar, Cardiovascular Physics Model Based Data Analysis of Heart Rhythm at Physikzentrum Bad Honnef, Germany (with Prof Timothy Poston).

6 February 2006 – "Rapid Chaotic Synchronization by Intermittent Driving Signals"

at the Third National Conference on 'Nonlinear Systems and Dynamics' (NCNSD-2006), The Ramanujan Institute for Advanced Study in Mathematics (RIASM), Chennai (with Ms. Sajini Anand).

### Prof. Timothy Poston

10 August 2005 – "Mathematics and Useful Laziness", Institute of Bioinformatics and Applied Biotechnology, Bangalore.

28 October 2005 – "The Semantics of Anatomical Geometry", Logic and Semantics Workshop organised by Calcutta Logic Circle and Centre For Cognitive Science, Jadavpur University.

### Prof. P. K. Shetty

29 November 2005 – Two talks for a Refresher Course in Bioscience, at UGC-Academic Staff College, Bharathidasan University, Tiruchirapalli, Tamil Nadu.

4 January 2006 – "Biotechnology in Agriculture: Science and Business" for Ninth NIAS Course for University and College Teachers.

18 January 2006 – "Relevance of Genetically Modified Crops to Indian Agriculture" at The Bangalore Science Forum, Dr. H. N. Hall, National College, Basavanagudi, Bangalore.

### Prof. Anindya Sinha

16 April 2005 – "Understanding Autism Through the Animal Mind" at Manovikas Kendra, Kolkata.

12 May 2005 – "Modern Genetic Technologies: Boon or Bane?" at Summer School for High School Students, Indian Association for the Cultivation of Science, Kolkata.

22 June 2005 – "Human Cloning – The Science and the Ethics" at Bangalore Science Forum, National College, Bangalore.

2 August 2005 – "How Bonnet Monkeys See the World" at the Second DST-NIAS Programme on 'Multidisciplinary Perspectives on Science and Technology' at NIAS.

22 August 2005 – "The Science and Ethics of Human Cloning" at Maharaja Srish Chandra College, Kolkata.

12 September 2005 – “The Indian Bonnet Macaque” at Indo-US International Workshop for Indian Primates, Primate Research Centre, Jodhpur.

13 September 2005 – “Primates of Southern India: Current Problems and Future Perspectives” at Indo-US International Workshop for Indian Primates, Primate Research Centre, Jodhpur.

24 September 2005 – “Current Perspectives in Animal Cognition”, Bejoygarh Jyotish College, Kolkata.

26 September 2005 – “To Clone or Not to Clone – That is the Question” at Gurudas College, Kolkata.

4 October 2005 – “Comparative Cognition in Monkeys, Apes and Humans” at Centre for Cellular and Molecular Biology, Hyderabad.

8 November 2005 – “Playing God? Scientific and Ethical Perspectives in the Cloning of Human Beings” at Indian Council of Philosophical Research, New Delhi.

29 December 2005 – “Of Monkeys, Men and Morals: Studying Primates in India” at Ninth NIAS Course for University and College Teachers.

22 February 2005 – “Monkeys of The Deep Forest: The Discovery of a New Macaque in Arunachal Pradesh, Northeastern India” at Asian College of Journalism, Chennai.

27 February 2005 – “True Lies: Tactical Deception in Wild Bonnet Macaques” at Nature Conservation Foundation, Mysore.

#### **Dr. Sindhu Radhakrishna**

12 September 2005 – “Status and Conservation of the Slender Loris in Southern India” at Indo-US International Workshop for Indian Primates, Primate Research Centre, Jodhpur.

18 February 2006 – “Sleeping Secrets: Of Prosimians and Their Societies” at Department of Environmental Sociology, Stella Maris College, Chennai.

## **SCHOOL OF SOCIAL SCIENCES**

### **Prof. Dilip R. Ahuja**

19 April 2005 – “Research Ethics” Foundation Course, Panel Discussion at NIAS.

12 May 2005 – “Proposals and Issues for India” at the Workshop on “Greenhouse Gas Emissions Reduction Strategies for Developing Countries”, in Sao Paulo, Brazil.

9 September 2005 – “Incremental Cost Analysis” at the 2nd Regional Expert Consultation Meeting on Logical Framework Analysis of the proposed project on “Reducing Greenhouse Gas Emissions by Promoting Bioenergy Technologies for Heat Applications, Gual Pahadi, Haryana.

17 September 2005 – “What Can We Do to Reduce the Risk of Climate Change?” at the Regional Conference on Science, Technology and Society, at the Indian Institute of Public Administration, Karnataka Regional Branch, Bangalore.

28 October 2005 – “Optimism and Pessimism about the Prospects for Making Energy Systems More Sustainable”, key note address at the Seminar on ‘Science, Technology and Development’, in honour of Professor A. K. N. Reddy on the occasion of his 75th birthday, Bangalore.

### **Prof. N. Shantha Mohan**

9 July 2005 – Resource person and facilitated the sessions on “Assessing and Measuring Change Through the Development of Indicators in a Qualitative Educational Empowerment Programme” for national and state programme directors and district coordinators at the National Workshop organized by Mahila Samakhya, Mysore.

8 March 2006 – “Social Impacts of Hydro-Electric Reservoirs” in the Joint Indo-German workshop on ‘Will Competition for Land and Water Hinder Energy Development in India’ at NIAS.

### **Prof. A. R. Vasavi**

7 January 2006 – “Caste and Career Options: Reading the WORSS Survey Data”, National Conference on ‘Work and Career Options’, Organised by The Promise Foundation, and held at ECC, Whitefield.

9 January 2006 – “Trends and Contradictions: Some Questions for Future Research”, Seminar on ‘Research Review of Tamil Nadu Social Science Scholars’, Madras Institute of Development Studies, Chennai.

2 March 2006 – “Involutions in Rural India? Understanding Contemporary Conditions”, National Seminar on ‘Agrarian Changes in India: Theories and Methods’, University of Hyderabad, Hyderabad.

11 March 2006 – “Re-Imagining Education” at the Consultation on the ‘Re-imagining Education’ organized by the SEMINAR Foundation, New Delhi and held at Pataudi.

#### **Dr. Carol Upadhy**

15 April 2005 – “Rights to Land in Jharkhand: Laws, Policies and Practices” at the Dissemination Workshop for UNDP-CBPPI-PRADAN Study on Pro-Poor Policies and Laws in Jharkhand, UNDP, New Delhi.

18-19 April 2005 – “Gender Issues in the Indian Software Outsourcing Industry” at the South Asian Seminar on ‘Feminist Perspectives on Gender in the Information Society’ at IIM Bangalore.

8-9 July 2005 – “Globalising the City: The IT Industry’s Bangalore” at the Workshop on ‘Politics and Alternatives in Globalising Cities’ organized by Sarai, CSDS (Delhi) – CASUM-m (Bangalore), United Theological College, Bangalore.

20 July 2005 – Talk and interactive session with group of American School Teachers visiting India on USEFI programme, on impact of IT industry in Bangalore.

12-13 August 2005 – “Controlling Through Culture: Indian Software Engineers in the Global Economy” at the International Conference on ‘New Global Workforces and Virtual Workplaces: Connections, Culture, and Control’ at NIAS.

26-27 August 2005 – “The Anthropology of Tribes and the Problem of Postcoloniality” at the National Workshop on ‘Sociology in Undergraduate Classrooms: Curricular and Pedagogical Possibilities’ at Department of Sociology, Christ College, Bangalore.

#### **Dr. Padma M. Sarangapani**

29 August 2005 – “Quality in Education: A View From the South of Its History and Debatable Effects” at Expert Meeting on ‘Researching Quality of Education for All in the South: Main Research Issues and Current Gaps’, organised by University of Amsterdam, AMIDSt and Netherlands Ministry of Foreign Affairs Cultural Cooperation, Education and Research Department.

9 March 2006 – “Soft Disciplines and Hard Battles” at Sociology of Education in India: Looking Back, Looking Ahead. Seminar in honour of Professor Karuna Chanana, at the Zakir Husain Centre for Educational Studies, School of Social Sciences, Jawaharlal Nehru University, New Delhi.

#### **INTERNATIONAL AND STRATEGIC STUDIES PROGRAMME**

##### **Prof. S. Chandrashekar**

27 October 2005 – “Pakistan’s Ballistic Missile Programme” at DRDO HQ, New Delhi.

##### **Prof. S. Rajagopal**

6 January 2005 – “Indo-US Civilian Nuclear Cooperation” at the Ninth NIAS Course for University and College Teachers.

2 September 2005 – “Indo-US Deal” in the Panel on ‘Indo-US Cooperation in S&T – Way Forward’ organized by ORF at the Hotel Windsor Manor, Bangalore.

20 October 2005 – “India’s Nuclear Energy Programmes” at the Dhvanyaloka Centre for Indian Studies, Mysore.

4 November 2005 – “Nuclear Terrorism” at CISAC Conference in Washington, D.C.

26 February 2006 – “Review of DST Programmes for Senior Scientists / Administrators” organized by the Department of Science and Technology at Sariska, New Delhi.

26 March 2006 – “Indo-US Nuclear Deal” at Adarsh College, R. T. Nagar, Bangalore.

**Mr. Arvind Kumar**

22–24 September 2005 – Series of lectures at the Post-graduate Department of International Studies at Stella Maris College, Chennai. The topics included “Game Theory in International Relations”, “India-China Relations” and “WMD Terrorism and India’s Foreign Policy”.

4 November 2005 – Panelist for the session on “Nuclear Non-Proliferation and Nuclear Weapons Policy” at the CISAC’s 25th Anniversary Symposium, National Academies, Washington, D.C.

6 January 2006 – “Indo-US Civilian Nuclear Cooperation: Cost-Benefit Paradigm” at the Ninth NIAS Course for University and College Teachers at NIAS.

28 March 2006 – “Implications of Nepal’s Domestic and Foreign Policy for India” in an International Conference on ‘International Relations Theory and South Asia’ organized by University of Pennsylvania Institute of Advanced Studies in India in New Delhi.

28 March 2006 – “Pakistan’s Ballistic Missile Capability” in an International Conference organized by Institute of Peace and Conflict Studies in collaboration with Massachusetts Institute of Technology, USA and Centre for Air-Power Studies, New Delhi.

**Dr. Sonika Gupta**

2 December 2005 – “Internet and Democracy in China”, National Seminar on ‘Emerging India-China Relations: Challenges and Prospects’ organised by Department of East Asia Studies, Delhi University. 13 December 2005 – “India and Taiwan Economy, Trade and Politics” during India-Taiwan Dialogue organized by ISSS Programme.

6 January 2006 – “Perception in Foreign Policy: India-China Relations” at the Ninth NIAS Course for University and College Teachers. Also Panelist in a panel on India-China-Pakistan Relations.

6 March 2006 – “Economic Interdependence in Cross Strait Relations” at the International Conference on ‘Asian Politics’ organized by JNU, New Delhi.

## MEETINGS ATTENDED BY NIAS FACULTY

### **Dr. K. Kasturirangan, Director**

17 May 2005 – International Astronautical Congress (IAF) Selection Committee Meeting to select the IAF Executive Director, IAF, Paris.

29 November – 3 December 2005 – 16th Third World Academy of Sciences (TWAS) meeting at Alexandria, Egypt and participated in the deliberations on “New Initiatives in Promoting Science Education and Research in Developing Countries”.

10-11 December 2005 – Presided over the Annual Convention and the AGM of the Indian National Academy of Engineering (INAE) held at Bangalore as its President.

### **SCHOOL OF HUMANITIES**

#### **Dr. M.G. Narasimhan**

21-23 December 2005 – International Seminar on “Science Education”, Vidya Bhavan Education Centre, VBGS Institute of Advanced Studies, Udaipur, Rajasthan.

30-31 January 2006 – Meeting of Section-Heads in Connection with An Encyclopedia Project on “Women Studies Encyclopedia”, Centre for Women’s Studies, Kannada University, Hampi.

### **SCHOOL OF NATURAL AND ENGINEERING SCIENCES**

#### **Prof. Anindya Sinha**

12-14 September 2005 – Indo-US International Workshop for “Indian Primates, Primate Research Centre”, Jodhpur.

4 October 2005 – One-day Meeting on “Chimpanzees and Humans: Comparative Genomics”, Centre for Cellular and Molecular Biology, Hyderabad.

8-9 November 2005 – Seminar on “History of Science and Philosophy of Science”, Project on the History of Indian Science, Philosophy and Culture, Indian Council of Philosophical Research, New Delhi.

27-28 February 2006 – Annual Research Seminar of the Nature Conservation Foundation, Mysore.

#### **Dr. Sindhu Radhakrishna**

12-14 September 2005 – Indo-US International Workshop for “Indian Primates, Primate Research Centre”, Jodhpur.

15-29 January 2006 – DST Workshop on “Methods in Behavioural Ecology, Centre for Ecological Sciences”, Indian Institute of Science, Bangalore.

### **SCHOOL OF SOCIAL SCIENCES**

#### **Prof. Dilip R. Ahuja**

24-27 April 2005 – Meeting of the Organizing Group for the IAC study on “Transitions to Sustainable Energy Systems,” at the Royal Netherlands Academy of Arts and Sciences in Amsterdam, the Netherlands.

4 May 2005 – Meeting of the Indian Authors participating in the IPCC Fourth Assessment Report, New Delhi.

9 June 2005 – 2nd Lead Author Meeting, IPCC Fourth Assessment Report Working Group III, held in Lima, Peru.

20 October 2005 – IPCC Fourth Assessment Report, Indian Authors' Meet, New Delhi.

29-30 October 2005 – InterAcademy Council International Workshop on "Energy", Durban, South Africa.

14-15 November 2005 – International Workshop on "Energy", jointly organized by the Chinese Academy of Sciences (CAS) and the InterAcademy Council (IAC), Beijing, China.

5-6 January 2006 – InterAcademy Council North American Workshop on "Transitions to Sustainable Energy Systems", Lawrence Berkeley Laboratories, Berkeley.

23-24 January 2006 – Country Study Leaders Meeting: Finalization of Full-Scale Regional Project Proposal Document on "Reducing Greenhouse Gas Emissions by Promoting Bioenergy Technologies for Heat Applications", FAORAP Office Bangkok, Thailand.

31 January-2 February 2006 – First Panel meeting of the Study Panel on "Transitions to Sustainable Energy Systems", Inter Academy Council, Amsterdam.

14-17 February 2006 – Third Lead Authors' Meeting to prepare Working Group III contribution to the Fourth Assessment of the Inter Governmental Panel on Climate Change, Beijing, China.

#### **Prof. N. Shantha Mohan**

30 August 2005 – Participated in a Seminar on "IPC Section 498A: A Tool to Combat Domestic Violence" organized by the Centre for Social Research at India Habitat Centre, New Delhi.

5-7 September 2005 – Participated in the Core Group Meeting of the South Asian Consortium for Interdisciplinary Water Resources Studies (SaciWaters), Hyderabad,

21-28 November 2005 – Participated in a Workshop on "Integrated Water Resource Management", organised by Cap-Net (UNDP) and UNESCO, Bandung, Indonesia.

August-November 2005 – Participated in a Course on "Online Learning in Water Management" for the training of facilitators by UNESCO-IWE (Institute for Water Education).

16-17 December 2005 – Participated in the National Seminar on "Integrated Water Resource Management" and chaired the session on "Gender and IWRM", organised by India Water Partnership, National Academy of Agricultural Sciences, New Delhi.

#### **Prof. A. R. Vasavi**

28-29 July 2005 – Knowledge Groups for Children in India. UNICEF Meet at Habitat Centre, New Delhi.

29-30 October 2005 – Globalisation and Education. International Conference organized by International Institute of Education, London.

#### **Dr. Carol Upadhya**

4-5 June 2005 – Participated in Workshop on "Studying the Family", organized by Janaki Nair and Mary John, Bangalore.

7-9 November 2005 – International Conference on "Consumerism and the Emerging Middle Class: Comparative Perspectives from India and China", India International Centre, New Delhi: "Rewriting the Code: Software Professionals and the Reconstitution of Indian Middle Class Identity" (paper presented in absentia).

### **INTERNATIONAL AND STRATEGIC STUDIES PROGRAMME**

#### **Mr. Arvind Kumar**

7-8 November 2005 – Participated at the Carnegie International Conference on "Non-Proliferation", Washington, DC.

**Prof. M. S. Swaminathan (Chairman)**

Chairman- M.S. Swaminathan  
Research Foundation  
3rd Cross Street, Taramani Institutional Area  
Chennai 600 113

**Prof. P. Balaram**

Director  
Indian Institute of Science  
Bangalore 560 012

**Mr. Xerxes Desai**

41, 4<sup>th</sup> Cross, Defence Colony  
Indiranagar  
Bangalore 560 038

**Mr. N. Gokulram**

Principal Secretary to the Government  
Finance Department  
Government of Karnataka  
Bangalore 560 001

**Dr. J. J. Irani**

Director  
Tata Sons Limited  
Bombay House  
24, Homi Mody Street  
Mumbai 400 001

**Dr. Devaki Jain**

"Tharangavana", D-5, 12<sup>th</sup> Cross  
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Bangalore 560 080

**Dr. K. Kasturirangan**

Director  
National Institute of Advanced Studies  
Indian Institute of Science Campus  
Bangalore 560 012

**Mr. Homi R. Khusrokhhan**

Executive Director  
Tata Chemicals Ltd.  
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**Dr. Shoba Nambisan**

Principal Secretary to the Government  
Education Department  
Government of Karnataka  
Bangalore 560 001

**Mr. N. R. Narayana Murthy**

Chairman of the Board  
Infosys Technologies Limited  
Hosur Road, 3<sup>rd</sup> Cross, Electronic City  
Bangalore 561 229

**Prof. V. S. Ramamurthy**

Secretary  
Department of Science and Technology  
Government of India  
New Delhi 110 016

**Dr. Kiran Mazumdar - Shaw**

Chairman and Managing Director  
Biocon India Limited  
20<sup>th</sup> KM Hosur Road, Electronic City P.O.  
Bangalore 560 100

**Mr. Pratyush Sinha**

Secretary  
Ministry of Personnel,  
Public Grievances and Pensions  
Government of India  
New Delhi 110 001

**Prof. B. V. Sreekantan**

Visiting Professor  
National Institute of Advanced Studies  
Indian Institute of Science Campus  
Bangalore 560 012

**Prof. Dilip R. Ahuja (Secretary)**

ISRO Professor of Science and Technology Policy  
National Institute of Advanced Studies  
Indian Institute of Science Campus  
Bangalore 560 012

**Prof. M. S. Swaminathan (Chairman)**

Chairman-M. S. Swaminathan  
Research Foundation  
3rd Cross Street, Taramani Institutional Area  
Chennai 600 113

**Prof. P. Balaram**

Director  
Indian Institute of Science  
Bangalore 560 012

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Defence Colony  
Indiranagar  
Bangalore 560 038

**Mr. N. Gokulram**

Principal Secretary to the Government  
Finance Department  
Government of Karnataka  
Bangalore 560 001

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Bombay House  
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Mumbai 400 001

**Dr. Devaki Jain**

"Tharangavana"  
D-5, 12th Cross  
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Director  
National Institute of Advanced Studies  
Indian Institute of Science Campus  
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Executive Director  
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Bangalore 560 001

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Bangalore 560 100

**Mr. Pratyush Sinha**

Secretary  
Ministry of Personnel,  
Public Grievances and Pensions  
Government of India  
New Delhi 110 001

**Prof. Dilip R. Ahuja (Secretary)**

ISRO Professor of Science and Technology Policy  
National Institute of Advanced Studies  
Indian Institute of Science Campus  
Bangalore 560 012



**Director**

K. Kasturirangan

**Professors Emeritus**

R. L. Kapur  
R. Narasimha

**Visiting Professor**

S. S. Meenakshisundaram

**Honorary Professor**

N. Balakrishnan  
Vijay Chandru  
D. P. Sen Gupta  
Malavika Kapur  
Kenneth Keniston  
Arcot Ramachandran  
B. V. Subbarayappa  
V. J. Sundaram, Lt. Gen.

**Visiting Scientist**

H. K. Anasuya Devi

**SCHOOL OF HUMANITIES**

**Visiting Professors**

B. V. Sreekantan, Dean  
S. Settar,  
*S. Radhakrishnan Visiting Professor*  
S. Ranganathan

**Professor**

Sundar Sarukkai

**Fellows**

Sangeetha Menon  
M. G. Narasimhan  
Sharada Srinivasan

**Doctoral Students**

Meera Baindur  
Swarnali Majumder  
S. K. Arun Murthi  
M. B. Rajani

**SCHOOL OF NATURAL AND ENGINEERING  
SCIENCES**

**Professors**

Prabhakar G. Vaidya, Dean  
P. K. Shetty  
Anindya Sinha

**Visiting Professors**

Timothy Poston,  
*Sir Ashutosh Mukherjee*  
*Visiting Professor*  
K. Ramachandra

**Visiting Associate Fellow**

Sindhu Radhakrishna

**Doctoral Students**

Kishor G. Bhat  
Mayukh Chatterjee  
M. Murugan  
Nithin Nagaraj  
Narayan Sharma

**SCHOOL OF SOCIAL SCIENCES**

**Professors**

Dilip R. Ahuja, *ISRO Professor and Dean*  
N. Shantha Mohan  
A. R. Vasavi

**Fellow**

B. K. Anitha

**Visiting Fellow**

Carol Upadhya

**Visiting Associate Fellow**

Padma M. Sarangapani

**Doctoral Students**

Anu Joy

K. Latha

Rahul Mukhopadhyay

Leena Pascal

Sailen Routray

Sahana Udupa

Indira Vijaysimha

**INTERNATIONAL AND STRATEGIC STUDIES  
PROGRAMME****Visiting Professors**

S. Chandrashekar

S. Rajagopal

**Associate Fellow**

Arvind Kumar

**Post-Doctoral Fellow**

Sonika Gupta

**ADMINISTRATION****Dean (Administration)**

S. Rajagopal

**Office Manager**

V. A. Joseph

**Accountant**

P. Srinivasa Aithal

**LIBRARY****Assistant Librarian**

Hamsa Kalyani

**FINANCIAL STATEMENTS**  
For the Year 2005-2006

**National Institute of Advanced Studies**  
Indian Institute of Science Campus  
Bangalore - 560 012

**SANTHAPPA & CO.**  
Chartered Accountants  
# 201, 2nd Floor, House of Lords  
St. Marks Road, Bangalore - 560 001

## AUDITORS' REPORT

1. We have audited the attached Balance Sheet of "NATIONAL INSTITUTE OF ADVANCED STUDIES", Indian Institute of Science Campus, Bangalore - 560 012, as at 31st March 2006, the General Income and Expenditure Account and Sponsored Projects Income & Expenditure Account for the year ended on that date, annexed thereto. These Financial Statements are the responsibility of the Institute's Management. Our responsibility is to express an opinion on these Financial Statements based on our Audit.
2. We have obtained all the information and explanations, which to the best of our knowledge and belief were necessary for the purpose of our Audit.
3. In our opinion, proper Books of Accounts as required by law have been kept by the Institute so far as appear from our examination of such books.
4. The Balance Sheet and the Income and Expenditure Account dealt with by this report are in agreement with the books of account.

We have conducted our audit in accordance with Auditing standards generally accepted in India. Those Standards require that we plan and perform the audit to obtain reasonable assurance about whether the Financial Statements are free of material misstatement. An Audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the Financial Statements. An audit also includes assessing the accounting principles used and significant estimates by Management, as well as evaluating the overall Financial Statement presentation. We believe that our audit provides a reasonable basis for our opinion.

5. In our opinion and to the best of our information and according to the explanations given to us, the said accounts read with the schedules and notes thereon give a true and fair view:

- a) In the case of the Balance Sheet, of the state of affairs of the Institute as at 31st March 2006,

AND

- b) In the case of Income and Expenditure Account, of the surplus in the General Income and Expenditure Account and in the Sponsored Projects Income and Expenditure Account for the year end on that date.

for **SANTHAPPA & CO.**  
Chartered Accountants

PLACE: BANGALORE  
DATE: 12 JUNE 2006

(A. C. RAJU)  
PARTNER  
M.NO.18134

**NATIONAL INSTITUTE OF ADVANCED STUDIES**  
INDIAN INSTITUTE OF SCIENCE CAMPUS, BANGALORE - 560 012

**BALANCE SHEET AS AT 31ST MARCH, 2006**

Particulars	As on 31/03/2006	As on 31/03/2005
	Rs.	Rs.
<b>I. SOURCES OF FUNDS:</b>		
a) Capital Fund	37472934	32690661
b) Other Funds	187739393	84418467
c) Current Liabilities	576553	696109
d) Depreciation Fund	47650090	43744292
Total Rs.	273438970	161549529
<b>II. APPLICATION OF FUNDS:</b>		
a) Fixed Assets	88100893	72738303
b) Investments	179999443	85263000
c) Advances & Deposits	2557268	620679
d) Cash at Banks	2781366	2927547
Total Rs.	273438970	161549529

As per our report of even date  
for SANTHAPPA & CO.

Sd/-  
(DR. K. KASTURIRANGAN)  
DIRECTOR

Sd/-  
(A. C. RAJ U)  
PARTNER

PLACE: BANGALORE  
DATE :12 JUNE 2006

Sd/-  
(PROF. S. RAJAGOPAL)  
DEAN-ADMINISTRATION

**NATIONAL INSTITUTE OF ADVANCED STUDIES**  
INDIAN INSTITUTE OF SCIENCE CAMPUS, BANGALORE - 560 012

**GENERAL INCOME AND EXPENDITURE ACCOUNT FOR  
THE YEAR ENDED 31ST MARCH, 2006**

Particulars	2005-06 Rs.	2004-05 Rs.
<b>A. INCOME:</b>		
Grants and Donations	3000000	2500000
Interest on Investments	11046071	4485216
Overhead & Administrative Charges Received	1511875	1643045
Research, Symposia & Course Receipts	4879663	2789611
Miscellaneous Income	5594643	4634372
TOTAL (A) Rs.	26032252	16052244
<b>B. EXPENDITURE:</b>		
Administrative Expenses	10374317	9816284
Travelling Expenses	360408	335574
Repairs and Maintenance Expenses	1436102	1562740
Research, Symposia and Course Expenses	5215789	2513854
Professorship Expenses	824242	784011
Miscellaneous Expenses	90228	66427
TOTAL (B) Rs.	18301084	15078889
<b>C. SURPLUS BEFORE DEPRECIATION (A-B)</b>	7731168	973354
<b>LESS: DEPRECIATION</b>	2948895	2294231
<b>D. SURPLUS/(DEFICIT) AFTER DEPRECIATION</b>	4782273.20	(1320877)

As per our report of even date  
for SANTHAPPA & CO.

Sd/-  
(DR. K. KASTURIRANGAN)  
DIRECTOR

Sd/-  
(A. C. RAJU)  
PARTNER

PLACE: BANGALORE  
DATE : 12 JUNE 2006

Sd/-  
(PROF. S. RAJAGOPAL)  
DEAN-ADMINISTRATION

**NATIONAL INSTITUTE OF ADVANCED STUDIES**  
INDIAN INSTITUTE OF SCIENCE CAMPUS, BANGALORE - 560 012

**SPONSORED PROJECTS INCOME AND EXPENDITURE ACCOUNT  
FOR THE YEAR ENDED 31ST MARCH, 2006**

Particulars	Scientific Research As on 31/03/2006	Scientific Research As on 31/03/2005	Social Science Research As on 31/03/2006	Social Science Research As on 31/03/2005
	Rs.	Rs.	Rs.	Rs.
<b>A. INCOME:</b>				
Projects Receipts	14226412	12715116	10674912	10413517
TOTAL (A) Rs.	14226412	12715116	10674912	10413517
<b>B. EXPENDITURE:</b>				
Projects Expenditure	12761124	8870725	9532460	8682365
Depreciation	588418	287680	368485	214941
TOTAL (B) Rs.	13349542	9158405	9900945	8897306
<b>C. SURPLUS/(DEFICIT) FOR YEAR (A-B) TRANSFERRED TO PROJECTS FUND</b>	876870	3556711	773967	1516211

As per our report of even date  
for SANTHAPPA & CO.

Sd/-  
(DR. K. KASTURIRANGAN)  
DIRECTOR

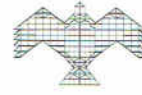
Sd/-  
(A. C. RAJU)  
PARTNER

PLACE : BANGALORE  
DATE : 12 JUNE 2006

Sd/-  
(PROF S. RAJAGOPAL)  
DEAN-ADMINISTRATION

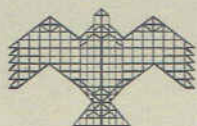






The NIAS emblem can be traced back to a remarkable Sanskrit work called the Śulva-sūtras, which, while being one of the four Kalpa-sūtra texts concerned chiefly with vedic ritual, displays a deep knowledge of geometry from pre-Euclidean times. Śulva (or śulba) stands for rope, string or cord, and is derived from the root śulv, meaning “to measure”; the Śulva-sūtras are therefore literally “The Rules of the Cord”. (To this day a cord is part of the basic equipment carried by an Indian mason, to be used in surveying or in laying out a structure in any construction activity.) The text is in fact a handbook of ritual geometry, and describes a series of geometric ‘constructions’ or procedures (using only strings and pegs) for the layout of sacrificial altars and fires of various shapes and dimensions, usually specified with extraordinary precision.

There are four extant versions of the Śulva-sūtras, but the one attributed to Baudhāyana is considered to be the oldest as well as the most systematic and detailed. Scholars are not agreed on the precise date of the Sūtras, but the text clearly pre-dates Pānini and must have been composed before the 6th century B.C. The procedures described in the text, however, must have been known very much before its composition, as the text itself acknowledges.



## NATIONAL INSTITUTE OF ADVANCED STUDIES

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