NIAS NEWS

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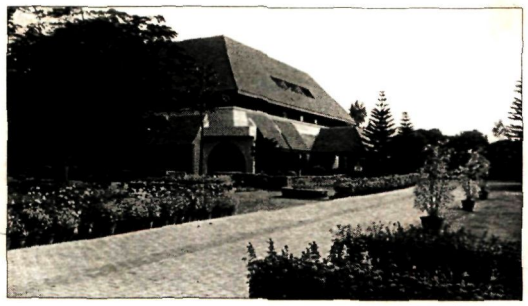
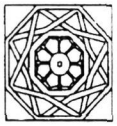
JANUARY 2003





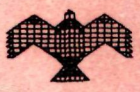
Editors' Note

This issue of NIAS NEWS marks the beginning of the twelfth year of publication of this newsletter, which began under the able stewardship of Major General M K Paul, our Controller. Although the format has changed significantly from what it was earlier, the contents continue to remain similar, providing you glimpses of the activities being carried out at the National Institute of Advanced Studies. We have, of course, now added brief summaries of the lectures and talks delivered at the Institute. What will not change, we hope, is the continued support that we have been receiving from our readers in the form of valuable suggestions and comments on how we can improve NIAS NEWS further – please do keep writing in!

With our warmest wishes for a wonderful new year,

Anindya Sinha, **Hamsa Kalyani** and
A Deva Raju,
Editors, January 2003

From the Director's Desk



This December has been very busy, with two courses offered on campus; and January promises to be even busier, with our annual course for senior executives and a major international Symposium on *Science and Beyond.*

A new item on our calendar this year has been a Winter School on the theme of *Systems Engineering.* This is a subject which has wide application, not only in industry but also in any major administrative project. The School was conducted in collaboration with the Stevens Institute of Technology, New Jersey, USA, the Indian Institute of Management Kolkata, and the Defence Research and Development Organisation. Apart from the many interesting lectures given as part of the course, a major additional attraction was a series of case studies, covering projects going all the way from the Tata Indica to the Simputer and the Light Combat Aircraft to Dosa King. How to plan and implement systems so that their operational effectiveness is ensured throughout their life remains an important problem facing many different sectors in the country.

This winter course was followed by another on the *Indian Space Enterprise,* organised for the Indian Space Research Organization. This was the fourth in the series, and we had once again a host of speakers from a wide variety of backgrounds: from Prof C N R Rao speaking on *Science as a Culture* to Dr Devi Setty on *Telemedicine* and Prof Sulochana Gadgil on the *Asian Brown Haze Controversy,* apart from a variety of other talks on matters more closely connected with space science and technology.

One event at NIAS that attracted an unprecedented audience was a lecture on *Cyborgs Unplugged*, by Prof Kevin Warwick of the University of Reading, UK. Prof Warwick has made experiments with silicon chip transponders surgically implanted in his own body, and with his nervous system linked to a computer. These ideas caught the imagination of a large number of young people in this IT city, and the questions that his audience had for him, in an overflowing JRD Tata Auditorium, seemed almost never to cease.

Almost exactly a year ago we had staged *Copenhagen*, a play by Michael Frayn about the mysterious war time meeting between Werner Heisenberg and Niels Bohr, two of the greatest physicists of this century, both concerned with the making of nuclear weapons during the war. As readers of NIAS Newsletter may remember, the play staged in 2002 was very enthusiastically received by the very knowledgeable audience that thronged the JRD Tata Auditorium. We therefore decided that the play should be put up once again, but without any cuts whatever in the text this time. This was a great gain, and we once again had a wonderful audience to watch the play put up by Dr Krishnamurthy of the Centre for Learning and his friends.

I take this opportunity to welcome Dr Padma Sarangapani, who has just joined the Sociology and Social Anthropology Unit as an Associate Research Fellow. She will work with Dr Vasavi coordinating on a new NIAS project on District Quality Education.

For a variety of reasons connected with the interests of the Institute and our faculty, two Units have recently been renamed. What used to be the Philosophy of Science Unit now becomes the Culture, Cognition and Consciousness Unit, and what used to

be the Science and Society Unit has acquired philosophy as part of its name. I hope that these new names reflect more closely the intellectual profiles of the respective Units.

I wish all readers a happy, peaceful and prosperous new year.

R Narasimha

Research Programmes

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

More specifically, the **Environmental Studies Unit** has just initiated a 30-month research project supported by the Department of Science and Technology, Government of India. The primary purpose of this project is to conduct detailed field investigations on the use and abuse of pesticides as well as record the changing scenarios of pests and diseases, and the problem of pest resurgence in different agro-climatic regions of India. The study

will also examine the longitudinal trends of pesticide usage in various Indian states, and identify and develop strategies to reduce the abuse of pesticides by the involved farming communities.

The **International and Strategic Studies Unit** has completed the project on Dimensions of Nuclear Deterrence in the Indian Context, funded by the Board of Research in Nuclear Sciences, Department of Atomic Energy (DAE), Mumbai, with the final presentation of the project report to DAE in December. The project on Prospects for Stability in a Nuclear Sub-continent, jointly funded by the United States Institute of Peace, USA and NIAS, has also been completed recently.

The **Science and Technology Policy Studies Unit** completed the Draft National GEF Strategy prepared for the Ministry of Environment and Forests, Government of India with funding from UNDP-GEF, New Delhi. The draft strategy identified the problems plaguing the current portfolio of GEF projects in India and proposed measures to address them. Several of the recommendations such as the establishment of an Inter-Ministerial Coordination Committee and the decoupling of the office of GEF Council Member from South Asia from the office of the Executive Director of the World Bank have been accepted by the Government.

The **Sociology and Social Anthropology Unit** has initiated a new research and outreach project called District Quality Education Project. The project will focus on developing the quality of elementary education in Chamarajnagar district in Karnataka and is designed in close collaboration with the education department of the state. A baseline study and feasibility review will be conducted

between December 2001 and July 2003. The actual outreach programme and its implementation will be conducted between 2003 and 2007. The project is supported by the Sir Ratan Tata Trust, Mumbai.

Publications

NIAS PUBLICATIONS

I. LECTURES

L3-02 The idea of God
R L Kapur

PAPERS

Kumar, A. 2002. Missile defense and strategic modernization in southern Asia. In: *The Impact of US Ballistic Missile Defences on Southern Asia* (eds M Krepon and C Gagne), The Henry L Stimson Center, Washington DC (Report No 46), pp 29-44

Kumar, A. 2002. US Ballistic Missile Defence Programme: Implications for China and India's Security. In: *India in a Turbulent World* (eds V T Patil and N K Jha), South Asian Publishers, New Delhi, pp 234-259

Sarukkai, S. 2002. Inside/outside: Merleau-Ponty/Yoga. *Philosophy East and West* 52 (4): 459-478

Shetty, P K. 2002. Ecological implications of pesticide use in agro-ecosystems in India. Proceedings of the Conference on Pesticide Stewardship, organised by the National Pesticide Stewardship Alliance, Seattle, USA; *http://www.npsalliance.org/Conf2002/2002NPSA.htm*

Sinha, A. 2002. Reflective consciousness and the emergence of memes: Serial evolutionary pathways? *Journal of Biosciences* 27: 637-643

CONFERENCE ABSTRACTS

Mallapur, A, Choudhury, B C, **Sinha, A** and Waran, N. 2002. Conservation breeding of an endangered macaque: The need for modernising macaque husbandry in India to initiate captive breeding programmes. *Caring for primates: Abstracts of the Nineteenth Congress of the International Primatological Society*, Mammalogical Society of China, Beijing, p. 86-87

REVIEWS

Vasavi, A R. 2002. We must tame the globe to benefit its poor. Book review of "Human Development in South Asia, 2001. Globalisation and Human Development", Mahbub ul Huq Centre, Oxford University Press, Karachi, 2001. *Times Higher Education Supplement*, London, October 18: 30

Vasavi, A R. 2002. Mapping multi-culturalism. Book review of "Mapping Multiculturalism" by K Deb (ed), Rawat Publications, Jaipur, 2002. *Book Review* 26(12): 8

ARTICLES

Kumar, A. A need to consider tactical nuke option for India. *Deccan Herald*, September 30

Kumar, A. Opportunity for India, Pakistan. *Deccan Herald*, October 28

Kumar, A. Pakistan's support of terrorism prevents peace with India. *Stanford Daily*, October 29

Kumar, A. First-use doctrine for effective deterrence. *Deccan Herald*, November 26

Kumar, A. Brothers in arms: Indo-US relations. *Vijay Times*, December 30

Commentary

CROP PROTECTION PRACTICES: A SOCIO-ECOLOGICAL PERSPECTIVE

P K Shetty
Environmental Studies Unit

This is a brief summary of a research report submitted to the Department of Science and Technology, Government of India

India is among the largest agricultural societies in the world. The agricultural sector contributes nearly 26% of gross domestic production and it provides a livelihood to a majority of its one billion people. Agricultural production has recorded remarkable growth over the past few decades. Although the high-yielding varieties have contributed significantly towards improving production, these varieties are more demanding and their intensive use has tremendously increased the need for inputs such as irrigation, pesticides and fertilisers. However, the very agro-inputs responsible for increasing agricultural production are slowly showing signs of threats to the environment, health and the socio-economic well-being of the community. Besides, monoculture and continuous cultivation of improved

varieties, overlapping of cropping seasons, and excessive application of agro-chemicals, have resulted in high incidences of pests and diseases in many parts of the country.

Synthetic pesticides are one of the major agro-inputs that significantly contributed to the agricultural production in the country. These chemicals have become an inevitable input and constitute an integral part of modern crop-management practices. However, its consumption in India has not been uniform. It varies with the cropping pattern, intensity of pests and diseases as well as agro-ecological regions. Pesticide use is particularly high in regions with good irrigation facilities and also in those areas where commercial crops are grown. For instance, cotton is grown in only 5% of the total cropped area but consumes 50-55% of pesticides used in the country. Similarly, paddy is cultivated in 24% of the cropped area and receives 17-18% of total pesticides used in the country. In spite of an increase in the use of pesticides, annually about one third of the potential food production is lost to crop pests. Many innocuous pests of previous decades have attained the status of serious pests in recent years. Problems of pest outbreak, resistance and resurgence of insect pests, in turn, demand more pesticides. Consequently, frequent crop loss, increased expenditure on agro-inputs, high debts, and fluctuation in market price have put many farming communities in deep economic and psychological distress.

Keeping these points in view, a field investigation was carried out to look into the use (and misuse) of pesticides in a few selected pesticide hot-spots of Karnataka (Raichur and Bellary), Andhra Pradesh (Guntur and Warangal), Punjab (Bhatinda) and Maharashtra (Nashik) with the help of pre-tested schedules. The respondents for

the study included farmers, agricultural labourers, pesticide sellers, agricultural officers and medical specialists. A sample size of 300 respondents from 48 randomly selected villages was used for the study.

Modern agriculture has brought about several changes in the farming community in these regions. The majority of the farmers are greatly influenced by the market, agricultural extension, agro-industrial agencies, credit institutions and government policies with respect to the crops to be cultivated in their fields. Farmers thus take up cultivation of only those crops that give them maximum returns. They continue to grow these lucrative crops, even if they incur losses in a season or two, in the anticipation of getting better returns in the following seasons. The change in cropping pattern in the hot-spots is finally a cumulative result of improved irrigation and easy availability of agro-inputs. However, the agro-ecological setting is never given much priority while deciding on the cropping pattern in these regions. Farmers shifted from traditional dry, region-specific crops such as coarse cereals, small millets, and barley to irrigation-intensive, non-region-specific crops such as paddy, sugarcane, cotton, or vegetables. Monoculture and continuous cultivation in the hot-spots have thus led to the decline in the genetic base of most of its crops, and have made these agro-ecosystems very susceptible to crop pests.

The respondents in the hot-spots were concerned about increasing crop losses due to brown plant hopper in paddy, bollworm and whitefly in cotton and diamondback moth in cole-crops. Apart from these, several other important insect pests and diseases also brought about serious economic losses in these regions. The farmers in the hot-spots prefer to use

chemical pesticides over bio-pesticides, because these chemicals have an immediate knock-down effect and are easily available in the local market. The prophylactic and remedial uses of insecticides are widely prevalent in these hot-spots. Besides, farmers were found to follow several unusual agronomic practices and uncommon combinations of pesticides to overcome the problem of insect pests. Defective pesticide spraying, sub-lethal or over-dosages coupled with spraying of spurious insecticides have also aggravated the problems of pests in the hot-spots. It was observed that pesticides occupy a major share in the cost of cultivation and accounts to about 40-50%, 25% and 38% for the cultivation of cotton, paddy and cole-crops respectively.

While the respondents in the hot-spots are confined to a few generic pesticides, the majority of them follow their own spraying schedules and doses. The respondents were found to increase the number of sprays or take up mixing of different groups of insecticides, depending on the severity of attack of pests and diseases. In Raichur and Bellary, farmers take up an average 15-20 sprays per season to control paddy pests, whereas the recommended number of sprays are only 8 per cropping season. Some farmers in the hot-spots were also found to spray under-doses. In Bhatinda, although the package of practice recommends 600 ml/acre of triazophos to control cotton bollworm, farmers were found to apply only 500 ml/acre. These practices in the hot-spots have thus resulted in development of resistance to most of the available insecticides. The continuous use of pesticides in the hot-spots also resulted in the decline of natural enemies of insect pests – one of the main reasons for resurgence. With the present pattern of pesticide use, the sustenance of non-target

organisms, i.e. beneficial organisms, predators, parasites, and pollinating insects is greatly jeopardized. Overuse of pesticides has brought about a decline in the bio-diversity of non-target organisms in many of the hot-spots. The respondents in the hot-spots revealed that a significant decline in population of birds, earthworms, natural predators like green lacewing, *Chrysoperla carnea*, ladybird beetles, spiders, *Apanteles* spp., *Trichogramman* spp., *Cheloanus blackburni*, etc., were noticed in their fields.

It was observed that farmers usually make a short-term assessment of pesticide use. They invest more money on crop protection chemicals in order to get maximum returns. Unfortunately, they fail to take into account the health risks and medical expenditure associated with this. Moreover, the loss of money due to loss of labour during sickness or poisoning, or the loss of ability or potential to work due to their ill health, is not considered at all while calculating the net returns. The pesticides commonly used and known to cause health problems in the hot-spots belong to the following group of WHO classification – Class Ia (extremely hazardous) – phorate and phosphamidon; Class Ib (highly hazardous) – monocrotophos; and Class II (moderately hazardous) – quinalphos, endosulfan, demacron, cypermethrin. The farmers neither read the instructions given on the labels of the pesticide containers nor wear any protective clothing while spraying. Farmers in the hot-spots also do not follow the recommended intervals of re-entry after spraying and the minimum waiting period between spraying and harvest.

Most of the farmers, who have taken up modern agricultural practices, are in high debts in these regions. Many of the small and marginal farmers prefer to take loan from private finance corporations because

of quick and easy accessibility and less procedural delay. However, when these farmers are faced with crop loss due to un-seasonal rains or outbreaks of pests and diseases, they are answerable to the moneylenders and local merchants from whom they have purchased the seeds and chemicals on credit. Also, agricultural labourers usually demand more wages or share from harvested crops during adverse climate conditions. The inconsistency in the market prices and other reasons sometimes results in farmers taking up the extreme step of ending their lives prematurely by committing suicide.

In addition, the use of costly inputs such as pesticides has its adverse impact on the socio-economic status of the farming community. There are no detailed studies on the socio-economic costs associated with pesticide use in India. Farmers in the hot-spots are over-burdened with increasing costs of cultivation, a deleterious credit system, declining productivity, increased incidences of pests and diseases, as well as spurious pesticides. The sole reliance on chemical pesticides for plant protection has thus created serious problems. The development of resistance and resurgence of insect pests has aggravated the situation to a pesticide treadmill. However, crop protection cannot be neglected. When the country's natural resources are shrinking, prevention of crop losses due to pests and diseases is necessary to increase agricultural production and to ensure food security. The concept of group farming, which has a primary objective of reducing the cost of farming among small and marginal farmers, needs to be initiated. Government and Non-Government Organisations (NGOs) need to promote programs on education about need-based and judicious use of plant protection chemicals and also the concept of eco-friendly farming; these will ensure

long-term food security and environmental safety.

DOCTORAL PROGRAMME IN NIAS

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

One constraint that NIAS has functioned under so far has been the lack of a doctoral programme whereby young students are trained in the research areas that the Institute has traditionally been interested in. There is, however, an urgent need for such a programme for two principal reasons. First, the unique multidisciplinary academic culture that NIAS has so carefully been building up over the past years has to be nurtured and not allowed to dissipate with the passage of time. This would require that young, talented, and committed students are identified and absorbed into the organisation — they would then serve as torchbearers into the future. Second, much of the research being conducted in the Institute, being of an interdisciplinary nature, requires cooperation between a number of specialists. Large groups such as these would definitely benefit from young researchers of different disciplines who can actively contribute to the progress of the group in their respective areas of expertise.

It must also be noted that there has been, in recent times, increasing awareness and interest in issues relating to the interfaces between the natural sciences, technology

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

Anindya Sinha

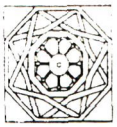
HONOURS FOR NIAS FACULTY

Sangeetha Menon

Featured in the inaugural section on "Meet the Researchers" of the Journal of Transpersonal Psychology, 2002, Volume 34, Number 1, pp 67-71

Sharada Srinivasan

Invited as a Visiting Faculty at Uppsala University, Sweden, November 17-28



New Faces at NIAS

Padma M Sarangapani

Dr Padma M Sarangapani has joined the Sociology and Social Anthropology Unit as an Associate Research Fellow. She has an MSc in Physics from IIT Madras and a doctorate in Education from Delhi University. Her academic interests are anthropology of childhood and learning, elementary education, curriculum studies and teacher education. She has been a recipient of the Fulbright predoctoral fellowship and the Indira Gandhi National Fellowship of the IGNCA, New Delhi. Her book – Constructing School Knowledge: An Ethnography of Learning in an Indian Village – is to appear in 2003 from Sage, New Delhi. At NIAS she will be the co-coordinator for the new project on District Quality Education.

...AND NEW UNIT IDENTITIES

Culture, Cognition and Consciousness Unit

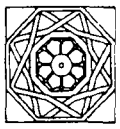
The Philosophy of Science Unit now exists in a new *avatar*: the Culture, Cognition and Consciousness Unit. Comprising B V Sreekantan, Anindya Sinha, Sangeetha Menon, Sharada Srinivasan and Sindhu Radhakrishna as faculty and M D Madhusudan as research scholar, this Unit continues to have diverse research interests. A primary focus is on an understanding of cognition and consciousness from different view-points: as scientific processes in the brain with their implications for philosophy of science, as experiential issues in Indian psychology, philosophy and dramaturgy, and as biological mechanisms in animals, particularly primates.

The Unit is also interested in wildlife studies and conservation biology – including primate behavioural ecology, primate communication, and human-wildlife interactions – and in captive animal welfare.

Finally, the Unit conducts research in art history and archaeo-metallurgy, especially the finger-printing of metal icons, and in the development of methodologies for the digital preservation of ancient manuscripts.

Philosophy, Science and Society Unit

The Science and Society Unit, with R L Kapur, Sundar Sarukkai and M G Narasimhan as its faculty and S K Uma as research scholar, has changed its name to Philosophy, Science and Society Unit in order to emphasise its continuing research interests in the history and philosophy of science.



Important Events

Complementing its research programmes, NIAS organises a variety of seminars, workshops, and academic courses each year. Some of the important events that were organised during the period from October to December 2002 included:

DISCUSSION MEETING ON TECHNOLOGY TRANSFER AND INTERNATIONAL SECURITY

November 20

In this discussion meeting, organised by the International and Strategic Studies Unit, Dr Ellen L Frost, Visiting Fellow, Institute for

International Economics and Adjunct Fellow, Institute of National Strategic Studies, Washington DC, USA, spoke on US regulations in technology transfer in the light of international security. Representatives from different organisations participated in this meeting and exchanged views, especially on dual use items.

S Rajagopal

NATIONAL CONFERENCE ON WOMEN AND WATER NETWORK

November 25-27

In recent years there has been a global recognition of the limitations of water resource development. Fragmentation of water into its various existential forms finds its reflection in the fractured conceptualisation of development of water resources for domestic, agricultural, industrial and other uses. The overemphasis of the technical aspects has resulted in the lack of application of developmental and equity principles in this important sector. The absence of social scientists particularly women has resulted in marginalising gender concerns, which is central to any discussion on water. As a result the role of women in the policy, management and distribution of water has been relegated to the background.

The Women In Water Network – India, an evolving network of recent origin, aims to bring together different stakeholders, including grassroots organisations, researchers, water professionals, social scientists, policy makers and women's organisations. The purpose is to effect a paradigm shift for the creation of alternatives and reinforce a new trajectory that reflects, articulates and translates

gender concerns. This network, having its origin at the grassroot-level, has been built on the basis of the consultations had at the network meetings that have been established – one each in north and south India. Realising the importance of increasing the outreach of these networks to include individuals and organisations as well as all stakeholders, the south India network has also initiated and established state-level networks. The Karnataka Water Network is an initiative taken by the Gender Studies Unit of NIAS.

The idea of forming a national-level Women in Water Network was conceptualised during the two-day national workshop held in NIAS on November 25-26, organised jointly by the Gender Studies Unit and the Women and Water Network South India, supported by UNIFEM. The workshop had more than 60 participants representing 14 states as well as different stakeholders comprising of scientists, water professionals, social scientists, researchers, NGOs, women's organisations as well as community leaders. Presentations were made and discussed under the four broad themes of Gender and Water, Gender and Policy, Gender Issues in Management of Water and Best Practices. This national network is yet to be formalised and therefore to facilitate the process, an interim steering committee, comprising nine members representing the different regions in the country has been constituted. NIAS has been identified as the anchor institution for the network.

The issues identified by the participants to be addressed by the network on a priority basis are:

There is the absence of a critical number of women in mainstream dialogue on issues relating to water from a gender perspective.

There is also the lack of integration of gender concerns emerging from the grassroots in such dialogue, which is reflected in the policy documents of both the states (of those which have) and the nation. In order to fill these gaps, there is a need to:

1. Increase the number of individuals and organisations, particularly that of women, so that they become representative of the voice of women in the country. Members of the steering committee and the participants decided to disseminate, at the local levels, information regarding the emergence of this network, its objectives and the need to be a part of it to facilitate and influence decisions in the sector that would integrate the concerns of women.

2. The main role of the network would be to identify the gaps in research and conduct research with a gender perspective. The participants felt the need to prepare a country status paper, which would not only collate statistics, studies, etc and make a situational analysis but also critique the existing policies and identify areas that require additional research.

3. The participants felt that the network should play an active role in the documentation and dissemination of experiences and information, in current debates, campaigns, consensus building and advocacy to influence policy.

N Shantha Mohan

WINTER SCHOOL ON SYSTEM OPERATIONAL EFFECTIVENESS: SYSTEMS ENGINEERING AND PROFITABILITY

December 2-7

This winter school was hosted by the International and Strategic Studies Unit in association with the Defence Research and Development Organisation (DRDO), Stevens Institute of Technology (SIT), New Jersey, USA, and the Indian Institute of Management (IIM), Kolkata, as part of a DRDO-funded project on Systems Engineering Approaches to Mega Projects. The main faculty were from SIT and IIM with the course featuring case-studies and guest lectures covering a gamut of projects – the Light Combat Aircraft, the Tata Indica, the Mahindra Scorpio, the Maini Reva, Pico-Peta's Simputer, Dosa King, the Raichur Power Station expansion project, and the greening of Leh. The participants were mostly senior DRDO systems engineers, and the aim of the course was to develop a holistic (concept to completion) approach to the development, implementation and marketing of major projects, which demand a 'systems' approach, covering not only engineering challenges, but marketing and financial issues as well.

Modern, high technology platforms are complex creations that pose challenges in terms of high costs, time to market/ deployment, the requirement of high levels of technical skills spanning a range of scientific and engineering disciplines, and managerial and financial skills. Time and cost over-runs and technological hurdles are features of almost every major 'systems' project, either in core sectors of the government like defence, space, atomic energy and power, or in the private sector.

Systems engineering, system operational effectiveness, and related questions of life-cycle analysis and profitability therefore need to be studied in contexts relevant to our needs and experiences, with a view to evolving powerful ways of integrating high-performance functionality, reliability, maintainability and supportability.

Sridhar K Chari

FOURTH ANNUAL ISRO COURSE ON THE INDIAN SPACE ENTERPRISE: TECHNOLOGY FOR A SUSTAINABLE DEVELOPMENT

December 16-21

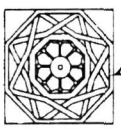
The theme of this annual course for a group of 38 senior engineers from ISRO was Technology for Sustainable Development. As in previous years, this group was identified by ISRO as potentially constituting its future leadership and the purpose of the course was to offer views of the broader horizons necessary for the establishment of goals for the Indian space program in the coming decades.

The course was inaugurated by Prof U R Rao, the former Chairman of the Department of Space. Dr R C Chidambaram, Principal Scientific Advisor to the Government of India, delivered the valedictory address. As it typical for NIAS courses, the lectures and presentations were from several disciplines including science and technology, music and the arts. Among the highlights of the course were a visit to Infosys, hosted by Mr K Dinesh, Co-founder and Member of the Board, Infosys Technologies Limited; and lectures by Prof Ashok Jhunjhunwala on bringing the Telecom Revolution to Rural Areas, Mr Prabhakaran on the Role of Technology in

Scientific Enterprises and by Prof Shekhar Singh on Ethics in Public Life. The complete agenda is reproduced below.

- *Inaugural Address* U R Rao
- *Space technologies for universal access of IT* Swami Manohar
- *Uses of Space Data* Ravi Gupta
- *The Asian Brown Haze Controversy* Sulochana Gadgil
- *Carnatic Music Concert – Vocal* M S Sheela
- *Sustainable Development and the Role of Technology* Sharad Lele
- *Commercialisation of Satellite Communications* K Narayanan
- *Bringing Telecom Revolution to India's Rural Areas* Ashok Jhunjhunwala
- *Is Planning in India Still Relevant?* L C Jain
  Science as a Culture: A Critical Appreciation C N R Rao
- *International Space Law* V S Mani
- *Emerging Indian National Innovation System* R T Krishnan
- *Infosys—Corporate Presentation* K Dinesh
- *Interpersonal Dynamics in Indian Organizations* R L Kapur
- *Bureaucracy's Role in Scientific Enterprises* Prabhakaran
- *The Currency of Ideas* Rahul Matthan
- *Ethical Issues in Public Life* Shekhar Singh
- *Telemedicine* Devi Shetty
- *Is the Universe a Simple Program?* R Narasimha
- *Geo-techno-politics and India's role in its changing dynamics* V Siddhartha
- *Indian Mission to Moon: Challenges and Prospects* George Joseph
- *Planning a Metropolis – Vijayanagara City* S Settar
- *Computer-based Self Learning* Sugata Mitra
- *Leaders we have worked with: Bhabha, Sarabhai and Dhawan* B V Sreekantan, U R Rao and V Siddhartha
- *India's Nuclear Energy Option* R Chidambaram

Dilip Ahuja



Associates' Programme

The Institute maintains a strong outreach with its Associates Programme, organised by ***P K Shetty****. The Associates of the Institute include prominent personalities from widely*

different backgrounds in the media, arts, policy-making and academia. Associates are invited to a monthly evening lecture series and other important events, and constitute a strong base of ongoing outside support and interactions for the Institute.

The Associates' Programmes during the period from October to December 2002 included the following events:

October 3 — Ethics without metaphysics
Hilary W Putnam
Cogan Professor
Harvard University
USA

Since the time of Plato, philosophers have sought for an objective foundation for ethics, or failing to find one, have sought to debunk the very idea of an objective ethics. This lecture, jointly organised with the Indian Council of Philosophical Research, described the controversy and defended the view that the objectivity of ethical judgement needs no foundation external to ethical life itself.

December 10 — Copenhagen
A play written by Michael Frayn, with Gerard Bayle as Niels Bohr, Gopal Krishnamurthy as Werner Heisenberg and Isabell Brand as Margarethe Bohr

Jointly organised with the Centre for Learning, Bangalore, this play is an

explosive re-imagining of the mysterious wartime meeting between two Nobel laureates to discuss the atomic bomb. In 1941 the German physicist Werner Heisenberg made a clandestine trip to Copenhagen to see his Danish counterpart and friend Niels Bohr. Their work together on quantum mechanics and the Uncertainty Principle had revolutionised physics. But now the world had changed and the two men were on opposite sides in a world war. Why Heisenberg went to Copenhagen and what he wanted to say to Bohr are questions that have vexed historians ever since. In Michael Fray's ambitious, fiercely intelligent and daring play, Heisenberg and Bohr meet once again to discuss the intricacies of physics and to ponder the metaphysical – the essence of human motivation.

December 20 Computer-based self learning

Sugata Mitra
National Institute of Software Technology
New Delhi

Development in the 21st century will be determined to a large extent by the thought, action and imagination of

young people. This in turn is shaped by the education system. The talk examined the current systems of education and analysed why they are often perceived as irrelevant. A new structure for determining what should be taught and in what order was proposed. The results of several experiments conducted in the area of self-instruction was also described. Based on observations from these experiments as well as from constructivist theory, an approach named Minimally Invasive Education was proposed and the process discussed. The analogy and role of self-organising systems in future education were also mentioned in this lecture.

Wednesday Discussion Meetings

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

The Wednesday Discussion Meetings during the period from October to

December 2002 have included:

September 25 Shortsighted about the shortwing? Ecology, behaviour and conservation of a threatened endemic bird, the White-bellied Shortwing
Robin V Vijayan

The White- bellied Shortwing is a globally threatened bird, found exclusively in the Western Ghats. There are now serious concerns about its survival with increasing loss of its prime habitats. This talk introduced the species and its habitat, outlined the threats that both are facing and highlighted possible effective conservation strategies on the basis of a recently-concluded two-year study of the current distribution and status of the bird. Plans for a future investigation on the ecology and behaviour of the species for its conservation, to be carried out in NIAS, were also be presented at the talk.

October 9 The enigmatic Wootz steel: Preliminary findings from Mel-siruvalur
Sharada Srinivasan

According to late medieval European accounts, high-grade steel was being made in parts of southern India much before it came into vogue in Europe. It was known as Ukku in many south Indian languages, and was referred to by the Europeans as Wootz steel. Legend has it that it was used to make the fabled Damascus swords. Despite these literary accounts, there is not much that is concretely known about the antiquity, modes of production, and properties of this remarkable steel. Mel-siruvalur, in Tamil Nadu, a previously unknown site uncovered by the author,

shows some of the most comprehensive and exciting preliminary evidence to date supporting the early production of Wootz steel.

October 16 — Elementary education: A vocation or a profession?
Padma M Sarangapani

In spite of enormous policy and social activism in elementary education, this field of study is not represented in institutions of higher education. The reasons why elementary school teaching has remained a vocation, and the study of elementary education in the universities is neglected, were examined in this talk. An argument for professionalising this area was also made during the presentation.

November 6 — Some paradoxes and '*rangoli*' problems in mathematics
K Ramachandra

Many mathematicians like Ramanujan, Gauss and Dirishle have considered aspects of what are known as lattice point problems, which I refer to as 'rangoli' problems. The talk discussed some aspects of these problems at a popular level.

November 13 — Relief from suffering: Western psychotherapy or Eastern spiritual practices?
R L Kapur

It has become fashionable lately to advocate eastern spiritual practices for clients who approach mental health professionals for relief from psychological distress. This is happening not only in India, but also in the West, where a new school of psychotherapy based on Eastern spiritual practices is flourishing under the heading 'Transpersonal Psychology'. The talk

critically examined this movement and shared the concerns that have emerged regarding the role of Eastern spiritual practices in dealing with day-to-day mundane problems of living, for which clients consult psychiatrists. This was preambled with an introduction to the concepts on which psychotherapy and Eastern spiritual practices are respectively based.

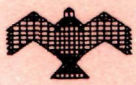
November 27 Man and God playing dice
Prabhakar G Vaidya

In this lecture, the speaker examined the role that games of chance, gambling and risk-taking play in our personal and intellectual lives. These issues have concerned theologians, economists, psychologists and mathematicians for a long time. The speaker discussed the background history of three Nobel prizes in Economics, which resulted from some simple questions in this area. More particularly, the problems of quantum mechanics and chaos were addressed and the talk finally ended with a mathematical puzzle.

The **guest lectures** at the Wednesday Discussion Meetings during this period included:

October 23 Internal consistency of eclipses and planetary positions in the *Mahabharata*
R N Iyengar
Bangalore

The speaker, while searching for natural disasters in ancient India, came across several citations to earthquakes in Mahabharata. The question arises, are these historical and can they be dated? The ancient Sanskritic intellectual tradition of



India holds that Mahabharata reports national history. However, this belief has depended more on an unbroken tradition, rather than on physical evidence. The single most important physical source available for present-day study is the text of Mahabharata itself. It is unlikely that later reciters and copyists of the epic would have tampered with descriptions of natural phenomena like eclipses even though transmission errors cannot be ruled out. Hence, such celestial observations would become the most important physical evidence if they can be scientifically investigated. Planetarium software are powerful tools for computer-based searching of thousands of possibilities and for sifting through obscure texts on celestial events. Results of such an exercise were presented in this talk. The results led to the conclusion that the eclipses and planetary observations of Mahabharata are internally consistent and could have been observed during 1493 BC-1443 BC.

October 30 — Remote handling and robotics
M Ramkumar
Former Director
Robotics and Remote Handling
Bhabha Atomic Research Centre, Mumbai

The talk covered aspects of telemanipulation, robotics and automation for remote applications, especially for hazardous environments and inaccessible locations. A short video presentation also accompanied the lecture.

November 20 — Road-blocking dynamic urban economies: Evolution of an "anti-politics machine" in the pursuit of modernisation?

Solomon Benjamin
Bangalore

Recent studies of urban economies show an amazing dynamic underlying Indian cities. There are many political and institutional insights that emerge from a closer look at the way Bangalore is "modernised". The city is not a neutral terrain but one where big business competes for productive location and subsidised civic infrastructure. In this situation, we also find that newly promoted 'urban renewal' schemes prove regressive to local economies. They also seem to accentuate urban divides and polarise society. If so, can one replace the homogenised vision of modernisation with a more complex view of urban change? If the economy of cities emerge out of pluralistic societies undergoing incremental transformation, can one conceptualise a different planning process?

SPECIAL PROGRAMMES

There were four public lectures, one film show and one public concert organised at the Institute during the period from October to December 2002.

Public lectures

October18 — Cyborgs unplugged
Kevin Warwick
University of Reading
United Kingdom

Prof Warwick, who has carried out extensive research in artificial intelligence, robotics and allied areas, has been described as Britain's leading prophet of the robot age. Beginning in 1998 he has made experiments on himself with silicon chip transponders surgically implanted and

his nervous system linked to a computer. His most recent implant experiment, called Project Cyborg, got underway in March 2002 and the results of this project, announced in his recent book 'I, Cyborg', formed the basis of the talk.

December 17 Science as a culture: A critical appreciation
C N R Rao
Linus Pauling Research Professor
Jawaharlal Nehru Centre for Advanced Scientific Research
Bangalore

December 19 Telemedicine
Devi Shetty
Managing Director
Narayana Hrudayalaya
Bangalore

The new paradigm of health care delivery has been termed telemedicine,referring to healthcare practice at a distance. Most disease management is based on history, haematology, biochemical reports and images. As all of these can be transferred electronically a specialist at any location can deliver quality care through telemedicine. The synergism achieved by integrating information and communications technology with health care has been achieved through telemedicine and has facilitated treatment of emergency cases on real time resulting in valuable lives saved, especially in cardiac emergency cases.Tackling the challenges of the escalating health care cost and of taking modern medicare to rural and remote areas has become possible with telemedicine. Nearly five thousand patients have already been benefited from the Integrated Telemedicine and Telehealth Project, supported by several state

governments and the Indian Space Research Organization.

December 21 — India's nuclear energy option
R Chidambaram
Principal Scientific Adviser to Government of India

Film show

September 24 — Inherit the Wind

This is a classic film about the Scopes trial in Tennessee, USA, in 1925, which pitted William Jennings Bryan against Clarence Darrow in a landmark trial at which teacher John Scopes was accused of teaching evolution in his class.

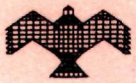
Public concerts

August 13 — Carnatic classical music – A vocal recital
Vidushi M S Sheela and party
Bangalore

SEMINAR ON THE HISTORY OF IDEAS

NIAS and Raman Research Institute (RRI), Bangalore, are organising a monthly Seminar on the History of Ideas, meeting usually on the second Friday of every month in NIAS. The organising committee consists of R L Kapur, N Kumar, R Narasimha and M G Narasimhan (Convener). The talks in this series held during the period from October to December 2002 included:

October 11 — The idea of evolution
Amitabh Joshi



Jawaharlal Nehru Centre
for Advanced Scientific
Research
Bangalore

The idea of biological evolution – of descent with modification – has wrought one of the most comprehensive intellectual revolutions in human history. No other scientific idea has so profoundly altered the way in which we think about the world, and no other scientific doctrine has sparked so much continuing criticism, abuse, fear and hate. One of the principal tasks facing thinkers trying to understand the world since the earliest civilisations has been to explain the diversity, relatedness and adaptedness of living forms. Darwin's theory of evolution through natural selection is one idea in biology that has managed to do that. There are several ways in which Darwin's idea has changed the weltanschauung of biologists in particular, and intellectuals in general. The talk discussed the backdrop of Darwin's work and its integration with genetics to provide the only grand theory in biology and focused on some of the applications of evolution, the common misconceptions about evolution and their implications for science and society.

November 8 Death conquering death: Indian philosophy and the practice of termination of life
S Settar
NIAS

Cessation of breathing and suspension of neural and cerebral behaviours are the obvious and outward indications of the body appropriated by death. This could be a broad description of the dead, but it could hardly be an acceptable definition of death. Questions of the kind – what is death, how

has it been conceived by primitive and mature minds, are there varieties of death, what is natural and unnatural death – arise. That death is all-pervasive and, till date, an inescapable phenomenon, has been more or less accepted universally, but qualifying this should be a statement that though death marks the end of the road for the journeying body, the journey is continued even after the collapse of the biological frame. The main framework of the enquiry in the lecture would be Indian, with special accent on the view of Jains, who dealt with death in great depth.

December 13 The idea of chaos
Prabhakar G Vaidya
NIAS

The talk discussed the 'chaotic' history of the idea of chaos. This history has two distinct streams. One is the narrative of the applied scientists (mostly in physics, but also in engineering, biology and economics) and the other is the story of mathematicians. The two streams occasionally influenced each other but most followers of one of the paths were ignorant of the achievements of the other for a long time. Coming to the present time, it seems that we are about to end a chapter in this history whose title might have been: 'Isn't it wonderful, everything is chaotic?' and we have just begun a chapter called 'So, how does it affect my day-to-day work?' The interaction of the idea with other disciplines and its possible growth in the future were also discussed in the talk.

NIAS LITERARY FORUM

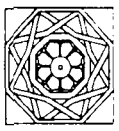
This forum has been established in the Institute to pursue and conduct literary activities such as play-reading, reading of poetry (one's own or others'), reading of

short stories and the like. These activities are aimed at providing complementary support to the Institute's more regular work. The activities are open to all members of the NIAS fraternity and occasional guests from outside the Institute as well. Currently, this forum meets on one Wednesday every month. For more details about its activities, please contact **M G Narasimhan.**

On December 11, S Settar, NIAS, shared his thoughts on various aspects of art, literature, and culture and also led a discussion on the future activities of the Forum.

CONSCIOUSNESS DISCUSSION FORUM

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



Meetings attended and Lectures delivered by NIAS Faculty

OCTOBER TO DECEMBER 2002

Dilip Ahuja

Attended the Eighth General Conference and the Thirteenth General Meeting of the Third World Academy of Sciences, New Delhi, October 20-24

Attended the Meeting of the GEF Review Mission, UNDP, New Delhi, October 22

Attended the Eighth Conference of the Parties to the Framework Convention on Climate Change, New Delhi, October 28-31

Attended the Inter-Academy Council Energy Study Workshop, Chinese Academy of Sciences, Beijing, November 20-21

Made a presentation entitled "Developing the Draft National GEF Strategy", a briefing to the Government of India, chaired by the Secretary, Ministry of Environment and Forests, Paryavaran Bhawan, New Delhi, December 30

B K Anitha

Presented a paper on "The central issues related to the formation of the Women and Water Network" at the National Workshop on Women and Water Network, Bangalore, November 25

Participated in the Second South Asia Forum, organised by the Pakistan Water Partnership, Islamabad, Pakistan, December 14-16

Participated in the South Asian Women and Water Network Coordinators' Meeting, organised by SASTAC, Islamabad, Pakistan, December 17

Sridhar K Chari

Presented a paper entitled "Nuclear weapons and strategic stability" at the Eighth ISODARCO Beijing Seminar on Arms Control, Beijing, China, October 14

H K Anasuya Devi

Attended the International Course on Soft Computing Approach to Pattern Recognition and Image Processing, organised by CIMPA UNESCO – INDIA, Kolkata, December 1-14

Arvind Kumar

While in the USA as Visiting Research Scholar at the Sandia National Laboratories and Visiting Fellow at the Institute of International Studies, Stanford University, made presentations at the Center for Non-Proliferation Studies, Monterey, October 31; US State Department, Washington DC, November 17; Center for Non-Proliferation Studies, Washington DC, November 18; Brookings Institution, The Henry L Stimson Center, and the Woodrow Wilson Center for International Scholars, Washington DC, November 19-21; and the Sandia National Laboratories, Albuquerque, December 11

Sangeetha Menon

Delivered a public lecture entitled "Self-exploration and consciousness in classic Hindu thought" at the Western Michigan University, Kalamazoo, USA, October 7

Delivered the Annual Honors Program Lecture entitled "Consciousness studies:

Interdisciplinary discussions and Indian thinking" at Spelman College, Atlanta, USA, October 10

N Shantha Mohan

Participated in the Regional Workshop on Sustainable Livelihoods and Drought Management in South Asia: Issues, Alternatives and Future and chaired a session on Incidence, Livelihood Impacts and Management of Droughts in India: An Overview, Islamabad, Pakistan, October 26-30

Conducted a session on Sexual Harassment at the Work Place for senior executives, organised by the National Institute of Public Administration, Bangalore, November 22

Presented the concept paper on "Women and Water Network" at the National Workshop on Women and Water Network, Bangalore, November 25

Presented a paper on "Gender and the role of police in curbing violence against women" for senior police officials at the Vertical Interaction Course on Gender Justice and Role of Police, organised by the National Institute of Public Cooperation and Child Development (NIPCCD), Bangalore, December 9

Participated in the Workshop on Integrated Water Resource Management in South Asia: Global Theory, Emerging Practice and Local Needs and chaired a session on Water Allocation and Agriculture, Marawila, Sri Lanka, December 20-22

R Narasimha

Delivered two talks entitled "Models and/or algorithms?" and "Is Stephen Wolfram doing a 'new kind of science'?", NIAS Forum on Foundational Issues in Natural and Social Sciences, October 7 and 28

Delivered the keynote address at a meeting to foster communal harmony, Hope for Peace, Bangalore, November 17

Attended the brain-storming session on Science in India, organised by the Centre for Studies in Civilizations, New Delhi and delivered a lecture on "Classical Indian astronomy as Computational Positivism", India International Centre, New Delhi, November 23

Delivered the Monthly Symposium on "A working scientist's thoughts on the *Yôga-Vâsis?t?ha*", Centre for Studies in Civilizations, New Delhi, November 23

Delivered the Dr Biren Roy Memorial Lecture (2001) of the Indian National Science Academy on "The Megha-Tropiques: a satellite for atmospheric research in the tropics", Regional Research Laboratory, Thiruvananthapuram, November 28

Attended the CISAC Meeting on Asian Regional Security and Economic Development, Honolulu, USA, December 2-7

Served as Chief Guest at the ISTAM 47th Congress, IIT Guwahati and delivered a lecture entitled "The Megha-Tropiques, a new satellite for atmospheric research", December 23

Inaugurated the 38th Annual Conference of the All India Teachers' Association on Sustainable Development, NEERI, Nagpur, December 27

M G Narasimhan

Delivered a lecture on "Controversy in science" at the Bangalore Science Forum, November 13

Delivered a course of lectures on the History, Philosophy and Sociology of Science at the Indian Institute of Science, Bangalore. These included talks on "Science in history" on November 15 and "Scientific revolution and the origins of modern science" on November 19

Attended a Discussion Meeting on Logic of Discovery: Popper's Approach using Critical Rationalism and made a presentation on "Popper's critique of Darwin's theory of evolution by natural selection", Centre for Mathematical Modelling and Computer Simulations, November 27

S Rajagopal

Delivered two invited lectures on "Sustainable development: Nuclear energy programme" and "Sustainable peace: Role of nuclear treaties" for the students of University of Iowa, USA, Dhyvanyaloka Centre for Indian Studies, Mysore, October 22

Sundar Sarukkai

Delivered two lectures on "Nature of scientific discourse" at the National Workshop on Philosophical Aspects of Scientific Discourse, organised by the Forum of Contemporary Thought, M S University, Vadodara, October 29-31

Delivered a course of three lectures at the Centre for Theoretical Studies, Indian Institute of Science, Bangalore – "Scientific knowledge", November 8; "Philosophy of space", November 13; and "What is an object?", November 22

Delivered a talk entitled "Illogic of discovery: Mathematics and reality", Chautauqua on Popper, Centre for

Mathematical Modelling and Computer Simulations, Bangalore, November 27

Served as a discussant at the International Seminar on ICTs and Indian Development, Bangalore, December 11

S Settar

Delivered a lecture entitled "Death conquers death: Indian philosophy and the practice of termination of life" under the History of Ideas Series, NIAS, November 8

Delivered the inaugural lecture entitled "Kannada (literary) scholars and the writing of Karnataka history", UGC Refresher Course for History Lecturers, Kannada University, Hampi, November 18

Delivered a lecture entitled "Planning a metropolis: Vijayanagara", Fourth Annual ISRO Course, NIAS, December 20

P K Shetty

Attended the Conference on Pesticide Stewardship, organised by the National Pesticide Stewardship Alliance, USA and delivered a talk on "Ecological implications of pesticide use in agro-ecosystems in India", Seattle, USA, August 25-28, 2002

Sharada Srinivasan

Delivered a lecture on "Metals in Indian antiquity" as a part of the Select Bookshop Lecture Series, Select Bookshop, Bangalore, October 26

Presented a lecture cum dance demonstration on "Portrait of a Tamil queen –Readings from Kalki's Ponniyan Selvan, Anamika, Bangalore, October 31

Delivered a lecture entitled "Metals analysis in South Asia" at the Seminar on Archaeology of Sri Lanka, Uppsala University, Uppsala, Sweden, November 19

Attended the Annual Archaeology Conference on Maritime Heritage of India and Annual Conference of the Indian Society for Prehistoric and Quaternary Studies, Tripunithura, Kerala, December 19-22

Anindya Sinha

Attended the Lecture Programme on Evolutionary and Organismal Biology, organised by the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore and Delhi University, and delivered two invited lectures entitled "Brave new world: Demographic and social evolution in bonnet macaques" and "Beautiful minds: Social and mechanical cognition in wild bonnet macaques", School of Environmental Studies, Delhi University, New Delhi, October 22-26

C Srinath

Presented a paper on "Water users associations: Scope for women's participation" at the National Workshop on Women and Water Network, Bangalore, November 25

Served on a team, comprising also of Laurence Dhondt and Ima Garmendia from the media, that made an exposure visit to investigate the system and practices of *Devadasis* in Belgaum district, Karnataka, December 13-17

A R Vasavi

Delivered a lecture entitled "Current ethnographic research methods", Centre for the Study of Culture and Society, Bangalore, October 19

Delivered a lecture entitled "The social and cultural bases of the gender ratio decline in India", as a respondent to the lecture on Declining Gender Ratios in India, Vimochana, Bangalore, November 23

Made a summary presentation of the study findings of the project on "Exclusion, elimination and opportunity in elementary education" to the Canadian International Development Agency, New Delhi, November 28

H Venugopal

Presented a paper on "Water users associations: Scope for women's participation" at the National Workshop on Women and Water Network, Bangalore, November 25

VISITS MADE BY THE FACULTY

Arvind Kumar

Served as Visiting Research Scholar at the Cooperative Monitoring Center of Sandia National Laboratories, Albuquerque, New Mexico, USA and Post-Doctoral Fellow at the University of New Mexico, USA, June 18-October 15. During this time, he visited the State Department in Washington D.C., National Defence University, Center for International and Strategic Studies, Center for Non-Proliferation Studies, The Henry L. Stimson Center, Brookings Institution, Carnegie Endowment for International Peace, United States Institute of Peace,

Johns Hopkins University, Woodrow Wilson Center for International Scholars, Center for Naval Analyses Corporation, and the School of Public Affairs of the University of Maryland

Served as Visiting Fellow at the Center for International Security and Cooperation, Institute of International Studies, Stanford University, USA, October 16-December 15

P K Shetty

Visited the Ag Container Recycling Council (ACRC), Washington; Washington State University, Pullman; Fort Valley State University, Fort Valley, Georgia; and the United States Environmental Protection Agency, Chicago, August 28-September 27

Sharada Srinivasan

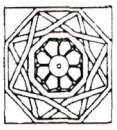
Visited the Swedish Museum of Natural History, Stockholm, the Archaeological Laboratory of the Royal Academy of Letters, History and Antiquities, Stockholm, the Angstrom Laboratory, Uppsala, and the Geoarchaeological Laboratory of the National Heritage Board, Uppsala, as Visiting Faculty at Uppsala University, Sweden, November 17-28

VISITORS TO THE INSTITUTE

Prof Richard M Stallman, President, Free Software Foundation, USA, visited the International and Strategic Studies Unit on October 29

Dr Axel Michaelowa, Head of Programme "International Climate Policy", Hamburg Institute of International Economics, Germany, visited the Science and Technology Policy Studies Unit on November 5

Dr P D Kaushik, Fellow, Rajiv Gandhi Institute for Contemporary Studies, Rajiv Gandhi Foundation, New Delhi, visited the Gender Studies Unit on December 19

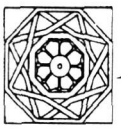


Upcoming Events

An international symposium on Science and Beyond: Cosmology, Consciousness and Technology in the Indic Traditions will be held at NIAS from January 8-11, 2003, under the program of "Science and Spiritual Quest" of the Templeton Foundation, USA. This symposium will bring together scientists, philosophers, psychologists and spiritual leaders from India and the rest of the world to dialogue on what essentially constitutes the pursuit of knowledge. This will facilitate defining the frontiers and what falls in the 'beyond' of scientific knowledge. Discussions on questions of philosophical and spiritual issues according to the convictions and experiences of scientists as well as discussions on scientific and empirical questions according to philosophers and spiritual leaders are expected to generate a forum to bridge knowledge communities and unite them for global concerns both at personal and institutional levels. It is particularly expected that the conference will bring forth a dialogue, in a global context, on Indian traditions of science, art, music, medicine, philosophy, psychology and spirituality. The program of the conference will include invited lectures, panels and discussions. For more details, please contact Sangeetha Menon (*prajnana@yahoo.com*)

The XVII NIAS Course for Senior Executives, with Corporate and Public Governance as its principal theme, will be held between 15 to 25 January, 2003. For more details,

please contact Sundar Sarukkai (*sarukkai@nias.iisc.ernet.in*)



An Appeal for Funds

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

About NIAS

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

If we have to achieve these goals it is necessary for us to bring together the best in the natural and social sciences. The late JRD Tata, who conceived of this institution,

saw the great need in India to form a new kind of leader – he envisioned an institution that could harness creativity and commitment, mathematics and management. With my distinguished colleagues on the faculty of NIAS, and the eminent persons we count among our Associates, I am hopeful that we can carve a unique niche for ourselves in the public and intellectual life of this country and the world, moving in the direction that our founders so clearly saw as essential for the future health of our nation.

The appeal

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

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

R Narasimha
Director, NIAS, and
Chairman, NIAS Endowment Committee

How to make Contributions to the NIAS Endowment Fund

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

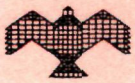
NIAS is registered under the Foreign Contributions (Regulation) Act, 1976, and is entitled to receive contributions from abroad directly (Register number 094420614, Account No. 0100005000200, State Bank of India, Indian Institute of Science, Bangalore 560 012). Contributions *must be made by cheques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

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

1. *Books*
   Can be donated as books or as funds to be utilised for purchase of books *Every book donated or purchased out* of donation funds will carry a label indicating the name of the donor

2. *Objects of art* (paintings, sculpture etc.)
   Rs 10,000/ and above
   Will carry a small plaque indicating the name of the donor

3. *Annual Endowed Lecture* (speaker residing in India)
   Rs 2.5 lakh or US $ 6,000



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4. *New Office Space*
   Rs 5 lakh per room
   Room will carry a plaque indicating the name of the donor

5. *Visiting Professor* (from India or abroad)
   Rs 10 lakh or US $ 25,000
   May be named with concurrence of donor

6. *Lecture Hall*
   Rs 20 lakh or US $ 50,000
   May be named with concurrence of donor

7. *East Wing, Main Building*
   Rs 40 lakh or US $ 100,000
   May be named with concurrence of donor

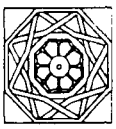
8. *West Wing, Main Building*
   Rs 50 lakh or US $ 125,000
   May be named with concurrence of donor

9. *Endowed Doctoral Scholarship*
   Rs 10 lakh or US $ 25,000
   May be named with concurrence of donor

10. *Endowed Fellowship*
    Rs 30 lakh or US $ 70,000
    May be named with concurrence of donor

11. *Endowed Professorship*
    Rs 40 lakh or US $ 90,000
    May be named with concurrence of donor

12. *Endowed Research Unit*
    Rs 80 lakh or US $ 187,500
    May be named with concurrence of donor



The NIAS Faculty

R Narasimha (PhD Caltech)
Director
roddam@nias.iisc.ernet.in
roddam@caos.iisc.ernet.in

Raja Ramanna (PhD London)
Director Emeritus
rr@nias.iisc.ernet.in

R L Kapur (PhD Edinburgh)
J R D Tata Visiting Professor,
Philosophy, Science and Society
rlkapur@bgl.vsnl.net.in

S Rajagopal (BTech Guindy)
Homi Bhabha Chair, International
and Strategic Studies
rajgopal139@hotmail.com

Prabhakar G Vaidya (PhD Southampton)
Professor, Mathematical Modelling
pgvaidya@nias.iisc.ernet.in

Dilip Ahuja (PhD Virginia)
ISRO Professor of Science
and Technology Policy Studies
dahuja@nias.iisc.ernet.in

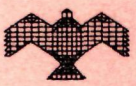
B V Sreekantan (PhD TIFR/Bombay)
Honorary Visiting Professor, Culture,
Cognition and Consciousness
bvs@ nias.iisc.ernet.in

S Settar (PhD Karnataka)
Dr S Radhakrishnan Visiting Professor
settar@nias.iisc.ernet.in

K Ramachandra (PhD TIFR/Bombay)
Honorary Visiting Professor
kram@nias.iisc.ernet.in

H K Anasuya Devi (PhD IISc)
Fellow, Epigraphy
hka@nias.iisc.ernet.in

N Shantha Mohan (PhD ISEC/Bangalore)
Fellow, Gender Studies
shantham@nias.iisc.ernet.in



A R Vasavi (PhD Michigan State)
Fellow, Sociology and Social Anthropology
arvasavi@nias.iisc.ernet.in

P K Shetty (PhD IARI)
Fellow, Environmental Studies
pks@nias.iisc.ernet.in

Sundar Sarukkai (PhD Purdue)
Fellow, Philosophy, Science and Society
sarukkai@nias.iisc.ernet.in
sarukkai1@yahoo.com

Anindya Sinha (PhD TIFR/Bombay)
Fellow, Culture, Cognition and Consciousness
asinha@nias.iisc.ernet.in

Sangeetha Menon (PhD Kerala)
Fellow, Culture, Cognition and Consciousness
prajnana@yahoo.com
www.geocities.com/prajnana

B K Anitha (PhD ISEC/Bangalore)
Associate Fellow, Gender Studies
anibk@nias.iisc.ernet.in

M G Narasimhan (PhD IISc)
Associate Fellow, Philosophy,
Science and Society
narasim@nias.iisc.ernet.in

Suri Venkatachalam (PhD IISc)
Adjunct Associate Fellow,
Mathematical Modelling
suri@ces.iisc.ernet.in

H N Shankar (PhD IISc)
Adjunct Associate Fellow,
Mathematical Modelling
hn_shankar@yahoo.com

Sharada Srinivasan (PhD London)
Adjunct Associate Fellow, Culture,
Cognition and Consciousness
sharada@nias.iisc.ernet.in

Sarada Balagopalan (PhD New York)
Adjunct Associate Fellow, Sociology
and Social Anthropology
saradab@vsnl.net

Sindhu Radhakrishna (PhD Mysore)
Adjunct Associate Fellow, Culture, Cognition and Consciousness
loris_sr@yahoo.com

Padma M Sarangapani (PhD Delhi)
Associate Research Fellow, Sociology and Social Anthropology
psarangapani@hotmail.com

Arvind Kumar (MPhil JNU)
Research Associate, International and Strategic Studies
arvind@nias.iisc.ernet.in

C Srinath
Research Associate, Gender Studies
srinath@nias.iisc.ernet.in

N Sudhamani (MA Bangalore)
Research Associate, Gender Studies

Sridhar Krishnaprasad Chari (MA Leicester)
Research Associate, International and Strategic Studies
sridhar_kchari@yahoo.co.in

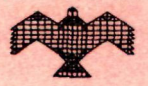
M D Madhusudan (MSc Saurashtra)
Research Scholar, Culture, Cognition and Consciousness
madhu@nias.iisc.ernet.in

Savita Angadi (BE Karnataka)
Research Scholar, Mathematical Modelling
savita@nias.iisc.ernet.in

S K Uma (MSc Bangalore)
Research Scholar, Philosophy, Science and Society

N Balakrishnan, Honorary Professor
Information Sciences Division,
Indian Institute of Science, Bangalore
balki@serc.iisc.ernet.in

Vijay Chandru, Honorary Professor
Computer Science and Automation,
Indian Institute of Science, Bangalore
chandru@csa.iisc.ernet.in



R K Kochhar, Honorary Professor
National Institute of Science, Technology and Development Studies, New Delhi
rkk@nistads.res.in
rkochhar2000@yahoo.com

V J Modi, Honorary Professor
Mechanical Engineering, University of British Columbia, Vancouver, Canada

A Ramachandran, Honorary Professor
Bangalore
Tel: 225 5780

D P Sen Gupta, Honorary Professor
Electrical Engineering,
Indian Institute of Science, Bangalore

H N Sharan, Honorary Professor
Netpro Renewable Energy India Ltd,
Bangalore
netpro@blr.vsnl.net.in

B V Subbarayappa, Honorary Professor
Indian Institute of World Culture,
Bangalore

V J Sundaram, Honorary Professor
Bangalore
sundaram@nias.iisc.ernet.in

ADMINISTRATION

Maj Gen M K Paul VSM (Retd) (BE Jadavpur)
Controller
mgp@nias.iisc.ernet.in

PRINCIPAL S R GROVER LIBRARY

Hamsa Kalyani (MLISc Bangalore)
Assistant Librarian
niaslib@nias.iisc.ernet.in

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

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

Sangeetha Menon

Prof R Narasimha
Director
National Institute of Advanced Studies
Indian Institute of Science Campus
Bangalore 560012, India
Tel: 91-80-3604351, 3602050
Fax: 91-80-3606634
Email: niasoff@nias.iisc.ernet.in
URL: www.iisc.ernet.in/nias/
www.nias.res.in

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