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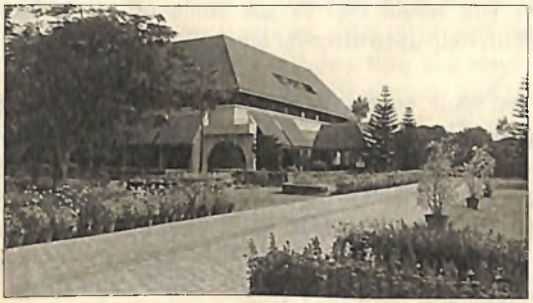

Editors' Note

We are close to the end of yet another eventful year in NIAS and this issue of NIASNEWS completes an year as well in its new format. We hope that in the coming year the newsletter will evolve further and that there will be more improvement in its appearance and contents. What will not change, however, is its newsworthiness; we will continue to serve as a window through which the world can glimpse the various activities of the institute. But, in the meantime, please do let us know, as many of you have in the past, what you feel about NIASNEWS and whether you would like to see some other changes brought in. Help us to discover ourselves further!

In the last issue, some mistakes had inadvertently crept in: three articles by A Deva Raju had been attributed to P K Shetty and a report on the NIAS Discussion Meeting On The Future Direction Of US Strategy by Sridhar K Chari carried the name of A Deva Raju. We hope that such errors will be avoided in the future, and express our sincere apologies to all concerned.

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

From the Director's Desk

One of the most interesting events at NIAS during the last quarter was a dramatised reading of the play *Partition*, which is *not* about the dreadful events of 1947 but about the life and work of the Indian mathematical genius Srinivasa Ramanujan. The play, written by Ira Hauptman of Queens College New York, had its world premiére at the University of California at Berkeley in April this year. The Little Theatre of Hyderabad presented a dramatised reading of the play at NIAS, with the generous permission of the author, as part of our *History of Ideas* meetings. The play was very successful in offering insights into the ways of thinking of Ramanujan and his sponsor and later collaborator at Cambridge, Prof G H Hardy, but it acquired even more colour by including, in the *dramatis personae*, such characters as the Goddess of Namakkal, Pierre de Fermat (of 'Fermat's last problem' fame, but no contemporary of Ramanujan!) and the mythical classical scholar Prof Billington. The JRD Tata Auditorium was full on the occasion, and everybody thoroughly enjoyed the sharp conversations between Ramanujan and Hardy, between Ramanujan and his Goddess, between Hardy and Billington. and between Fermat and the Goddess. Hauptman has clearly written a play that presents a tantalising and fascinating dramatisation of intellectual and cultural encounters between scholars from different places, times and backgrounds.

My colleagues in the Sociology and Social Anthropology Unit have embarked on a major initiative in education which involves an assessment of the elementary education system in the Chamarajanagar District of the State. A detailed survey in the District has been completed, and will provide the basis to formulate, in coming years, a system with better and more appropriate textual and other resources. The project will be carried out in collaboration with the office of the Department of Education and Public Instruction in the State of Karnataka; it is supported by the Sir

Ratan Tata Trust, and we hope that it will lead to concrete steps that would improve elementary education in the country.

We also had the pleasure of a brief visit by the distinguished philosopher Prof Arindam Chakraborty of the University of Hawaii, who spoke on *The three spaces in Yoga-Vasistha* and also conducted a workshop on *Indian theories of non-knowledge.*

As you will see from the rest of this Newsletter there were a variety of other interesting events as well, touching on such varied subjects as living with wild life to an asymptotic formula of the same Ramanujan, physicists in finance, and classical Indian logic and astronomy. As we approach the end of the year and the beginning of a new one, it will be time for a variety of courses at NIAS: one for university and college teachers, another for senior executives and a third on systems engineering; we expect the next two quarters will be very busy.

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 **Culture, Cognition and Consciousness Unit** has initated two new projects. A new project on the **Digital Preservation of Ancient Indian Manuscripts on Mathematics and Astronomy**, funded by the National Board of Higher Mathematics, was initiated in April 2003. The primary goal of this project is to build scholarship on ancient Indian mathematics through the digital preservation of a selected number of ancient Indian manuscripts on mathematics and astronomy, a compilation of relevant material on mathematics from *Brhamasputa Siddhanta*, placing on a website a selected number of manuscripts and books, and the publication of CD-ROMS with digital databases of several manuscripts. The principal investigator of the project is Sangeetha Menon, while the co-investigators are S Balachandra Rao and C S Yogananda (Department of Mathematics, Indian Institute of Science, Bangalore). K R Suchitra and P S Jayalakshmi are technical and research assistants to the project, respectively, while its chief advisors are B V Sreekantan and B V Subbarayappa.

Sangeetha Menon of this Unit has also initiated a research study on the **Rare Ritual Arts of Malabar**. Ritual-art forms of North Kerala form a class of their own with as much significance as classical and folklore traditions. Most ritual-art forms are

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associated with particular communities, specific times of the calendar, observances, and unique forms of staging. It is generally believed that these performances lead to spiritual and purgatory experiences, and in some cases, healing effects. Although a significant number of the ritual-art forms have been documented, there are several fast-disappearing forms of such ritual-arts of Malabar (North Kerala) that remain to be documented in the print/video media. Many subclasses of ritual-art forms have also not been recorded primarily due to a lack of public information, as also the disagreement from the performers that the events be publicly shown. It is also startling that the number of performers of certain complex ritual-art forms is declining rapidly while some of these performances are completely unknown since they were never documented in a systematic manner. The long-term goal of this particular project is to understand the nature of the spiritual experiences, and epistemology involved with rare ritual-arts. Apart from the spiritual content of experiences, it is proposed that the symbolism in the usage of color, form, space, make-up, movement, music, and myth involved in such ritual-arts will be studied, as also the style of living and value systems of the performers and the community involved. Through these, it is hoped that a transpersonal account of the psychology of the ritual-art performer and the community will be developed. This long-term project will also lead to the initiation of a networking of ritual art performers and a systematic documentation (in video and print format) of rare ritual art forms. Towards Phase I of this project a festival of (declining) ritual-art forms of North Kerala will be held in February 2004 in Kozhikode, Kerala; this event is being primarily organised by the Sambodh Foundation, New Delhi and sponsored by the Infinity Foundation, Princeton, USA.

Anindya Sinha of this Unit has just completed a project entitled **Social Communication in Wild Bonnet Macaques: Acoustic Structure, Information Content and Developmental Profile of Social Vocalisations in a Primate Society**. This four-year study was conducted with a research grant from the Wenner-Gren Foundation for Anthropological Research, New York, USA.

Sundar Sarukkai of the **History and Philosophy of Science Unit** has initiated a project entitled **Gandhian Thought and Social Transformation**, originally

conceived by Samir Banerjee and him as a framework to study the relevance of Gandhian thought to modern India. The NGO IT for Change (ITfC) is also associated with this project to help address the problematical issue of understanding the role of modern technology within the ambit of Gandhian thought. This project is supported by the Sir Ratan Tata Trust and the first phase of the project is a study of Gandhigram trust in Dindigul, where the project is administered. As part of this work, Banerjee and Sarukkai plan to visit various Gandhian organisations in India in an attempt to analyse the ideology and praxis of Gandhism.

The **Sociology and Social Anthropology Unit** has just completed a baseline survey of elementary schools in the Chamarajnagar district of Karnataka. The survey focused on understanding the functioning of schools and also assessed the academic levels of both children and teachers in 36 schools. The findings of the survey were shared with members of the district's education administration at all the five block levels. In addition, other meetings were held at the District Institute of Education Training at Mysore, at the office of Commissioner of Public Instruction, at the office of the Education Minister and with the NIAS faculty. The instruments that were used to conduct the survey are available to other agencies and institutions that are interested in conducting similar assessments of schools. For more information, please contact the Unit at NIAS.

This Unit has also initiated a two-year research study of Bangalore's IT professionals and their culture. This study, supported by the Indo-Dutch Programme for Alternative Development, is being jointly coordinated by Carol Upadhya and A R Vasavi, with Peter Van der Veer as the Dutch research partner.

Publications

NIAS PUBLICATIONS

I. SPECIAL PUBLICATIONS

SP2-03 Diasater management: A reader
S Rajagopal and S K Chari (eds)

PAPERS

Ahuja, D. 2003. An Indian National GEF Strategy. *Energy for Sustainable Development* 7(2): 30-39

Mohan, N Shantha, Devi, G and Antony, P. 2003. Community participation in primary education: The Karnataka experience. In: *Community Participation and Empowerment in Primary Education* (eds Govinda, R and Diwan, R), Sage Publications, New Delhi, pp 159-181

Narasimha, R. 2003. Axiomatism and computational positivism: Two mathematical cultures in pursuit of exact sciences. *Economic and Political Weekly* 38(35): 3650-3656

Narasimha, R. 2003. Is Indian aerospace all set for a boom? *Proceedings of the International Seminar on Aerospace Technologies: Developments and Strategies* 1:x-xxxiii

Narasimha, R. 2003. The Indian half of Needham's question: Some thoughts on axioms, models, algorithms and computational positivism. *Interdisciplinary Science Reviews* 28(1): 54-66

Radhakrishna, S and **Sinha, A**. 2003. Other societies: Social organisation and behaviour in primates. *Lectures on Recent Trends in Ethology and Behavioural Sciences* (ed John Thomas K), Department of Zoology, Christ College, Irinjalakuda, pp 104-117

Sarangapani, P M. 2003. Indigenising curriculum: Questions posed by Baiga *vidya*. *Comparative Education* 39(2): 199-209

Sarangapani, P M and **Vasavi, A R.** 2003. Aided programmes or guided policies? The DPEP in Karnataka. *Economic and Political Weekly* 38(32): 3401-3408

Sarukkai, S. 2003. Praying to machines. *Leonardo Electronic Almanac* 11(8), August 2003

Sarukkai, S. Perspectives on mathematics (Editorial). *Economic and Political Weekly* (Special issue on 'Review of Science Studies') 38(35): 3648, 2003

Sarukkai, S. 2003. Applying mathematics: The paradoxical relation between mathematics, language and reality. *Economic and Political Weekly* 38(35): 3662 3670

Sinha, A. 2003. Cognitive ethology: A behavioural lens into the primate mind. *Lectures on Recent Trends in Ethology and Behavioural Sciences* (ed John Thomas K), Department of Zoology, Christ College, Irinjalakuda, pp 18-28

Sinha, A, Mukhopadhyay, K and Datta-Roy, A. 2003. Evolution of unimale social organisation in bonnet macaques (*Macaca radiata radiata*). *Proceedings of the Twenty-eighth Conference of the Ethological Society of India* (eds R Annamalai, M Narayanan and J Vanitharani), Department of Zoology, Sarah Tucker College and Tamil Nadu Forest Department, Kalakad-Mundanthurai Tiger Reserve, Tirunelveli, pp 110-115

REVIEWS

Sarangapani, P M. 2003. Tedium of schooling. Book review of "Social Implications of Schooling" by Avijit Pathak, Rainbow, New Delhi, 2002. *Economic and Political Weekly* 38(33): 3470-3472

Sarukkai, S. 2003. End of time. A review of the book by E Tiezzi, WIT Press, Southampton, 2003. *Current Science* 85: 214

Sinha, A. Imitation in animals and artifacts. A review of the book by K Dautenhahn and C L

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Sinha, A. Imitation in animals and artifacts. A review of the book by K Dautenhahn and C L

Nehaniv, MIT Press, 2002. *Current Science* 85: 523-525

Vasavi, A R. 2003. Growth and death of Gujarat. Book review of "Development and Deprivation in Gujarat: In honour of Jan Breman" (eds G Shah, M Rutten and H Streefkerk), Sage Publications, New Delhi, 2002 and "The Other Gujarat: Social Transformation among Weaker Sections" (ed T Shinoda), Popular Prakashan, New Delhi, 2002. *The Book Review* 27(9): 20

ARTICLES

Deva Raju, A. Tips for motivation. *Deccan Herald*, April 9

Deva Raju, A. Glorious chapter in Kannada cinema. *The Vijay Times*, May 30

Deva Raju, A. Temple that truly stands tall. *The Vijay Times*, June 13

Narasimha, R. Vinod J Modi – Personal News, *Current Science* 84: 1262-1263, 2003

Sarangapani, P M. Talking in class: Do children's contributions count? *Insights Education: Development Research*, September 2003

Sarukkai, S. The deity in the engine. *Outlook*, July 14, pp 78-79

Srinivasan, S. Simmering cauldrons. *The Hindu*, July 13

Commentary

The following is a brief summary of the book **Philosophy of Symmetry** *by Sundar Sarukkai. The book is published by the Indian Institute of Advanced Studies, Shimla and is priced at Rs 250. Please contact proiias@rediffmail.com for information/order. You may also contact the author for further details at sarukkai@nias.iisc.ernet.in.*

The idea of symmetry is one of the most important and pervasive ideas, occurring in disciplines ranging from the sciences to the arts. Symmetry is manifested very widely in the natural world as seen in the intricate shapes, patterns and colours of both inanimate and animate beings. It is a guiding principle in modern physics and is an integral part of many important works in architecture, sculpture, music, painting and so on. Given the breadth of this notion, it is understandable that there is no single concept which can encapsulate its scope. Considering the importance of the idea of symmetry and its occurrence over a whole range of human activity it is important to explicitly clarify its philosophical foundations. This is the task of this book.

Part One begins with a general overview of the various manifestations of symmetry in nature, science and art. Symmetry is manifested in a wide range of objects, from molecules to galaxies. In science, symmetry plays many roles: for example, to classify crystals, illuminate the nature of space-time, describe quantum objects and explain the fundamental laws of conservation in science. The use of symmetry in art occurs in all civilisations and ranges from activities such as sculpture and architecture to theatre and dance.

Part Two of this book uses metaphysical categories to explicate the nature of symmetry in science. This allows us to consider the meaning of symmetry in objects, relation between change, invariance and symmetry, relation between symmetry and form, metaphysics of sets and

groups (the mathematical objects that describe symmetry in science), the special nature of conserved properties and the link between symmetry, conservation laws and causality. Through this analysis, we find that symmetry should be considered as a first-order property of objects and systems.

There is also another dimension to symmetry, its phenomenological one. There seems to be something unique in the phenomenology of symmetrical objects. Balance is a term that sometimes captures this uniqueness. Our experiences with symmetrical objects give us a phenomenological idea of balance, whether in balancing a stick at one point or building a paper plane by folding along the axes of symmetry. The experience of balance is not only tactile; it is also visual and auditory. Tasty food, for example, generally manifests a balance of different tastes. There are also other terms which, in our common usage, captures the idea of symmetry. These are simplicity, harmony, elegance, boredom, unity and so on. Symmetry, from ancient times, has also been intimately associated with the notions of beauty and truth. All these terms suggest that we can attempt to understand the idea of symmetry in art by drawing upon theories of aesthetics. Part Three offers a discussion on the phenomenological and aesthetic aspects of symmetry and discusses themes such as phenomenology of perception, the relation between symmetry and the Gestalt, the nature of beauty, beauty in science and the aesthetic dimension of symmetry, and concludes with the observation that symmetry in art should be understood as an aesthetic property.

DOCTORAL PROGRAMME IN NIAS

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

One constraint that NIAS has functioned under so far has been the lack of a doctoral programme whereby young students are trained in the research areas that the

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

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

M D Madhusudan, the first student under the NIAS-MAHE Doctoral Programme has just submitted his thesis entitled "Uneasy neighbours: Human resource-use and large mammal conservation in the tropical forests of Karnataka, India" in

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fulfilment for a doctoral degree at NIAS, under the aegis of Manipal Academy of Higher Education, Manipal, in September 2003.

Anindya Sinha

Honours and Awards for NIAS Faculty

Malavika Kapur

Invited to be a Member of the International Advisory Committee on Global Child Mental Health, sponsored by the World Psychiatric Society, World Health Organisation and International Association of Child Psychiatry and Allied Professions, from August 2003

Sangeetha Menon

Invited to be a member of the Board of Distinguished Visiting Scholars of the Dharma Association of North America (DANAM)

Padma Sarangapani

Invited to be the Managing Editor of the peer-reviewed journal Education Dialogue, the first issue of which appeared in September 2003

Sundar Sarukkai

Nominated a Member, International Advisory Board, International Society for the Arts, Sciences and Technology (ISAST)

Awarded a PHISPC Fellowship to complete work on a book on Indian philosophy and its relevance to contemporary philosophy, particularly philosophy of science. September 2003 – September 2004

B V Sreekantan

Awarded the Yodh Prize of the IUPAP Cosmic Ray Commission and the University of California, Irvine, USA for his lifetime contributions to the field of cosmic ray research, at the International Conference on Cosmic Rays held at Tsukuba, Japan in August 2003

DISSERTATIONS GUIDED BY THE NIAS FACULTY

Anindya Sinha

A dissertation entitled "Uneasy neighbours: Human resource-use and large mammal conservation in the tropical forests of Karnataka, India" by M D Madhusudan, submitted in fulfilment for a doctoral degree at the National Institute of Advanced Studies, Bangalore, under the aegis of Manipal Academy of Higher Education, Manipal, September 2003

COURSES TAUGHT BY THE NIAS FACULTY

Sundar Sarukkai

Offering a course in **introductory philosophy** for students and the general public, starting from October 4 for a period of three months. The classes meet every Saturday afternoon for three hours. The topics include epistemology, metaphysics, existence, phenomenology, aesthetics, philosophy of science, philosophy of language and postmodernism. Readings are distributed and discussed in class. About forty people, ranging from students to professionals such as engineers,

software professionals, lawyers and teachers are already participating in this course. The course fee is Rs 500. More such courses are planned, both at the introductory level and also some specialised modules. Those interested may please contact Sundar Sarukkai (*sarukkai@nias.iisc.ernet.in*) for more details.

A R Vasavi

Taught a course on Social Transformation in India to first-year MBA students at the Indian Institute of Management, Kozhikode, between July 4 and September 3

International and Strategic Studies Unit

Conducted a course on Systems Engineering for 360 DRDO scientists at the Institute of Armament Technology, Pune, during June 29 to July 3 and during July 12-16.

New Faces at NIAS

Carol Upadhya

Dr Carol Upadhya joins the Sociology and Social Anthropology Unit as a Visiting Fellow. She has a doctorate in Social Anthropology from Yale University, USA and has co-edited a volume on Asian entrepreneurs. Her academic interests are in the anthropology of India, concepts of indigeneity, environmental sociology and theoretical anthropology.

Important Events

Complementing its research programmes, NIAS organises a variety of seminars, workshops, and academic courses each year. Some of the important events that were organised during the period from July to September 2003 included:

DISCUSSION MEETING ON US SECURITY INTERESTS

August 21

A small group meeting was organised by the International and Strategic Studies Unit to discuss "US Security Interests in South Asia" and "US Security Interests in the Asia Pacific". Prof Robert G Wirsing and Dr Satu Limaye from Asia Pacific Center for Security Studies (APCSS), Honolulo, Hawaii, USA addressed the group. The meeting lasted for over two hours with lively exchange of views.

S Rajagopal

FOURTH NIAS COURSE FOR SENIOR-LEVEL INDIAN ADMINISTRATIVE SERVICE OFFICERS

August 25-29

The course this year was on the theme of "Disaster Management". Nineteen participants from different parts of the country participated in the course. The course was designed to have three sessions each day. The first session provided an overview of different kinds of natural and industrial disasters; the second focused on a specific case study while the third consisted of an interactive session between the participants, the speaker and an NGO. The main topics covered during this course included Health and Humanitarian Challenges in Disaster Response, Floods and Cyclones, Earthquakes, Chemical Disasters, Emergency Preparedness and Railway Accidents. The case study presentations included

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A R Vasavi

Taught a course on Social Transformation in India to first-year MBA students at the Indian Institute of Management, Kozhikode, between July 4 and September 3

International and Strategic Studies Unit

Conducted a course on Systems Engineering for 360 DRDO scientists at the Institute of Armament Technology, Pune, during June 29 to July 3 and during July 12-16.

New Faces at NIAS

Carol Upadhya

Dr Carol Upadhya joins the Sociology and Social Anthropology Unit as a Visiting Fellow. She has a doctorate in Social Anthropology from Yale University, USA and has co-edited a volume on Asian entrepreneurs. Her academic interests are in the anthropology of India, concepts of indigeneity, environmental sociology and theoretical anthropology.

Important Events

Complementing its research programmes, NIAS organises a variety of seminars, workshops, and academic courses each year. Some of the important events that were organised during the period from July to September 2003 included:

DISCUSSION MEETING ON US SECURITY INTERESTS

August 21

A small group meeting was organised by the International and Strategic Studies Unit to discuss "US Security Interests in South Asia" and "US Security Interests in the Asia Pacific". Prof Robert G Wirsing and Dr Satu Limaye from Asia Pacific Center for Security Studies (APCSS), Honolulu, Hawaii, USA addressed the group. The meeting lasted for over two hours with lively exchange of views.

S Rajagopal

FOURTH NIAS COURSE FOR SENIOR-LEVEL INDIAN ADMINISTRATIVE SERVICE OFFICERS

August 25-29

The course this year was on the theme of "Disaster Management". Nineteen participants from different parts of the country participated in the course. The course was designed to have three sessions each day. The first session provided an overview of different kinds of natural and industrial disasters; the second focused on a specific case study while the third consisted of an interactive session between the participants, the speaker and an NGO. The main topics covered during this course included Health and Humanitarian Challenges in Disaster Response, Floods and Cyclones, Earthquakes, Chemical Disasters, Emergency Preparedness and Railway Accidents. The case study presentations included

those on the Bhopal Gas Tragedy, Orissa Floods and the Gujarat Earthquake. The interactive sessions resulted in intense debate and discussions. The course was designed to trigger the participants to approach the issues of preparedness, as well as those of handling and the mitigation of various disasters through specific case studies.

S Rajagopal

SEMINAR ON 'FIFTY YEARS OF DNA"

September 30

A Seminar on "50 Years of DNA" was organised by the faculty of the History and Philosophy of Science Unit of NIAS in collaboration with the Department of Microbiology, Maharani's Science College for Women, Bangalore, at the Seminar Hall of the Maharani's College. The seminar was organised to mark the 50th anniversary of the discovery of the double helical structure of DNA by James Watson and Francis Crick in 1953.

Professor R Narasimha, Director, NIAS, inaugurated the seminar. In his address, Prof Narasimha emphasised the role played by DNA as an informational concept. Professor K V Kodandaramaiah, Additional Director, Department of Collegiate Education, was the Chief Guest on the occasion. Prof Kodandaramaiah called upon the scientists to make new knowledge accessible to the community at large. Professor N G Desai, Principal of Maharani's College, presided over the function. Dr Agnes Madhuravani, Head, Department of Microbiology and Dr M G Narasimhan were the organisers of the seminar.

After the inaugural function and the address by the Chief Guest, there were two sessions from 10 AM to 1.15 PM and from 2 PM to 3.30 PM. The following were the speakers at the seminar:

➢ Prof V Nanjundaiah	50 Years of Double Helix
➢ Dr M G Narasimhan	From Usual to Unusual Structures of DNA
➢ Prof S Mahadevan	From Double-Helix to Gene Regulation: The Operon-Concept Revisited
➢ Prof D N Rao	Restriction and Modification
➢ Prof Mario Vaz	Medical Implications of New Biology
➢ Prof C M Francis	Ethical Issues in Medical Genetics

M G Narasimhan

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 July to September 2003 included the following event:

August 22 — What kind of humanism in the post-genomic era?

Gilles Bibeau
Department of Anthropology
University of Montreal
Montreal, Canada

New developments in the filed of biotechnology are shaping a grand narrative around the ability of human-kind to correct mistakes in DNA, reprogramme life, improve plants and living animals, and upgrade consciousness in human beings. It is feared that the world is entering a new era, which would lead to the eclipsing of the human dimension, by the technological one. In this talk, the speaker, however, argued that humanism is not dead but, in fact, more alive than ever, and that wisdom cannot be cloned or manufactured.

Wednesday Discussion Meetings

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

The Wednesday Discussion Meetings during the period from July to September 2003 have included:

July 9

Living with large wildlife: Human resource use and the conservation of large mammals in Karnataka's tropical forests

M D Madhusudan

India's remaining wildlife habitats are characterised by pervasive human presence and resource-use. Yet, our understanding of human resource use and its impacts on wildlife has remained poor. This talk presented and analysed results of recent work in Karnataka's forests focusing on the socio-economic drivers and ecological consequences of two important forms of human resource-use: hunting and livestock grazing. Based on data presented, the talk reviewed current approaches to the conservation of wildlife in India.

This talk represented the final thesis seminar of M D Madhusudan, the first student to register for a doctoral degree under the NIAS-MAHE Doctoral Programme.

July 16

Do as others do: Imitation, mind-reading and mirror neurons

Anindya Sinha

A fascinating problem in cognitive psychology continues to be that of mind-reading, or our ability to

'know' what the other person is thinking. How do we judge intentions and feelings, or assign goals or beliefs to our friends and adversaries? 'Reading' the minds of others is something we take for granted. Yet philosophers, psychologists and neuroscientists alike have been baffled by our ability to anticipate other people's behaviour and empathise with their feelings.

Recently, however, a team of Italian neurophysiologists may have stumbled on the key to this mystery when they identified an entirely new class of neurons in the human brain. These neurons are active when their owners perform a certain task, and in this respect are wholly unremarkable. But, more interestingly, the same neurons fire when their owner watches someone.else perform that same task. The team has dubbed the novel nerve cells "mirror" neurons, because they seem to be firing in sympathy, reflecting or perhaps simulating the actions of others.

This talk briefly reviewed the discovery of mirror neurons, which may play a pivotal role in understanding the intentions of others in higher primates, including humans and discussed the claim made by cognitive psychologists that mirror neurons will, some day, answer important questions about human evolution, language and culture - and ultimately explain what it means to be human.

July 23

An asymptotic formula of Ramanujan

K Ramachandra

An attempt was made to explain the formula. The error term in this formula has been improved by the author and A Sankaranarayanan. The main result was stated without details of proof, with the author claiming that the statement can be understood by a common man.

July 30 and August 7

Baseline study of schooling in Chamarajanagar: Some preliminary findings

Leena Pascal, T Vijayalakshmi, K Latha, R Padmashree and Padma Sarangapani

The Sociology and Social Anthropology Unit of NIAS has just completed a study of schooling in Chamarajanagar District, Karnataka. The study involved designing about twenty instruments to study the state of schooling and community involvement in education. The sample included 36 schools in 26 different types of settlements. In this presentation these findings relating to some aspects of community, schools and teachers were shared with the audience. Discussions were also conducted on the diagnostic, activity-based instruments developed to profile learners, and the results of the analysis of performance of students in classes II, IV and VII, in the areas of language, mathematics and environmental studies presented. A short film on the baseline study process was also shown.

August 13

Applications of nonlinear dynamics and chaos to signal and image processing

Savita Angadi

The talk mainly discussed approaches to find equations from observed data and use these equations to predict and control a given system.

Data were collected from computer-simulated equations and from human speech, ECG and EEG. The first step in analysis was to find local derivatives or derivative- like quantities from such data to be embedded in high dimensional space. Theoretical work was then carried out to increase the accuracy of such procedures to reduce noise from the various data. Using derivatives, phase portraits were derived for each of these cases. In the case of speech, the feasibility of using these phase portraits for speaker identification was also carried out. The results were further modified by using accurate nonlinear spectral methods.

Partly guided by such a model, a parametric model for canonical differential equations fitting the system was generated. The parameters were identified from the derivative information. Identification of these parameters was applied to chaotic cryptography and speaker identification. Application of the technique to two-dimensional data such as image processing and other biomedical problems, including oncogenesis, was also investigated.

This talk represented the final thesis seminar of Savita Angadi, the second student to register for a doctoral degree under the NIAS-MAHE Doctoral Programme.

September 3

Indian astronomy: Some glimpses

S Balachandra Rao

A brief survey of the development of astronomy in India through the Vedanga Jyothisya, Aryabhata, Bhaskara I, Brahmagupta, Bhaskara II, Ganesh Daivajna and the Kerala astronomers was presented during this talk.

September 10

Where did the snake and the silver disappear? Instances from Indian epistemology

Sangeetha Menon

The nature of perceptual illusion, illusory object and its cognition is a topic for intense debate in Indian epistemology, contributing much to theories of error. This talk discussed instances from Adhyasabhasya of Sankaracharya and Panchapadika of Padmapada, along with some positions taken by the Purvapaksa.

September 24

Pesticide stewardship and food security

P K Shetty

Modern techniques of farming have led to an increased dependence on chemicals in order to

maintain an efficient system of food production and security. Pesticides are one of the major agro-inputs that has significantly contributed to food security in India. On the other hand, increased presence of pesticides in food and natural environments has become a major cause of concern in society. Pesticide stewardship is a cooperative venture, different from other isolated and independent ventures. A safer, better environment through improved and enhanced stewardship necessitates the participation of industry, user-agencies, state departments and regulatory authorities. This presentation made an attempt to analyse various issues associated with pesticide stewardship and food security in our country.

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

July 2

Indian logic and artificial intelligence

V V S Sarma
Department of Computer Science and Automation
Indian Institute of Science, Bangalore

Indian logic (Nyaya Sastra) (with early name Anvikshiki) has a long history, spanning about three thousand years. Nyaya Sastra includes logic, the art of debate (Tarka Sastra) and the science of reasons or causes (Hetu Vidya). There have been three distinct phases of development of logic in India the Ancient School (up to 100 AD), the Medieval School (100-1000 AD) and the Modern School, called Navya Nyaya (New logic, NN) (1000 AD-the present). The most influential work of NN is Gangesa Upadhyaya's Tattva Chintamani.

Artificial Intelligence as a branch of Computer Science has a history of about six decades. AI studies how computers can simulate intelligent processes such as learning, reasoning, and understanding symbolic information in context. AI, while being a sub-field of computer science, using algorithms, databases, and logic, has close connections to neuroscience, cognitive science, psychology, and philosophy.

In this talk, some topics from Indian logic, which appear to be of potential interest to AI researchers, were introduced to the audience.

August 6

Physicists in finance

Prashant Manohar Gade
Institute of Mathematical Sciences, Chennai

Recently physicists have tried to venture into the areas of finance and economics and apply established techniques of physics to these fields. These attempts have met with varying degree of success. The speaker briefly reviewed these attempts, which are being clubbed together as an emerging field called 'econophysics'. He also briefly talked about his ongoing work on agent-based modelling of wealth distribution.

September 10

The ineffectiveness of mainstream methods of instruction for educating poor children

Akshay Ahuja
Bangalore

The failure of publicly-funded schools to significantly improve the academic level of poor children is usually blamed on the areas where schools for the poor come up short of those for other children: inferior facilities and resources, less qualified teachers, and often ill-conceived curricula. The assumption is that, even though the stresses attendant to poverty will always challenge poor children, the methods of instruction that seem fairly effective for children of the better-off will remain effective for the poor; and that our task, therefore, is to equalize resources where possible, and try to raise the level of schools serving poor communities to the middle-class standard.

After teaching 7th standard Reading in a school catering to America's black urban underclass, the speaker believes that simple equality of resources will not bring any genuine equality of

achievement, and that the fundamental differences between rich and poor families require schools for the poor to be run on an alternate model: small, decentralised, non-coercive, and largely unstructured.

SPECIAL PROGRAMMES

There were three public lectures, one special lecture and a workshop organised at the Institute during the period from July to September 2003.

Public lectures

July 1

The three spaces in *Yoga-Vasistha*

Arindam Chakrabarti
Department of Philosophy
University of Hawaii, Honolulu, USA

July 28

The Indian mathematical scene in the 20th century: A personal account

M S Raghunathan
School of Mathematics
Tata Institute of Fundamental Research, Mumbai

This talk was about some mathematicians who contributed significantly to the development of mathematics in India in the twentieth century. There was very little about their mathematics: it was rather an attempt at offering some glimpses of these personalities and their times.

September 11

Whispers from Bangalore

Ana Paula Menino Avelar
Universidade Aberta, Portugal

To access a place without going there, say Bangalore, in the 16th century what else can we do than listen to the voices of those that experienced it themselves? To do it we need to summon them through their writings. To understand these we have to form an image of their authors, chart their whereabouts, reveal their contemporary readers, and place their perceptions in their context. Only thus equipped will we be able to evocate their perceptions of Bangalore.

Special lecture

August 5

The many facets of carbon
Demonstration of an educational CD

Kalpana Krishnaswamy
EOS Jigyasa Inc, Bangalore

Workshop

July 3

Indian Theories of Non-knowledge

Arindam Chakrabarti
Department of Philosophy
University of Hawaii, Honolulu, USA

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). One talk in this series held during the period from July to September 2003 included:

July 4

Physical cosmology: A modern perspective

Ramanath Cowsik
Indian Institute of Astrophysics, Bangalore
Washington University, Saint Louis, USA, and
School of Physics, Tata Institute of Fundamental Research, Mumbai

The modern view of cosmology is based on our understanding of the physics of elementary particles and fields on the one hand and astronomical observations of the expanding universe on the other. The interplay between these two apparently diverse fields of study, one of the microcosm and the other of the macrocosm, has enriched both of them and has given us a view into the beauty and elegance of the physical world. The speaker traced the progressive growth of ideas from the times of Copernicus, with increasing detail as the modern

epoch is approached, and briefly mentioned his own theoretical and experimental efforts to understand some of the key issues under discussion.

August 8

Computational biology and vice versa

Vijay Chandru
Department of Computer Science and Automation
Indian Institute of Science, Bangalore

Biology is celebrating the 50th anniversary of the discovery of the double helix, and is now poised to define the scientific agenda for the 21st century. In a surprisingly parallel development, computer science has progressed largely in the last five decades as well building on the theoretical foundations built by logicians in the first half of the 20th century. The two paths have crossed on occasion, sometimes with spectacular results. The exciting prospect is that the best is yet to come.

September 12

Partition

Dramatised readings of Ira Hauptman's play on Srinivasa Ramanujan

The Little Theatre of Hyderabad

This was the all-India premiere of a play on the life and work of the Indian mathematical genius Srinivasa Ramanujan by Ira Hauptman, of the Department of Drama, Theatre, and Dance at Queens College, New York, USA. The cast consisted of five characters: Ramanujan, G H Hardy, the Goddess of Namakkal, Prof Billington and Pierre de Fermat. The play had its world premiere at the University of California in Berkeley, USA in April 2003, and was read at NIAS with the generous permission of the author.

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** (*narasim@nias.iisc.ernet.in*).

CONSCIOUSNESS DISCUSSION FORUM

The Culture, Cognition and Consciousness Unit, in an effort to increase its activities in consciousness studies and to draw upon other existing sources of knowledge and interest in this area, has initiated a Consciousness Discussion Forum. The Forum has decided to meet once in about two months. Following the exchange of ideas in the first few meetings, an e-group on Consciousness has been formed. For more details, please contact **Sangeetha Menon** (*smenon@nias.iisc.ernet.in*).

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Meetings Attended and Lectures Delivered by NIAS Faculty

JULY TO SEPTEMBER 2003

Dilip Ahuja

Chaired a session on Environment International Dimensions, at the Symposium on Energy, Environment and Sustainable Development, Indira Gandhi Institute for Development Research, Mumbai, July 6-7

Served as a Member on the panel reviewing the Energy Efficiency component of the World Bank-funded India Renewable Energy II Project, New Delhi and Mumbai, July 19-28

Participated in the Policy Meeting on Water and Security in South Asia, New Delhi, September 22

Participated in the GEF meeting on Second National Communications to the Framework Convention on Climate Change, Mexico City, Mexico, September 25-26

B K Anitha

Facilitated the formation of a local implementation committee to check and prevent violence against women due to alcoholism at the Grama Vikas Balwadi Centre, Nagamangala, Pichagundanahalli Gram Panchayat, Kolar, September 4

Facilitated the formation of a local implementation committee to check and prevent violence against women due to dowry harassment at the Anganwadi Centre, Paadur, Majur Gram Panchayat, Udupi, September 10

Participated in and presented a paper on "Conceptual and methodological issues in understanding women garment workers" in the session on 'Long Working Hours and Short Working Life: The Crisis in the Lives of Women Garment Workers' at the Consultation on Labour Standards in the Indian Garment Industry, jointly organised by the Network of Social Action Groups (NSAG-

Fedina), Bangalore; the Gender Studies Unit of NIAS; Civil Initiatives for Development and Peace India (Cividep-India), Bangalore and Oxfam-GB in India, Bangalore, September 30

Malavika Kapur

Participated as a resource person at the South India AIDS Action Programme meeting to counsel children in the context of HIV and AIDS, Bangalore, July 28-29

Participated as a resource person in the Expert Meeting to review the curriculum of International Post-Graduate Diploma course in Guidance and Counselling, in collaboration with Commonwealth of Learning (COL), Canada through distance/online mode, NCERT, New Delhi, August 27-28

Delivered a lecture on "Gender and child mental health" as part of the Gender Awareness training programme of the DSERT, Bangalore for Head Masters, September 29

Arvind Kumar

Delivered a talk on "Ballistic missile stability in southern Asia" at the Aeronautical Development Agency, DRDO, Bangalore, January 14

Attended a roundtable discussion on Systems Engineering, organised by NIAS and DRDO, Bangalore, February 8

Invited to be a panelist and spoke on the "Strategic implications of US war on Iraq for India" in a discussion on War on Iraq: Implications for India", organised by School of International Studies, Pondicherry University, Pondicherry, March 27

Delivered a talk on "The relevance of Nehruvian thoughts and traditions to the international order" at the National Seminar on Nehruvian Philosophy and Traditions, organised by the Centre for Nehruvian Studies, Pondicherry University, Pondicherry, March 28

Served as a panelist in a discussion on War on Iraq: India's Policy Options, organised by the Institute of International Affairs, Bangalore, April 8

Delivered a talk on "Ballistic missile and strategic stability in southern Asia", Institute for Defence Studies and Analyses, New Delhi, June 10

Delivered a talk on "Ballistic missile stability in southern Asia", Institute of Peace and Conflict Studies, New Delhi, June 11

Participated in and delivered a talk on "India and nuclear weapons in the Indian Ocean" at the International Conference on India and the Emerging Geopolitics of the Indian Ocean Region, organised by the Asia-Pacific Center for Security Studies, Honolulu, USA, August 19-21

Participated in and delivered a talk on "International relations theory and deterrence in south Asia" at the International Conference on Deterrence Theory and South Asia, organised by the University of Pennsylvania Institute for the Advanced Study Of India, New Delhi, August 26-27

Participated in a roundtable discussion on Nuclear Future, organised by the Centre for Security Analysis, Chennai, September 16

Delivered a talk on "Strategic studies" and served as the moderator for a panel discussion, Department of International Relations, Stella Maris College, Chennai, September 17

Delivered two talks on "The role of nuclear weapons in international politics" and "India's nuclear strategy" in a UGC-sponsored refresher course organised by the School of International Studies and Department of Political Science, Pondicherry Central University, September 18

Sangeetha Menon

Delivered a lecture entitled "Being self-aware: Some interesting ideas from *Atmabodha* of Sankaracarya" at the Sri Aurobindo Aradhana Trust, Bangalore, September 9

N Shantha Mohan

Participated in and presented a paper on "Frame work of the Convention and guidelines for writing alternative report" in the National Consultation on the Preparation of the Second Alternative Report on CEDAW, organised by the National Alliance of Women, Hyderabad, September 26-27

Participated in and moderated a session on 'Long Working Hours and Short Working Life: The Crisis in the Lives of Women Garment Workers' at the Consultation on Labour Standards in the Indian Garment Industry, jointly organised by the Network of Social Action Groups (NSAG-Fedina), Bangalore; the Gender Studies Unit of NIAS; Civil Initiatives for Development and Peace India (Cividep-India), Bangalore and Oxfam-GB in India, Bangalore, September 29-30

R Narasimha

Addressed the Conference on Fifty Years of DNA, Maharani's College, Bangalore, September 30

Delivered the inaugural address of the First Semester of the BE Course, BMS College of Engineering, Bangalore, September 28

Delivered the Dhawan Memorial Lecture on "The revolutions of modern science and technology: An Indian perspective, Satish Dhawan Space Centre, Sriharikota, September 25

Delivered the keynote address entitled "Beyond the centenary of powered flight: The future of Indian aerospace" at the International Conference on Modelling, Simulation, Optimization for Design of Multi-disciplinary Engineering Systems, Goa, September 23

Participated and presented a paper at the Workshop on the Control, Safety, and Reduction of Nuclear Weapons, St Petersburg, Russia, September 15-19

Delivered a lecture entitled "Can it be boom-time for Indian aerospace?" *Prasthutha*, Indian Institute of Science, Bangalore, September 5

Delivered the valedictory address and presented a lecture on "The use of cellular automata in modelling the transition zone" at the Minnowbrook IV: Workshop on Transition and Unsteady Aspects of Turbomachinery Flows, New York, USA, August 17-20

Delivered the keynote address at the Sixth Annual Computational Fluid Dynamics Symposium, Indian Institute of Science, Bangalore, August 11

Participated in the Symposium on Advances in Fluid Mechanics, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, July 24-25

Participated and presented a paper on "Linear stability theory of nonparallel flows: The minimal composite equation approaches" at the London Mathematical Society Workshop on New Developments and Applications of Rapid Fluid Flows, Durham, UK, July 14-18

Attended the Bureau meeting of the International Union of Theoretical and Applied Mechanics, Tallinn, Estonia, July 5-6

M G Narasimhan

Delivered a talk on "Reflections on the growth of scientific knowledge" at the Seminar of the Future of the Sciences, NMKRV College for Women, Bangalore, September 24

Delivered a talk on "From usual to unusual structures of DNA" at the Seminar on 50 Years of DNA, Maharani's Science College for Women, Bangalore, September 30

Delivered a talk on "Reflections on the growth of scientific knowledge" at the Evolutionary and Organismal Biology Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, October 30

S Rajagopal

Delivered two talks on "Energy security: Nuclear option" and "Nuclear treaties" in a UGC-sponsored refresher course organised by the School of International Studies and Department of Political Science, Pondicherry Central University, September 15

Participated in a roundtable discussion on Nuclear Future, organised by the Centre for Security Analysis, Chennai, September 16

Sundar Sarukkai

Delivered a talk on "What's philosophy got to do with it?", Christ College, Bangalore, July 5

Delivered the inaugural talk of the Mathematics Club in St Joseph's College, Bangalore, on "What is mathematics?", September 1

Delivered a talk on "What is science?", NMKRV College, Bangalore, September 23

Anindya Sinha

Delivered two lectures entitled "Behavioural approaches to the study of consciousness" and "Genes and memes in human evolution" at the Biology Programme of the Bangalore Association for Science Education (BASE), Bangalore, September 20 and 27

Sharada Srinivasan

Delivered a lecture on "Tin bronze in south India" at the Conference on the History of Science, Technology and Medicine, organised by the Manipal Academy of Higher Education on the occasion of their Golden Jubilee Celebrations, Manipal, September 21

Participated in the INTACH Southern Regional Chapter Convenors' Meeting and three-day seminar, which included a visit to the restored Tipu Sultan's Armory in Bangalore, August 24-26

N Sudhamani

Participated in the Consultation on Labour Standards in the Indian Garment Industry, jointly organised by the Network of Social Action Groups (NSAG-Fedina), Bangalore; the Gender Studies Unit of NIAS; Civil Initiatives for Development and Peace India (Cividep-India), Bangalore and Oxfam-GB in India, Bangalore, September 29-30

VISITORS TO THE INSTITUTE

Dr Neil Joeck, Senior Fellow at the Center for Global Security Research at the Lawrence Livermore National Laboratory, USA visited the International and Strategic Studies Unit on July 2. On this occasion, a small group discussion meeting on "Indo-Pakistani Security Issues" was organised at the Institute.

Prof Robert G Wirsing and Dr Satu Limaye, Director, Research Division, Asia Pacific Center for Security Studies (APCSS), Honolulu, Hawaii, USA visited the International and Strategic Studies Unit on August 21.

Prof U Dinesh Kumar, Professor, Indian Institute of Management, Kolkata visited the International and Strategic Studies Unit on September 10.

Mr Saurabh Kumar, Indian Ambassador-designate to Ireland, was a visitor to the International and StrategicStudies Unit on September 15.

Upcoming Events

The Seventh NIAS Course for University and College Teachers on an Integrated Approach to Knowledge and Information, supported by the University Grants Commission, New Delhi and the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore will be held during October 27 to November 15, 2003. The theme of the course this year is "Frontiers of knowledge in the natural sciences, social sciences, technology and the arts". For more information, please contact Anindya Sinha (*asinha@nias.iisc.ernet.in*).

The Third Winter School on System Operational Effectiveness: Systems Engineering and Profitability will be held in NIAS during December 1-6, 2003. Please contact S Rajagopal (*rajgopal139@hotmail.com*) for more information.

The International and Strategic Studies Unit will organise an Indo-US Workshop on "Science and Technology to Counter Terrorism" in Goa in January 2004. For more information, please contact S Rajagopal (*rajgopal139@hotmail.com*).

A course in Systems Engineering will be organised for DRDO scientists by the International and Strategic Studies Unit at the Institute of Armament Technology, Pune, during January 2004. Please contact S Rajagopal (*rajgopal139@hotmail.com*) for more information.

An Appeal for Funds

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

About NIAS

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

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

The appeal

The pursuit of our goals demands a measure of autonomy. We need financial support from diverse

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

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

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
   May be named with concurrence of donor

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

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

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

Sangeetha Menon

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