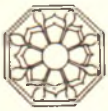
NIAS NEWS

Vol 11 No 3
July 2002

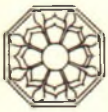
JULY 2002



Editors' Note

As before, we continue with our objective of bringing you newsworthy information that will make you aware of the research being conducted in our Institute as well as the many other activities that we organise every month. Please do write to us if you would like to participate in any of the upcoming events being organised at the Institute. And help us to strengthen our activities further.

Anindya Sinha, Hamsa Kalyani and
A Devaraju,
Editors, July 2002



From the Director's Desk

For two weeks from 17 June, there was a new kind of course at the Institute; the theme was *Understanding Science*. The course, co-sponsored by the Jawaharlal Nehru Centre for Advanced Scientific Research, was intended to introduce undergraduate students to the nature and growth of scientific knowledge. The students, numbering 37, came from many undergraduate and postgraduate colleges in the City, largely (but not exclusively) from scientific disciplines: there were some engineers and social scientists as well. We were very pleased with the response of the students to this kind of course, by their inquisitiveness about science and by their evident desire to understand the nature of something which has become a powerful force in the world. Talking to many of them, I could not help feeling how the present educational system fails to address this hunger for a certain kind of knowledge, chiefly because it does not 'belong' exclusively to natural or social science or to technology. The number of young men and women who would be interested in these broader issues will probably always remain relatively small, but they are clearly asking the right kind of questions for themselves, and I felt the Institute had done a good thing in trying to place before them the best thinking on this important subject. My colleagues in the Science and Society Unit, who organised this Course, have a longer report on it elsewhere in the Newsletter.

We have continued our security dialogues, two of which were held during this period. The first was with CISAC (US National Academy of Sciences) who came to Bangalore for the fourth in our series of

dialogues, held at the Institute during March 6-8. The second in our series of dialogues with the Asia Society was held in the Conference Centre at Pocantico near New York, in a lovely estate owned by the Rockefeller brothers. Looking back over these several meetings, it is gratifying that both parties have advanced so far from the issues that used to bother them in the immediate aftermath of the 1998 nuclear tests in the subcontinent.

The seminar on the *History of Ideas* is continuing with very interesting presentations and has elicited such an enthusiastic response that I am wondering whether we should not put those talks together. Any suggestions from those who have attended the seminars (or others) would be gratefully received.

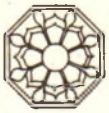
R Narasimha

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, international and strategic studies, mathematical modelling in non-traditional areas, primate behaviour, communication and cognition, science and society, science and technology policy, sociology and social anthropology, and theory of numbers.

More specifically, the **Mathematical Modelling Unit** has recently initiated a project, funded by the Indian Space

Research Organisation, entitled "Application of Chaos Theory to 2-D interpolation of irregular data sets and image compression"; this project aims to apply certain methods of non-linear dynamics (Chaos Theory) to two important problems in image processing.



Publications

NIAS PUBLICATIONS

I. WORKING PAPER

WP1-02 Binding experiences for a first-person approach: looking at Indian ways of thinking (*darsana*) and acting (*natya*) in the context of current discussions on 'consciousness'

Sangeetha Menon
Philosophy of Science Unit

II. SPECIAL PUBLICATIONS

SP7-02 IT for the common man: Lessons from India
(The Second M N Srinivas Memorial Lecture)

Kenneth Keniston

Sir Ashutosh Mukherjee Visiting Professor, NIAS, and Andrew Mellon Professor of Human Development and Director of Projects, Programme in Science, Technology and Society, MIT, USA

SP8-02 Children's double burden: Livelihood and schooling in a fishing community

Local Education Report – Chirala, Andhra Pradesh

A R Vasavi

SP9-02 Hashiye ke samuday aur nishkriya school
(Hindi version of the Report: Marginalised communities and dysfunctional schools)

Local Education Report – Khategaon, Madhya Pradesh

A R Vasavi

SP11-02 Nagaragalalli badathana mathu moolashikshanadinda vanchane
(Kannada version of the Report: Urban poverty and basic education deprivation)

Local Education Report – Bangalore, Karnataka

A R Vasavi

SP12-02 Caste, class and school

Local Education Report – Thanjavur, Tamil Nadu

A R Vasavi

BOOKS

Sarukkai, S. 2002. Translating the World: Science and Language. University Press of America, Lanham, Maryland, USA, pp. 166

PAPERS

Ahuja, D. 2002 Book review of "International Relations and Global Climate Change" by Urs Luterbacher and Detlef F Sprinz (eds). MIT Press, Cumberland, 2001. *Current Science* 82: 886-887

Menon, S. 2002. Structure of mind and structured mind. *Indian Philosophical Quarterly* 29: 334-344

Menon, S. 2002. The selfish meme and the selfless atma. *Sophia* 41: 83-88

Menon, S. 2002. The ontological pragmaticity of *karma* in the Bhagavad Gita: A mind to meditate and the meditative mind. In: *Perspectives on Indigenous Psychology* (eds. G Mishra and A K Mohanty), Advances in Psychological Research in India – Series 3, Concept Publishing Company, New Delhi, pp 326-338

Ragothaman, S, **Narasimha R** and Vasudeva Murthy, A S. 2002. Evolution of nocturnal temperature inversions: A numerical study. *Il Nuovo Cimento* 25: 147-163

Ramachandra, K. 2001. Could L Euler have conjectured what B Riemann did? In: *Proceedings of the IV International Conference on Modern Problems of Number Theory and its Applications, Topical Problems, Part II*, Tula, Russia, September 10-15, 2001; pp 137-142

Sreekantan, B V. 2002. Historical aspects of gamma ray astronomy. *Bulletin of the Astronomical Society of India* 30: 5-10

Ullas Karanth, K and **Madhusudan, M D**. 2002. Mitigating human-wildlife conflicts in southern Asia. In: *Making Parks Work: Strategies for Preserving Tropical Nature* (eds. J Terborgh, C van Schaik, L Davenport and M Rao), Island Press, Washington D C, pp. 250-264

Vasavi, A R. 2002. Book review of "Inter-culturalism, Education and Inclusion" by Jagdish Gundara. *Journal of Educational Planning and Administration* 16: 134-136

Vasavi, A R. 2002. Book review of "The Everyday State and Society in Modern India" by C J Fuller and V Bénéï (eds). *L'Homme* 163: 269-271 (in French)

ARTICLES

Srinivasan, S. Nataraja reveals cosmic secrets. The Speaking Tree, *The Times of India*, February 5

Vasavi, A R. Gujarat's proclivity to violence. *The Hindu*, May 5

Commentary

TRANSLATING THE WORLD: SCIENCE AND LANGUAGE

Sundar Sarukkai
Science and Society Unit

This is an extract from the Introduction of "Translating the World: Science and Language", a book authored by Sundar Sarukkai and published by the University Press of America, Lanham, Maryland, USA, in May 2002. The book is distributed in India by Viva Books, New Delhi (viva@mantraonline.com).

This book explores the relationship between scientific discourse and language. In particular, it is concerned with how theories are *written* in science and how these strategies of writing create meaning and knowledge. A sustained engagement with the writing of mathematics is a consequence of this approach. Through the length of the book, it is also argued that the theme of translation is relevant to an understanding of the discursive practice of science.

This book has three parts. The first part is concerned with how science writes its discourses. Like other genres, science too has its writing strategies. In Part One, I look at some of the writing strategies used in the formation of theories. One of the critiques against privileging the writing of science (and in general, focusing on the discourse) has to do with the relation between writing and epistemology. Even when writers from different disciplines show the presence of literary techniques like that of rhetoric and metaphor in the scientific discourse, it is not clear as to whether these strategies contribute to the epistemological claims of science. In this part, I look at some of the writing strategies that are essential to the formation of epistemological claims of theories.

After a brief introduction to the literature on the writing of science, I consider the intrinsic role of form in the theoretical discourse in physics. Theories draw upon the written form of graphs, diagrams, figures, mathematical symbols and so on. Many times, theories are written by following certain "rules" that are based on formal similarities of these many written forms. Problems in physics and solutions to them are many times suggested merely by looking at the written forms that occur in the discourse. Form and the related notion of similarity indeed suggest ideas for new theoretical structures. Following this discussion, I consider an example that exhibits the relation between ontology and the strategy that privileges the written form, drawing upon the example of gauge theory. This shows the importance of writing in creating not only new ideas in physics, but also new particles! The philosophical consequence of the formal similarity in the writing of theories leads us to consider the relationship between original forms and their copies, and eventually to the notion of simulacrum.

We cannot understand the writing strategies of the theoretical discourse if we do not query the writing of mathematics in sufficient detail. The second section of Part One deals with how mathematics is first to be viewed as language. Calculation, which is the heart of the discursive space of mathematics, should be seen on the order of writing. Calculation also reflects the metaphysical tension between speech and writing. It has an explicit temporality, and elements of rhetoric and narrative are associated with it. Mathematics has another explicit and important writing strategy that allows calculations to be performed and which also exhibits the Platonic impulse present in the writing of the discourse itself. This is the way in which mathematics creates and writes its "alphabets". I illustrate this with a few examples.

The above ideas of form, similarity and writing strategies are closely related to the notion of texts. Section three in this part offers a brief discussion on the nature of texts and textuality. In particular, the image of the world as an open book held by many scientists actually suggests that the world is first presented on the order of an original text, and writing science should be seen as writing the text of the original. In this context, it is useful to ask what characterizes the specificity of scientific texts. Drawing upon the idea of textuality, I describe the basic contours of scientific textuality.

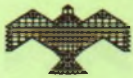
Part Two deals with how the theoretical discourse creates meaning. The fundamental mark of theories in science, be it in physics, chemistry or biology, is the *necessary* use of multisemiotic systems. How do we understand the possibility of coherent meaning of a text that is presented as a multisemiotic one? What is the role

of the writer (and reader) in creating (and reading) such texts? How is it possible to create "coherent" streams of meaning, as we move from NL words to mathematical symbols to diagrams, all as part of one text? It is clear, as Lemke (1998) has pointed out, that multiple semiotic systems, which scientific texts are, create multiple meaning. But then what distinguishes the creation of multiple meaning in scientific texts in contrast to other texts? It has been a commonly held view that symbolization, as in mathematics, reduces the ambiguity present in NL. Yet the very move of symbolization opens up new semantic spaces. Each new semiotic system, while closing one door opens another and *always* more than that. Thus, scientific texts should be primarily understood as agents that create a surplus of meaning. While symbolization "reduces" meaning in one domain (say the phenomenological one) it concurrently opens new domains of geometry and algebra, which are themselves used to generate newer narratives of the "reduced" phenomena. The shift from figures to geometry to algebra works towards exploding the semantic plurality inherent in the "original" phenomenon. Translation is one of the important models by which we can understand this shift from one semiotic system to another.

If theories are catalyzed by a desire to create richer semantic spaces, then it is clear that they have to be involved with metaphors. The literature on metaphors in science is disproportionately concerned with metaphors in the NL sub-texts of the scientific text. In the section on metaphors, I discuss the presence of metaphors in mathematics. The inalienable presence of metaphors in mathematical writing has helped to contribute to the growth of

physics and other disciplines which appropriate mathematics.

Hermeneutics exhibits the connection between meaning and interpretation, and therefore can also show the interpretative nature of any scientific activity, whether it is in the form of theoretical statements or experimental observation. The problem then is to understand the implications of such a claim. Does this then imply that all interpretations are possible and that science is reduced to "yet another" interpretative field? Even granting the hermeneutic character of science, is there still something that distinguishes it from other discourses? In trying to answer this, I embark on a more detailed critique of hermeneutics. What is special about the language use in science that makes it hermeneutical while at the same time allows it to articulate the possibility of "converging" interpretations? And why is it that hermeneutics has not been able to absorb into its own language the languages of science? This question is placed in the context of the notion of a circle, an image that is important in the expression "hermeneutic circle", and which is also a construct of central importance in science. I argue that the ideas of a circle have a rich interpretative structure and are expressed in many ways, as in the narratives of geometry, algebra, topology and so on. How is it possible then for hermeneutics to engage with these rich interpretative moves in science and mathematics regarding the "circle"? In other words, *what is the topology of the hermeneutic circle*? To complete the discussion on hermeneutics, I discuss the hermeneutics of mathematics, primarily the role played by operators and the = sign in making possible mathematical discourse.



While these are ways of understanding how scientific discourse makes meaning, it is also necessary to consider how science makes meaning of the world. To conclude Part Two, I discuss a conceptual category that is crucial in answering this question. This is the idea of the original. Understanding the impulse to scientific discourse through the original (instead of the real) leads us to consider the nature of the original and the relationship of original to copy and mimesis. The link between the world and this discourse is also exhibited through following the path opened up by the theme of the original. The final section argues how science not only reduces the world but also the text. This reductive move offers us one way to understand how science can compare the world and the text.

At various points in the first two parts of the book, it is suggested that the reading and writing of scientific discourse are intrinsically related to the notion of translation. Part Three attempts to bring all these points together and demonstrate why the complex ideas that underlie translation are relevant in clarifying the nature of scientific discourse. I distinguish two streams in this summary of translation: the literary and the philosophical. The issues related to translation arising from the concerns of literature are different from those of philosophy, although there are areas of overlap between them. By translation, I do not mean only the activity of translating a book from one language into another. Nor do I propose to be limited to the "naïve" view of translation which would suggest that translation aims to re-capture meanings in one text and "transmit" it into another text. The issues involved in the theme of translation are many and complex. These complex and rich ideas about translation make possible

the exploration of the link between science and translation, a link that is intimate, that which suggests a view of *science as translating the world.*

The multisemiotic nature of the scientific text immediately suggests that creation of meaning in these texts is related to the activity of translation. In particular, I discuss the relevance of the ideas of pseudotranslation, dubbing, minor literature and authorship in the context of scientific discourse. The philosophical issues related to translation are concerned not with the pragmatics of translating texts in specific languages, but arise from attempting to understand the possibility of translation itself. Their significance, therefore, is more oriented towards the foundations of science. In the context of philosophy, seminal works on translation by Walter Benjamin, Derrida, Steiner, Andrew Benjamin and others are drawn upon to isolate certain conceptual categories relevant to this exploration of the link between science and translation. These are the ideas of the original, the opposition between the literal and the figural, semantic "differential plurality" located in words, the relationship between words, names and things and Walter Benjamin's articulation of "pure language" and "kinship of languages".

To further exhibit the connection between science and translation, we have to specifically focus on the relation between mathematics and translation. The link between mathematics and translation is problematical. By referring to mathematics as the language of nature we are explicitly linking this language with that of truth, that is, truth of the world. Thus, mathematics has come to be associated with truth in ways that other languages have not. Consequently, given that what characterizes truth is its untranslatability,

mathematics must also, in principle, be untranslatable or at least not be translatable in the manner of other languages. This privilege extended to mathematics would also continue to reinforce the belief that mathematics is unique and not on par with other languages.

Such a view does disservice to the creative expression of mathematics itself. Mathematics is linked to the activity of translation in many ways. It arises in the first moment of tracing the alphabets and creating the symbols that are reduced from, and that refer to, NL terms. The reading of a mathematical text necessarily involves a constant shift from NL terms to symbolic ones. Translation is the model that can best explain this activity. By claiming to be the language of truth, mathematics attempts to take a privileged position among languages. But the very idea of applied mathematics depends largely on the possibility of translation. The same problems that plague translating one text into another also plague the distinction between pure and applied mathematics. What, in essence, is carried over from pure mathematical results to applied ones? What, other than translation, can explain how the ambiguity present in translating mathematical results into the domain of physics catalyzes the creation of new ideas and new models? These questions throw mathematics open to the concerns of translation.

Report

HOLISTIC APPROACHES IN THE STUDY OF HERITAGE

Sharada Srinivasan
Philosophy of Science Unit

Over the past six months, the author participated in a flurry of meetings that bear testimony to the growing realisation in academic circles of the importance of inter-disciplinary perspectives in the field of heritage studies. These topical seminars are briefly discussed here to emphasise the new approaches to archaeological, historical, art historical and anthropological research that recognise the need for engaging in dialogue across different disciplines to obtain fresh insights.

The picturesque temple town of Melkote was the venue of a meeting on February 2-3 on the "Iron and Steel Heritage of India", organised by the Indian National Academy of Engineering, the Department of Metallurgy, Indian Institute of Science (IISc), and the Academy of Sanskrit Research (ASR) at Melkote. This meeting sought to bring together scholars of Sanskrit with scientists and metallurgists sharing concern for the proper documentation of the iron and steel heritage of India. The Delhi iron pillar is evidence of the skills of ancient Indian metallurgists, while wootz steel from southern India is famed to have been used to make the reputed Damascus swords. The case for tapping into the rich resources of Sanskritic literature for insights into ancient Indian metallurgical practices was put forth very lucidly by Lakshmi Tathachar, Director, ASR. T R Anantharaman, who coined the catchy phrase – the rustless wonder – to

describe the corrosion-resistant Delhi iron pillar, gave a befitting overview of the iron and steel heritage of India. S Ranganathan of IISc, in an interesting talk titled "Damascus revisited" explored several intriguing vignettes ranging from the etymology of the term Damascus steel to new horizons in steel-making by alloying boron rather than carbon, and also argued for the integration of studies on metallurgical heritage into the education system as well as the systematic tapping of internet resources. Other key delegates included E Dwarkadasa of IISc, one of the organisers of the seminar, Kamanio Chattopadhyay of IISc and Raghunandan, formerly Director, Geological Survey of India-Bangalore Circle. The author, in the course of her talk, introduced her own archaeometallurgical research where she has uncovered previously unknown sites for wootz crucible steel production during fieldwork in Tamil Nadu and Karnataka. She also stressed the need for promoting archaeometallurgical studies at a professional level that can provide a link role between the different disciplines of archaeology, metallurgy, epigraphy and comparative literary studies in several languages to shed more concrete light on ancient metallurgical heritage and related archaeological and historical problems. An interesting exhibition on ancient Indian technology and metallurgy from textual sources was also arranged at the lovely campus of the Academy of Sanskrit Research, accompanied by a fine Bharatanatyam dance performance by Mrinalini Dasa.

'Thinking Wood, Carving Stone", an Associate's Lecture by John Marr, former Lecturer, School of Oriental and African Studies, London, at NIAS on February 12, vividly brought to light, with the help of excellent slides, the inter-connectedness

between stone and wooden architectural traditions in the Indian subcontinent as well as its religious architecture, ranging from Buddhist and Hindu shrines to the wooden mosques of Kashmir and Pakistan.

A conference titled "Archaeology as History: South Asia" was organised by Himanshu Ray of the Jawaharlal Nehru University and Carla Sinopoli of the University of Michigan, USA, between March 6-8 at New Delhi; this meeting was sponsored by the United States Education Foundation in India (USEFI) and the Indian Council of Historical Research (ICHR). This stimulating and well-conceived meeting brought into focus the need for a closer dialogue between archaeologists and historians to bridge the gap between the dialectics of the two disciplines and to explore the ways in which archaeological data can be more rigorously integrated into issues of social history. This is so especially given the fact that most archaeology teaching in universities is done through history departments rather than independent departments, as is exemplified by both Delhi and Bangalore universities. As tellingly indicated by Himanshu Ray, this introspection is crucial if the study of the ancient Indian past is to move away from the perspectives that have survived the colonial period or dominated historical debate in the post-independence era, while at the same time rising above the present politics of the nation-state. Some of the other interesting talks included those on coins and numismatic evidence in historical re-construction (Shrimali, Delhi University), the historically forgotten people of Vijayanagara (C Sinopoli, University of Michigan), the discovery of the Indus civilization (N Lahiri, Delhi University), archaeobotanical research on the Neolithic cattle mounds of Karnataka (R Korisettar, Dharwad University) and

ethnoarchaeology as history in the case of the Santhal Parganas (A Pratap). Also welcome was the participation of key members of the Archaeological Survey of India including R C Agrawal and Amarendra Nath who gave interesting insights into excavations at early historic sites such as Sanchi, Nagpur, Akhnur and Ambaran. The author, in her turn, in her paper on "Chronology and metal sources of south Indian metal icons: Insights from scientific analysis", discussed new insights into the dating and problems of chronology and provenance of South Indian Hindu, Buddhist and Jaina metal icons of the early historic to late medieval periods. These have come from her study of the metal technology, using finger-printing techniques such as lead isotope analysis, and compositional and trace element analysis, of about 150 representative and acclaimed images and Chola bronzes in the collections of the Government Museum, Chennai, the Victoria and Albert Museum, London and the British Museum, London, accompanied by archaeometallurgical studies on sites for copper and base metal production in South India.

The UNESCO-sponsored "International Workshop on the Proposed Regional Institute of Museology for the Asia-Pacific Region" was successfully organised by the Central Cultural Fund, Sri Lanka, in the verdant bird sanctuary and resort of the Habarana Lodge in Sri Lanka between May 8-11. The workshop was inaugurated by the Director-General, UNESCO, HE Koichura Matsuura and this was followed by a stirring keynote address, outlining the laudable objectives of the workshop, by Senake Bandaranayake, former Sri Lankan High Commissioner to India. This historic workshop formulated a proposal to set up an Asian Regional Institute of Museology and Culture in Development; it was

visualized that such an institute could play a major role in revitalising the institution of the museum in the Asian context in the face of challenges from globalisation, modernisation and destruction of both tangible and intangible heritage. It also aspires to address the issues of how museums, not only in towns but also at archaeological sites, can play a more significant role in the preservation and interpretation of cultural diversity and heritage as well as in more effectively managing heritage resources for outcomes such as learning in schools and visitor experiences in tourism, admittedly the fastest growing industry in the world. Amongst the key delegates were S Gorakshekar, former Director, Prince of Wales Museum, Mumbai, K.N. Srivastava, Joint Secretary, Ministry of Culture, India, A Galla, Technical Advisor to UNESCO and V Harish of the Commonwealth Association of Museums. The meeting also gave us an opportunity to witness the impressive strides made by Sri Lanka in managing their World Heritage Sites such as Polonnaruwa and Kandy under the Cultural Triangle Project with a world-class site museum at Polonnaruwa. The concept of good 'site museums' at sites of archaeological excavation is one that badly needs to attract attention in India.

The author also attended yet another interesting cross-disciplinary conference on "Traditional Arts of South Asia: Past Practice, Living Tradition" between between June 25-26 at PRASADA, De Montfort University, Leicester, United Kingdom, conceptualised and organised by C Branfoot of PRASADA. This conference aimed to explore how a study of the arts, crafts and architectural traditions of south Asia, as practiced today, can inform our understanding of these practices in Indian antiquity to yield art historical perspectives,

and also sought to explore how these crafts have evolved, changed or adapted in response to colonial, post-colonial and contemporary interventions and experiences. Some of the notable speakers at this conference included A Hardy, Director, PRASADA who spoke on 'Design through history and history through design', J Jain of the Jawaharlal Nehru University and former Director of the remarkable Crafts Museum, New Delhi on 'The Hindu icon: From the cultic to the exhibitory space' and A Dallapiccola on 'A contemporary pantheon: Popular religious imagery in South India'. The author's own talk titled 'From temple to mantlepiece: changing paradigms in the art and craft of south Indian metal icons' sought to explore the trajectory of changes within the seeming continuum of a millennium-old craft tradition for making Hindu metal icons that still survives in places like Swamimalai in Tamil Nadu, the various shifts in paradigm that the images have undergone – from originally being objects of ritual veneration to currently also being mantelpiece curios – and the ways in which these transformations have shaped artistic trends.

Finally, master craftsman and textile designer Ismail Mohammed Khatri from Kachchh in Gujarat talked about the Ajrakh and block-printing tradition, the vibant textile crafts of this region, which has successfully coped against the ravages of the earthquake last year that took a heavy toll on the lives and livelihood of many skilled artisans. While Kachchh seems to have been relatively free of the communal violence that has wracked many parts of Gujarat in the past few months, it is a fact that many artisans working in the handicraft sector – especially textiles and jewellery – in Gujarat, particularly in Kachchh, are Muslims. One really wonders how the

leaflets that are reported to have been circulated by some extremist proponents of Hindutva, exhorting for an economic boycott of Muslim goods and businesses, will further affect the prospects of such artisans.

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

Distinctions for NIAS Faculty

Arvind Kumar

Invited to be a Visiting Scholar by the Department of International Studies and Center for International Security and Cooperation (CISAC) of Stanford University, California, USA, to conduct research on the history of the nuclear weapons programme in southern Asia, from September 2002

R Narasimha

Honoured as a Doctor of Science (honoris causa) by the Banaras Hindu University, Varanasi

S Rajagopal

Nominated Member, Executive Committee, Gandhi Centre of Science and Human Values, Bharatiya Vidya Bhavan, Bangalore

Nominated Honorary Fellow, Indian Society for Non-Destructive Testing, Chennai

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 April to June 2002 included:

RELEASE OF POSTERS IN THE ADVOCACY PROJECT ON 'VIOLENCE AGAINST WOMEN'

April 30

In Kodagu, state violence has been identified as the form of violence, which affects women's status and needs intervention. Four posters on this theme were developed in consultation with both men and women from our project village and were released on April 30 at Kushalnagar. The event was organised in partnership with CORD, an NGO working in the area. Around 500 people from various NGO initiated women Self Help

Groups, tribal networks and most importantly our primary stakeholders, the men and women from the community we work with, attended the function. The guests included the Zilla Panchayat President, Deputy Superintendent of Police, Kushalnagar Range Forest Officer, Assistant Director, Department of Women and Child Development, President of Tribal Farmers Association and LAMP Society, elected representatives from the PRIs, officers from various line departments, other NGOs and local leaders.

N Shantha Mohan

THE FOURTH NIAS-CISAC DIALOGUE

May 6-8

At the Fourth CISAC-NIAS Dialogue held in NIAS in May, the topics that were addressed included Indo-US relations particularly with reference to the constraints and opportunities for various forms of cooperation, National Missile Defence/Theater, missile defence and the future of nuclear weapons in Asia and nuclear terrorism including strengthening material protection, control and accounting.

S Rajagopal

LECTURE SERIES ON MATHEMATICAL METHODS IN DATA PROCESSING

June 9-23

The Mathematical Modelling Unit conducted a series of weekend lectures on mathematical methods in data processing between June 9 and 23 at NIAS. On the first day, Savita Angadi of NIAS delivered a talk on "An overview of the applications of mathematical

modelling", while Prabhakar Vaidya of NIAS delivered one entitled "Counting ferns and flies". On June 16, Prabhakar Vaidya gave two talks – on the "Use of singular matrices" and the "Population genetics of *Drosophila melanogaster*" respectively. Finally, Venkatesh Nijamkar, member of the technical staff from C G Smith gave a talk entitled "An introduction to digital filters" and Savita Angadi delivered one on "The pathogenic model and the importance of filters in data analysis" on June 23. A number of faculty and students of NIAS , the Indian Institute of Science and the Jawaharlal Nehru Centre for Advanced Scientific Research, as well as some industry personnel attended these talks.

Savita Angadi

FIRST NIAS COURSE ON 'UNDERSTANDING SCIENCE'

June 17-28

The Science and Society Unit, as announced in the previous issue of the NIAS Newsletter, Vol. 11, No.2, April 2002, held a two-week course on 'Understanding Science' in NIAS. The course, the first of its kind, was co-sponsored by the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore. The course, aimed at introducing undergraduate students to the broader perspectives needed to understand the nature and growth of scientific knowledge, was attended by 37 students. The students were drawn from different degree colleges of Bangalore as well as the post-graduate centre of Bangalore University. While the majority of students came from different science disciplines, a few of them came from social sciences and engineering. One student was drawn from Fine Arts.

The course was inaugurated by Prof M S Thimmappa, Vice Chancellor, Bangalore University. In his inaugural address, Prof Thimmappa appreciated the initiative taken by NIAS in organising the course and suggested that courses of this kind should reach wider sections of the community. In his opening remarks, Prof R Narasimha, Director, NIAS, stressed the importance of looking at science and technology from a historical, philosophical and sociological perspective. Prof R L Kapur, Head, Science and Society Unit, gave a brief introduction to the course.

The two-week course comprised of lectures on History and Philosophy of Science as well as lectures on Scientific Creativity, History of Medicine and certain specific topics in the Life Sciences. A detailed programme of the course is given below:

1. Inauguration: M S Thimmappa
2. Sundar Sarukkai: Introduction
3. M G Narasimhan: Introduction to History of Science
4. R L Kapur: Scientific Creativity
5. Sundar Sarukkai: Epistemology
6. M G Narasimhan: Science in Ancient Period
7. R L Kapur: Scientific Creativity
8. Sundar Sarukkai: Logic and Rationality
9. M G Narasimhan: Science in Ancient Period
10. Roddam Narasimha : Science in Ancient India
11. M G Narasimhan: Science in Medieval Period

12. Sundar Sarukkai: Scientific Methodology

13. M G Narasimhan: Science in Modern Period

14. Sundar Sarukkai: Scientific Methodology

15. Anindya Sinha: From Genes to Memes: An Evolutionary Pathway

16. Rajesh Kochhar: Advent and Growth of Modern Science in India

17. M G Narasimhan: Science in Modern Period

18. Sundar Sarukkai: Scientific Methodology

19. Ravi Narayan: History of Modern Medicine

20. M G Narasimhan: Science in Modern Period

21. Anindya Sinha: Consciousness: Science and Evolution

22. Ravi Narayan: Philosophical Basis of Traditional and Modern Medicine

23. Sundar Sarukkai: Natural and Social sciences

24. Anindya Sinha: Ethics of Animal Exploitation

25. V Nanjundiah: What is Life?

26. M G Narasimhan: Summary and Conclusions

27. Sundar Sarukkai: Science and Society

In addition to the lectures, there were two special programmes, one on the reading of the play: 'In the Matter of J. Robert Oppenheimer' on June 24. The reading of the play was organised by the Little Theatre Group, Hyderabad, with participation of several NIAS faculty. The other programme was a panel discussion on 'Human Cloning' on June 28. The panelists were Dr Dilip Ahuja, Dr Anindya Sinha and Dr Sundar Sarukkai. The discussion was chaired by Prof R L Kapur. Towards the end of the course on 28 June 2002, the student-participants made project presentation on a wide variety of topics selected from different scientific disciplines.

Sundar Sarukkai

THIRD NIAS COURSE FOR SENIOR IAS OFFICERS

June 24-28

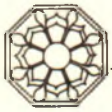
The Third NIAS Course on Disaster Management for Senior IAS Officers was conducted at NIAS by the International and Strategic Studies Unit. Twenty-two IAS officers from all over the country, many of them in very senior positions, participated in the course.

The topics covered in this course included natural disasters (earthquakes, floods, water crises), social challenges of disasters (medical and psycho-social issues), man-made disasters (nuclear, biological and chemical), technologies in disaster management (space technologies and environmental issues), and internal security. Eminent speakers from all over the country delivered lectures on these topics and engaged the participants in wide-ranging discussion. The participants were all praise for the inputs they obtained during the

course, the selection of the speakers, the campus and the facilities here, as well as the general management of the course.

The participants made project presentations on the topics of pre-disaster preparedness, post-disaster management and policy initiatives. As part of the course, the well-known former police officer, Julio F Ribeiro, currently the executive chairman of the Mohalla Committee Movement Trust in Mumbai, delivered a public lecture. The participants also had the opportunity to enjoy two Associate Programmes – a play-reading session and a panel discussion on human cloning. The play, In the Matter of J Robert Oppenheimer, written by Heinar Kipphardt and translated by Ruth Speirs, was read by Shankar Melkote and the Little Theatre Group from Hyderabad as well as faculty members of NIAS. The panel discussion – Human Cloning: Its Scientific, Philosophical and Policy Aspects – was presented by R L Kapur, Anindya Sinha, Sundar Sarukkai and Dilip Ahuja, all faculty members of NIAS.

Sridhar K Chari



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 April to June 2002 included the following events:

May 24 — Reform of the Indian legal system: Search for a new conceptual foundation

G Mohan Gopal
Director
National Law School of India University, Bangalore

June 24 — In the matter of J Robert Oppenheimer

A play by Heinar Kipphardt, translated by Ruth Speirs

Read by

Shankar Melkote and *The Little Theatre Group,* Hyderabad and NIAS Faculty

The play is based on the findings and recommendations of the US Personnel Security Board and the decisions and opinions of the U.S. Atomic Energy Commission, 'in the matter of Dr J Robert Oppenheimer'.

The Little Theatre, Hyderabad, is over five years old. It is an amateur reading group that has brought over 60 short stories, book excerpts, playlets, essays and poems to life in a no-set-no-fuss atmosphere using the story-telling genre to create maximum audiovisual impact. Its members come from all walks of life.

June 28 Panel Discussion on 'Human cloning: Its scientific, philosophical and policy aspects'

Panelists
R L Kapur, NIAS Chairperson)
Anindya Sinha, NIAS
Sundar Sarukkai, NIAS
Dilip Ahuja, NIAS

The objective of this presentation was to initiate debate and discussion on various aspects of human cloning. Each panelist spoke for about 15 minutes after which the session was thrown open to the floor, leading to intense wide-ranging discussions on several apparently controversial aspects of human cloning.

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 April to June 2002 have included:

April 10 and May 20

Review of 'War and Diplomacy in Kashmir during 1947-1948'

Arvind Kumar

The recent revelations made by Sri C Dasgupta in his book 'War and Diplomacy in Kashmir during 1947-1948' on the genesis of the Kashmir problem was discussed and analysed in great detail. It particularly focussed the four major questions:

Why did India take the Kashmir issue to the United Nations?
Why did India not carry the war into Pakistan?
What were the reasons behind India accepting a cease-fire?
What was the interplay between diplomatic and military developments at this point?

May 15

Agrarian distress in Karnataka: An overview

P K Shetty

May 22

Whither scientific quest for reality?

B V Sreekantan

Philosophy and Science have the same objective – the quest for ultimate reality. Helped tremendously by technology which it has given rise to, science in the past few hundred years has not only advanced our knowledge regarding the familiar world of our day-to-

day living, but has also extended the boundaries of our knowledge both in the directions of the ultra small and the ultra large and most interestingly, established fascinating connections between them. Also science has delineated the complex structures and intricate functionings of the human brain and its accessories. With all this wonderful information at its command and with mathematics as its perennial governor, where is science heading in the quest for reality? Some scientists believe that science in 2002 has certainly reached the stage where it is moving towards a grand synthesis and unification that implies the presence of an underlying, a spontaneously active universal substratum which perhaps is the ultimate reality. If so, is this reality in its essence, though not in detail, similar to the reality that is highlighted in some of the scriptures and what some of the mystics have claimed they have direct experience of? Does this similarity, if present, have any meaning? If so, to whom?

June 5

Some reflections on what is living and what is dead in Indian philosophy

M G Narasimhan

In this talk, Narasimhan shared some thoughts concerning a suggestion

offered by J N Mohanty, a well-known philosopher, in the context of what is dead and what is living in Indian philosophy. The work done by the late Deviprasad Chattopadhyaya in this area was also discussed and a few questions raised for further debate. Such a debate was considered extremely relevant not only from the point of view of the current scenario in philosophy but also in other fields like science and religion.

June 12 'Being' in Bihar: An introduction to Existentialism

Sundar Sarukkai

The other day somebody told me – 'I don't like all this abstract philosophy. Philosophy should be about our daily life.' I should have told her then to read existentialist philosophers but instead I sent her to Sri Sri R. After I was back from a trip to Bihar, somebody (else) said – 'You should give a talk on your trip to Bihar.' What is it about Bihar that makes somebody (anybody) say this? I mean: I have been to Chennai so many times but nobody has yet asked me to...

Yes, Bihar cannot be taken lightly. Although seen as the land of Laloo, aloo and balu (sand), my trip generated some profoundly useless philosophical questions on

the nature of Being and existence. And thus this talk on existentialism, which will hopefully satisfy both the somebodies or other anybodies for that matter.

But be warned: the road from Paris to Patna is filled with philosophical potholes. Also linguistic ones: Dostoevsky in anguished Russian, Nietzsche in angry German, Sartre in sensual French, Gandhi in chaste English and Laloo in mellifluous Bhojpuri!

June 19

"Neera kshira viveka": Separating signals from noise

Prabhakar G Vaidya

The problem of separating signals from noise is perhaps older than that of separating the proverbial "wheat from the chaff". A beautiful song, which we want to hear, is mixed with unwanted noise. We don't want to miss any part of the song, but remove as much noise as possible. This lecture discussed some of the traditional ideas for doing this and some of the newer ideas, based mostly on the concepts of chaos. Possibilities of mixing many signals together and then separating them one by one, cryptography and the sharpening of satellite images was some of the other themes discussed in the talk.

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

April 24 An engineer's view of structures in nature

A V Srinivasan
Bangalore

May 1 Corporate social responsibility

M A S Rajan
Bangalore

Business pursuits of the corporate sector should not let the sector abdicate its social responsibility. This noble ambition has lately acquired wider recognition than before. What gives it a place on the radar screen of global business? Corporate social responsibility can be looked at from several perspectives - from an evolutionary perspective, from the angle of category and size, and from the viewpoint of management science. Projecting the global ideas on the Indian business scene can also lead to many speculations – many of which were discussed in this talk.

May 9 Frederic Joliot-Curie: A biography

Radhakrishna
Bangalore

Frederic Joliot-Curie was an eminent nuclear scientist, resistance hero, public servant, and a communist dedicated to world peace. He studied at the

ESPC, and worked on polonium at the Radium Institute, under the direction of Mme Marie Curie. He married Irene Curie, her daughter. They discovered artificial radioactivity in 1934, for which they were awarded the Nobel Prize. He obtained important results on the positron, the neutron, the fission fragments from uranium, and showed the possibility of a chain reaction. During the war he was active in the Resistance, and logically enough, joined the Communist Party in 1942. After the War, he was appointed Haut Commissaire of Atomic Energy. The reactor research centre at Saclay was built under his direction. He was removed from all Govt. posts in April 1950, by Georges Bidault, and continued as Professor at the College de France, President of the World Organization of the Partisans of Peace, and later, after the death of his wife, Irene, in March 1956, as Director of the Radium Institute. He had a son Pierre, and a daughter, Helene, both distinguished physicists in their own right.

SPECIAL PROGRAMMES

There were three public lectures and three monthly seminars organised at the Institute during the period from April to June 2002

Public lectures

May 14 Impact of ballistic missile defense on southern Asia

Michael Krepon
Henry L Stimson Center
Washington D C, USA

May 8 Current thinking in the US about south Asia

Stephen P Cohen
Brookings Institution
Washington D C, USA

June 27 The challenges of internal security

Julio Francis Ribeiro, IPS (Retd)
Former Director General of the Central Reserve Police
Mumbai

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 this period included:

April 9 Growth, form and information

Alan Mackay, FRS
Birbeck College
University of London
London, UK

Genomics is only half of the secret of life, the other half of the secret being shape. The most important discovery of the twentieth century was that of the genetic code and the recognition of information-carrying structures,

all made of atoms. This talk traced out the development of ideas of change and of the formation of shape, along with the social forms, which fostered these ideas, to the separation out of information and its appropriation as intellectual property.

May 10 Evolution of the concept of entropy in engineering

J Srinivasan
Indian Institute of Science
Bangalore

The basic postulates of the second law of thermodynamics were proposed by Sadi Carnot, a French engineer, in 1824. His postulates were based on a dubious analogy between hydraulic and thermal machines on the assumption that heat was a fluid. This work was unknown until it was rescued by Claperyon, Clausius and Kelvin. The concept of ideal heat engines and entropy were found to be too abstract by most engineers. For a long time, the field of Applied Heat Engines remained distinct from Thermodynamics. The practical use of the second law by engineers was possible after entropy production in irreversible processes was demonstrated. The concept minimisation of entropy production is widely used today to optimise the design of thermal power plants, heat exchangers and other thermal energy systems.

June 14 What is a gene? The history of an ever-changing answer

K VijayRaghavan
National Centre for Biological Sciences
Bangalore

Genetics is the study of transmission of heredity characters from one generation to the next. The gene was first defined as the mechanism by which this transmission took place. In 1930 the gene was defined as a minute organic particle, capable of reproduction, located in a chromosome and responsible for the transmission of a hereditary characteristic. Later, it was found that the hereditary characteristic being transmitted was through the properties of proteins. Thus, each gene defined the properties of a specific protein. Experiments with bacteria showed that genes made proteins in a regulated manner. The gene must therefore have parts that are involved in regulation and parts that are required to make a specific protein. The biochemical and structural characterisation of genetic material provided molecular explanations for phenomena defined by classical genetics, and many surprises have led to the rethinking of the idea of the gene. With changing knowledge and understanding an abstraction that may have once seemed precise now appears less so. This talk examined the changing nature of the gene in history and illustrated how its various definitions were arrived at.

NIAS LITERARY FORUM

There was only a single meeting of the NIAS Literary Forum in the period between April and June 2002.

May 29 — Nothing to say

Savita Angadi
NIAS

A reading of a collection of poems written by Ms Angadi herself.

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

APRIL TO JUNE 2002

Savita Angadi

Delivered two lectures entitled "Opportunities for research in Image Processing and Time Series Analysis" and "Introduction to Nonlinear Dynamics" at the B V Bhoomaraddi College of Engineering and Technology, Hubli, June 1

B K Anitha

Presented the context of the "Violence against women" project, with special reference to violence against women due to alcoholism – the specific form of violence that is being addressed in Kolar district, Karnataka. This was a part of the poster release function held in Gram Vikas in which more than 500 women and men participated; April 6

Presented the importance of building partnership with the police, the forest officials, panchayati raj representatives and other stakeholders to address the violence perpetrated by the state in the poster release function jointly organised by CORD and NIAS at Kushalnagar, Kodagu, April 30

Lead the discussion, where the findings of the study on Women and Land Rights was presented, in a seminar organised by the Rural Development Institute, Bangalore, May 28

Arvind Kumar

Participated as a discussant in a session on Nuclear Deterrence in South Asia at the National Seminar on Nuclear Stability in Southern Asia, organised by the Institute for Peace and Conflict Studies, New Delhi, April 18-19

M D Madhusudan

Attended the International Student Conference in Conservation Science, organised by the University of Cambridge, Cambridge, UK, and delivered a talk entitled "The unlikely links: Connecting cowpats, coffee markets and wild herbivore conservation in India", March 25

Delivered a talk entitled "Conserving catfood: Large herbivore conservation in India" at the Institute of Zoology, Zoological Society of London, London, April 10

Sangeetha Menon

Delivered a talk entitled "Being with Being: Knowing Advaita Vedanta with a focus on consciousness" at the Bangalore Chapter of the Institute of Noetic Sciences, Bangalore, May 5

N Shantha Mohan

Participated in and chaired the sessions at the South Asia PhD Network Meeting on Interdisciplinary Research in Water Resources, jointly organised by the Nepal Water Conservation Foundation and the South Asian Consortium for Interdisciplinary Water Resources Studies (Hyderabad), Kathmandu, Nepal, April 19-21

Participated in and presented a paper on "Political participation of women in India"

at the UNDP APGEN Regional Evaluation / Planning Workshop, organised by IWRAW-Asia Pacific, Kuala Lumpur, Malaysia, May 10-13

Presented a paper at the Workshop on Women and Land Rights, organised by Rural Development Institute, Bangalore, May 28

Conducted gender-sensitisation training for the presidents of the milk associations of the Karnataka Milk Federation and bank officials, organised by NIPCCD, Bangalore, June 21

Conducted sessions on "Sexual harassment at the work place" for senior executives, organised by the National Institute for Public Administration, Bangalore, June 28

R Narasimha

Delivered the valedictory address, Citizenship Training Camp, Al-Ameen College of Education, Bangalore, April 2

Delivered the presidential address at the Seminar on *Science, Technology, Philosophy and Art: Karnataka's Tradition*, Mythic Society, Bangalore, April 28

Delivered a public lecture on "Boomerangs" for 'Looking Around', Indian Institute of Science, Bangalore, April 30

Delivered the valedictory address for the course on Emerging Trends in Satellite Meteorological Applications with Special Emphasis on Microwave Remote Sensing, Space Applications Centre, Ahmedabad, May 17

Delivered a lecture on "More verses for the brave", National Aerospace Laboratories, May 21

Delivered a lecture entitled "Heat flux scaling for turbulent convection at low winds in the atmosphere", Ninth Asian Congress of Fluid Mechanics, Isfahan, Iran, May 31

Participated in and led the Indian team to the second NIAS-Asia Society Dialogue, Pocantico, New York, USA, June 9-12

Delivered a lecture entitled "Science in ancient India", NIAS summer course for college students on "Understanding Science", June 28

Delivered a lecture on "Science and Religion" at the Seminar on Science and Philosophy, Shrimad Jagadguru Madhvacharya Moola Maha Samsthana Shri Uttaradi Mutt, Bangalore, June 30

M G Narasimhan

Delivered a series of eight lectures on history of science as part of the two-week NIAS summer course for college students on "Understanding Science", June 17-28

Sindhu Radhakrishna

Delivered a talk entitled "Primate communication" at a summer course for high school students, organised by the Bangalore Association for Science Education, Bangalore, May 11

S Rajagopal

Participated in the XIV International Amaldi Conference on Global Security and presented a paper on "The state of nuclear materials, protection, controls and accounting in India", Sienna, Italy, April 27-29

Participated in the Second NIAS-Asia Society Dialogue and presented a paper on "Energy questions: The need to exploit thorium", Pocantico, USA, June 9-12

Sundar Sarukkai

Delivered a series of eight lectures on philosophy of science as part of the two-week NIAS summer course for college students on "Understanding Science", June 17-28

Anindya Sinha

Delivered a talk entitled "Mind and consciousness in humans and animals" at a summer course for undergraduate students of biology, Bangalore Association for Science Education, Bangalore, June 6

Delivered three lectures entitled "From genes to memes: An evolutionary pathway", "Consciousness: In evolution and in science" and "Animal rights and human obligations: A reflection" as part of the two-week NIAS summer course for college students on "Understanding Science", June 17-28

C Srinath

Participated in and contributed to the National Conference on Domestic Violence in India, organised by the International Center for Research On Women (ICRW) at Indian Bank Management Academy for Growth and Exellence (IMAGE), Chennai, April 17-19

Conducted gender sensitisation training for the presidents of the milk associations of the Karnataka Milk Federation, organised by NIPCCD, Bangalore, June 21

Sharada Srinivasan

Delivered a talk entitled "The Chidambaram temple complex" to Class XII students of the Aditi Mallya International School, Bangalore, January 22

Presented a paper on "Wootz crucible steel from southern India: Some newly identified sites" at a seminar on Iron and Steel Heritage of India, organised by the Indian National Academy of Engineering, and the Department of Metallurgy, Indian Institute of Science, at the Academy of Sanskrit Research, Melkote, February 2-3

Presented a paper on "Chronology and metal sources of south Indian images: Some insights and scientific analysis" at a workshop on Archaeology as History: South Asia, sponsored by the United States Education Foundation of India and the Indian Council for Historical Research, New Delhi, March 6-8

Presented a paper entitled "Archaeometallurgy of south Indian metal icons" at the International Workshop on the Proposed Regional Institute of Museology for the Asia-Pacific Region, Habarana, Sri Lanka, May 8-11

Presented a paper entitled "From temple to mantelpiece: Changing paradigms in the art and craft of south Indian metal icons" at the Conference on Traditional Arts of South Asia: Past Practice, Living Tradition at PRASADA, De Montfort University, Leicester, UK, June 25-26

B V Sreekantan

Delivered a talk entitled "Science and reality" at Samvada, Bangalore, May 19

Delivered a talk entitled "Philosophy of science and Vedanta" at the Banglore Chapter of the Institute of Noetic Sciences, Bangalore, June 2

N Sudhamani

Participated in and presented a paper on "Gender policy and organisational change" at the 7th Gender Networking Workshop, organised by the Socio-Economic Unit Foundation, Thrissur, April 19-20

Participated in the Workshop on Women and Land Rights, organised by the Rural Development Institute, Bangalore, May 28

Prabhakar Vaidya

Delivered a talk entitled "Separating signals from noise" at the CSIR Centre for Mathematical Modelling and Computer Simulations, Bangalore, June 6

A R Vasavi

Delivered a talk entitled "Caste and class in India" at the Nightingale's Elderly Centre, Bangalore, April 12

Attended the international inter-disciplinary Conference on Violating Borders, organised by the Humboldt University and the Haus der Kulturen der Welt, Berlin, Germany, and presented a paper entitled "Repertoires in the reconstitution of cultures", June 27-29

H Venugopal

Participated in a signature collection campaign in protest against the Gujarat killings, organised by Vimochana, Bangalore, May 12

VISITS MADE BY THE FACULTY

Sharada Srinivasan

Visited Uppsala University, Sweden, June 27-29, in connection with a project on the Archaeology of Sri Lanka

VISITORS TO THE INSTITUTE

Ms Karen Westley, Shell Foundation, London, UK, visited the International and Strategic Studies Unit of the Institute on May 13.

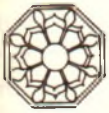
On May 14, Michael Krepon, Director, Stimson Centre, USA, visited the International and Strategic Studies Unit and held wide-ranging discussions with the Unit members.

Upcoming Events

The International and Strategic Studies Unit is organising the **NIAS-USIP International Conference on the theme of Prospects of Stability in a Nuclear Sub-Continent** between September 2-4, 2002

An international symposium on **Science and Beyond: Cosmology, Technology and Indian 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*)



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 lakhs or US $ 6,000
   May be named with concurrence of donor

4. *New Office Space*
   Rs 5 lakhs per room
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8. *West Wing, Main Building*
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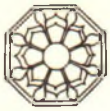

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The National Institute of Advanced Studies (NIAS) was conceived and initiated by the late Mr. J R D Tata, who sought to create an institution which would conduct advanced research in multidisciplinary areas, and also serve as a forum to bring together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

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

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Published by National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore 560 012 and printed by Verba Network Services, Bangalore