NIAS NEWS

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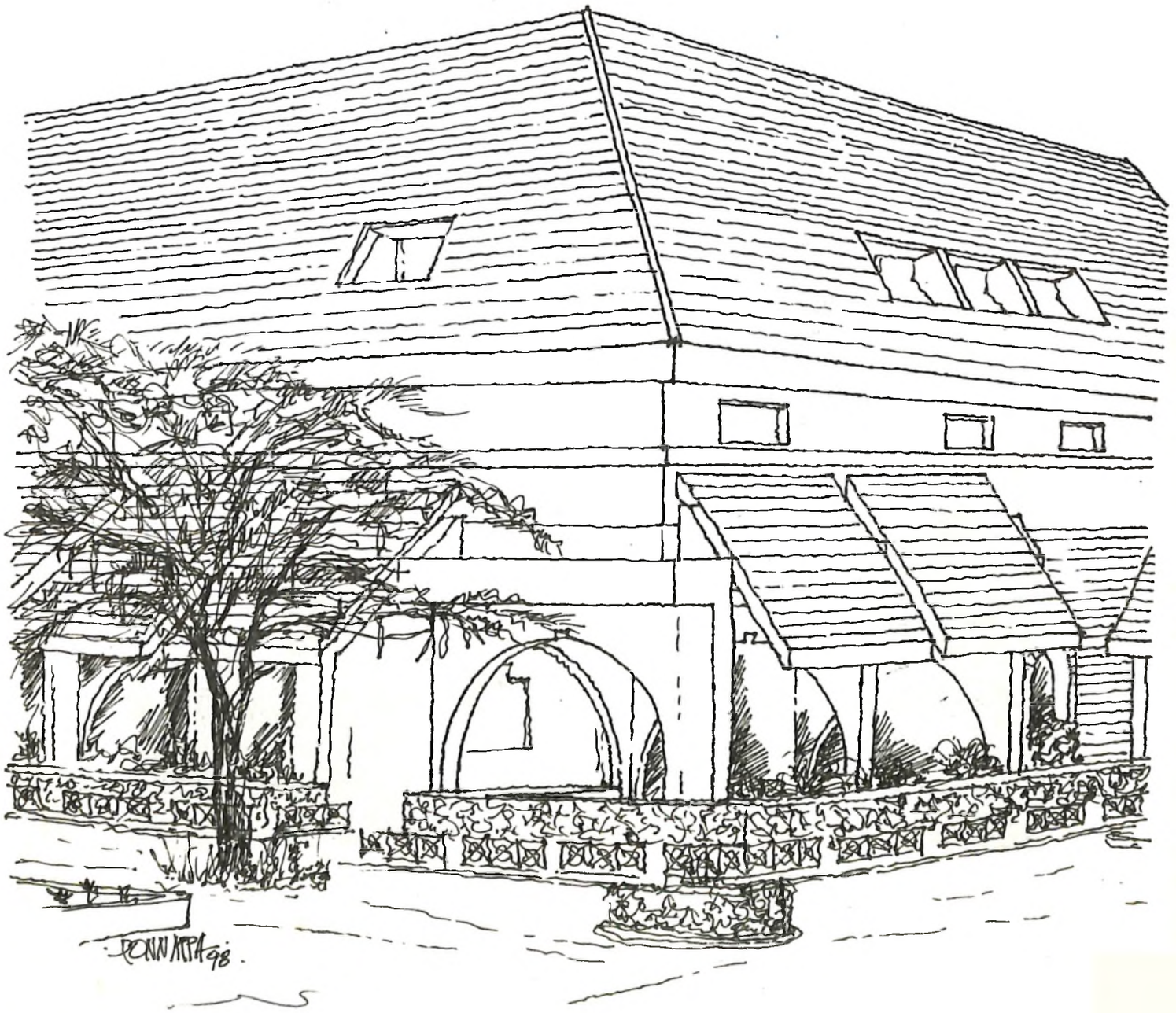


Editors' Note

This is the second issue of *NIAS NEWS*, a window into the National Institute of Advanced Studies, in its new avatar as a quarterly journal. We would like to begin with an apology about the delay in publishing the first issue in January; this was entirely due to circumstances beyond our control. There were also a few errors that crept in inadvertently – our sincere apologies for them! We, however, hope to be on time and avoid such errors with the future issues. Our objective is to bring you newsworthy information which will allow you to be 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
April 1999

Inauguration of the International Symposium on "Science in Society: A New Social Contract", on 27th January, 1999

From the Director's Desk

We have had another busy quarter at NIAS - busier than most, in fact, as you will see from this issue of NIAS News.

I have two happy events to report.

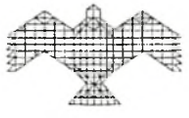
First, we received (just as we were going to press) a gift for our Library from Mr. Kanwal Grover, Chairman, Hindustan Export & Import Corporation Private Ltd. On behalf of NIAS, I want to express our gratitude to Mr. Grover, whose donation will go a long way towards strengthening our Library. We will return to this matter in one of the forthcoming issues of NIAS News.

Second, we are finally wired up on our campus. A LAN is operational since February, and faculty at NIAS now have faster electronic access to the rest of the world - and so does the rest of the world to us.

Our first reports in the new format are out, and I hope readers will find them of interest.

R. Narasimha

About the NIAS Logo



The NIAS logo can be traced back to a remarkable Sanskrit work called the *Sulva-Sūtra*, which, while being one of the four *Kalpā-Sūtra* texts concerned chiefly with vedic ritual, displays a deep knowledge of geometry from pre-Euclidean times. *Sulba* (or *Sulva)* stands for rope, string or cord, and is derived from the root *sulv*, meaning "to measure"; the *Sulva-Sūtra* is therefore literally "The Manual of the Cord". (To this day a cord is part of the basic equipment carried by an Indian mason, to be used in surveying or in laying out a structure in any construction activity: it is remarkable that the cord has been serving these functions for more than 2500 years!) The text is in fact a handbook of ritual geometry, and describes a series of geometric 'constructions' or procedures (using only strings and pegs) for the lay-out of sacrificial altars and fires of various shapes and dimensions, usually specified with extraordinary precision.

The *Sulva-Sūtra* attributed to *Baudhāyana* is considered to be the oldest as well as the most systematic and detailed version of the text. Scholars are not agreed on the precise date of the *Sūtra*, but the text clearly pre-dates *Pānini* and is generally thought to have been written sometime between the 4th and 8th centuries B.C., most probably in the 5th or 6th century B.C. However, the procedures described in the text must almost certainly have been known much earlier.

The NIAS logo displays the arrangement of bricks in the first layer of an altar called *syēna-cita*, in the shape of an eagle or falcon (= *syēna)*, and is described in Chapter 11 of *Baudhāyana* text. The construction of the altar needs a total of 200 bricks of five different shapes in the first layer. The second layer is similar in shape and also needs 200 bricks, but

five additional brick types are required. In constructing the altar, the bricks were laid in such a way that no brick rested on another of the same size and shape. Generally there were five layers, the odd ones being replicas of the first layer and the even ones of the second layer.

Using the dimensions of the bricks given in *angulas* in the text, and taking 1 ft = 16 angulas (as suggested by Fleet), I estimate the span of the altar-falcon as 40.5 ft or 12.3 m. The altar would have been knee-high. Its area is quoted as 7.5 square *purushas*; a purusha being the height of a man with uplifted arms (given as 120 angulas, i.e. 7.5 feet or 2.3 m); the area thus works out to 56.25 sq.ft. or 5.29 sq.m.

Vedic fire-altars were of two kinds: there were the perpetual ones (*nitya*) and the optional ones (*kāmya*). The *syēna-cita* is an optional fire, meant for those who desire heaven (*suvarga-kāma,* 8.1). It is constructed in the likeness of the falcon, after the shadow cast by it while flying (*utpatatam chāyay. ēty.arthah,* 8.5). The falcon shape is symbolic; the *Taittirīya Samhita* says,

> "He who desires heaven may construct the falcon-shaped altar; for the falcon is the best flyer among the birds; thus he [the sacrificer] having become a falcon himself flies up to the heavenly world."

Although the word *syēna* is generally used for a falcon, it is actually a comprehensive term for eagles, falcons and hawks, which constitute one of the three groups into which birds of prey were classified in ancient Indian texts. (All birds of prey are supposed descended from the primeval *garuda.*) In fact *syēna* is often used as a synonym for the vedic *suparna*, the celebrated golden eagle that is the strongest and fastest of the family. The female golden eagle, which is larger than the male, can have a wing span of over seven feet. The female is preferred by falconers for the chase, and is also known as the *gāyatri; syēna* (although a word that is masculine in gender) is in fact thought to stand for the female. Indeed the *Kapisthala Katha-samhitā* speaks of a *gāyatri - cita.*

Although the *Sūtra* is basically a manual of applied geometry, it is remarkable that, apart from "the formidable geometrical problems solved" there (Barrow 1992), many general geometrical propositions are stated (even more are implied) and frequently used. For example, the theorem now commonly attributed to Pythagoras (ca. 540 BC; "proved" in Euclid, ca. 300 BC) is explicitly stated in the following form in the very first section of the work (1.12, translation of Sen and Bag 1983):

> "The areas [of the squares] produced separately by the length and the breadth of a rectangle together equal the area [of the square] produced by the diagonal."

Such results were essential for constructing the altars to the specified shapes and sizes, especially when there were such requirements as (for example) the construction of an altar with double the area of but exactly the same shape as a smaller one.

The *syēna-cita* was therefore a creation for the spirit, founded on (or utilising, or even inspiring?) great mathematics and engineering – an apt symbol for all the things that NIAS stands for.

Incidentally, all of us learnt at school the elements of geometry to Euclid, and the creation of geometric constructions using only a ruler and compass. How different would it be if we did geometry with a string and a peg? – that may be worth exploring.

References

J. Barrow, 1992. *Pi in the Sky*. Little, Brown and Company, London.
K.N. Dave. 1985. *Birds in Sanskrit Literature*. Motilal Banarsidass, New Delhi.
S.N. Sen and A.K. Bag, 1983. *The Sulbasutras*. Indian National Science Academy, New Delhi.

Roddam Narasimha

MEETING OF THE COUNCIL OF MANAGEMENT AND ANNUAL GENERAL MEETING

The twentieth meeting of the Council of Management and the ninth Annual General Meeting of the Society of NIAS were held on 23 March, 1999. These were attended by Dr Raja Ramanna (Vice-Chairman), Mr R M Lala, Prof Roddam Narasimha, Prof G Mehta, Mr S C Kuntia, Mr Xerxes Desai, Prof M N Srinivas and Maj Gen M K Paul [Retd] (Secretary).

Research Programmes

The principal areas of research that faculty members of the Institute are currently involved in include consciousness studies, environmental toxicology, epigraphy, gender studies, international and strategic studies, philosophy of science, primate cognition, sociology and social anthropology, and theory of numbers.

In addition, a few new research projects were initiated during the period of January to March, 1999:

CREATION OF A DATABASE ON USE AND MISUSE OF PESTICIDES IN INDIA

P K Shetty
Environmental Studies Unit

This two-year project, supported by the National Science and Technology Management Information System, Department of Science and Technology, Government of India, aims to create a database on use and misuse of pesticides in agriculture and other related areas in India, particularly in Andhra Pradesh, Karnataka, Tamil Nadu and Punjab. The study also proposes to look into the issues related to pest fauna change, pest resurgence, occupational and health hazards as well as the social implications of the abuse of pesticides.

DIGITAL PRESERVATION AND COMPUTERISATION OF RARE MANUSCRIPTS

Sangeetha Menon
George M Williams
Philosophy of Science Unit

This project, supported by INFOSYS, Bangalore, involves the initial phases of a national initiative for the preservation of rare manuscripts (palm leaf and paper manuscripts; microfilm and microfiche). The project aims to develop a new copying method for digital archiving into computer databases. The method is cost-effective and leads to wider electronic accessibility of archival material. As a part of the project, a CD-ROM containing the digital images of selected illustrations in paper manuscripts, a manuscript of Bhagavad Gita and a manuscript pertaining to Dvaita Vedanta, has already been developed to demonstrate the nature and the results of the method. Prof B V Sreekantan is the Chief Advisor to this project.

VOCAL COMMUNICATION IN WILD BONNET MACAQUES: STRUCTURE, FUNCTION, MEANING AND PERCEPTION OF SOCIAL CALLS IN A PRIMATE SOCIETY

Anindya Sinha
Philosophy of Science Unit

This project, supported by the Wenner-Gren Foundation for Anthropological Research,

USA, for a period of three years, proposes to document the patterns of vocal communication and explore their underlying cognitive mechanisms in wild bonnet macaques (*Macaca radiata*). This study will not only focus on the general semantic structure and syntactic organisation of social calls, but also investigate the possible existence of dialects across different isolated social groups of this primate species.

COMMUNITY-SCHOOL PROFILES: SOCIOLOGICAL RESEARCH FOR PROMOTING PRIMARY EDUCATION IN INDIA

A R Vasavi
Sociology and Social Anthropology Unit

This project, supported by the Spencer Foundation, USA, for a period of one year, aims to conduct research on sociological issues related to promoting primary education in the country. The study will draw on data from six different communities in India, and delineate ways in which children are excluded from education. This project will also suggest measures by which communities and the state can promote primary education.

Important Events

Complementing its research programmes, NIAS organises a variety of seminars, workshops, and academic courses each year. One of the important events that was organised at the end of last year was:

SEMINAR ON "DIMENSIONS OF SCIENCE"

20 – 21 August, 1998

This two-day seminar on "Dimensions of Science", organised by R K Kochhar, provided a forum for experts drawn from science and humanities to discuss "the role of science in a context that transcends science". The seminar was jointly organized by NIAS, Indian Institute of Astrophysics, Bangalore, and the Sahitya Akademi, New Delhi. Sahitya Akademi's participation was made possible by the personal interest taken by its then president, Prof U R Ananthamurthy, who regrettably could not attend the meeting because of illness. The seminar placed on record its condolence on the demise of the well-known literateur Dr D R Nagaraj (Bangalore University) who was scheduled to be a speaker at the conference.

In his welcome speech, Prof Roddam Narasimha, Director, NIAS, drew attention to C P Snow's concept of "two cultures", one represented by scientists and technologists, the other by generalists, which regrettably stand apart. Noting that "the creative among the scientists and the social scientists are both vigorous in the framework of their own disciplines", he hoped that after the seminar each group would go back "with the idea that the other is not so bad after all!"

Prof C N R Rao's (Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore) own personal philosophy was epitomized in the title of his talk, " Doing science: imagination within bounds and passion without limits". "Science should find a place in man's life just like poetry and other creative endeavours. .....Inspiration, innovation, improvisation and imagination all have a place in doing science, but the one thing that has no limits is the passion for science". Striking a personal note, Prof Rao said, "Often I worry whether I am doing the right thing and whether what I am doing is relevant to science. Such self-doubt is probably necessary to improve one's quality of science, although it should not give room for lack of confidence". Prof Rao ended his talk by reciting lines from Robert Graves' poem, Images, which in turn closes with the couplet: "He in a new confusion of his understanding / I in a new understanding of my confusion".

Dr Raja Ramanna (NIAS), speaking on "Science and security", traced the history of incorporation of science into different dimensions of security. He pointed out that "security is an inherent evil and is caused by excessive nationalism. Although disarmament has been discussed at length, no country is willing to give up its national security". Prof Rajesh Kochhar (Indian Institute of Astrophysics and NIAS), in his paper "Science and domination: India before and after independence" discussed how the third world's attitude towards science has been fashioned by the colonial experience, with special reference to India. From Dr Mahendralal Sircar's initiative (1869-76) in setting up the Indian Association for the Cultivation of Science up to the First World War, Indians consciously sought to cultivate science with a view to neutralising the ideological advantage enjoyed by Europe by virtue of its proprietorship of modern science. After independence, India's most marked success has been in what the speaker described as "foreign-policy related science", which, strictly speaking, is not science but successful application of known technologies.

The well-known English-language poet, Mr Keki Daruwala, drawing on western thought and European poetry, spoke on "Science and poetry: Intersecting at the fringes". Both scientists and poets are explorers who try to tackle their problems up-front and resolve them..... It is not good enough to say that science is an objective study of phenomena and deals with outer reality while poetry is subjective and deals only with the inner reality. A good poem takes into account both the poet's inner environment as well as the external one". Mr Daruwala drew attention to the paradox that "however chaotic may be the inspiration of a poem, the poem itself imposes order on the chaos. In this sense, both in science and poetry, the sum is greater than the parts".

Prof N Mukunda (Indian Institute of Science, Bangalore) spoke about "Mathematical elegance in physical science". He argued that mathematics was more than a mere tool, "it comes as a guide and a sixth sense....and with it a heightened sense of elegance and beauty. Very often the mathematical expression of a new law came first, while its interpretation and physical understanding came much later. Maxwell's set of equations provides an obvious example of this". Mukunda then proceeded to emphasis the similarities in creativity in art and in science. "The artist as much as the scientist is carried along by a movement, a collective activity belonging to the time. Both require preparation, and both have their traditions. Terms like beauty and elegance have meaning as much in science as in art. An individual adept in science can be unusually sensitive to beauty in art. The converse however is often not true for technical reasons".

Prof Ravi Kapur (NIAS), speaking on "Creativity in science", said that India's contribution to creative development in science has been very limited. He cited inadequate funds and a lack of vision in national planning as among the causes. During his talk, Dr Kapur quoted extensively from a study done by him at the Indian Institute of Science, the object of which was to unravel the factors which influence creativity among scientists.

Dr Neelima Talwar (Indian Institute of Technology, Mumbai) presented "An analysis of science-drama in inependent India". Since the 1940s, plays have been written and performed in various Indian languages on science themes, providing a pan-Indian perspective. These plays strongly urge the audience to learn modern science. Playwrights like Badal Sircar have made a case for exercising a greater sense of responsibility in the use of modern science.

Mr Balan Nambiar, the well-known Bangalore-based artist- sculptor spoke on "Art and science". He pointed out that during the 15-17th centuries and then again during the mid 19th century, science in Europe influenced creativity in a big way. Painters benefitted from scientists' and technologists' work on colours and later on enamels, while the history of sculpture was influenced by technological

advances in metal castings, fabrication and the use of patina.

Dr Narendar Pani (Economic Times), speaking on "Economics as pseudo-science", argued that "what is wrong with economics today is that its practioners have converted it into a pseudo-science, in which the concept of science itself is very narrowly defined".

Finally, in his concluding remarks, Prof M N Srinivas (NIAS) compared natural science with social science, drawing particular attention to the role of ideology in the two. While the ideological leanings of a social scientist, especially an economist, determine the content of his work, the ideological leaning of a natural scientist remains a personal preference decoupled from his research.Thus, J B S Haldane's work in biological sciences was not tainted by his membership of the communist party.

A highlight of the seminar was the extended informed discussion after each talk. During one such discussion, Mr Girish Karnad (Bangalore) remarked that poets have lost their place in society. At least in the USA, poets are seeking refuge in teaching jobs and helping themselves by prescribing each other's work as textbooks.

R K Kochhar

Some of the important events during the early part of this year included:

XIII NIAS COURSE FOR SENIOR EXECUTIVES ON "LEADERSHIP AND SOCIETY"

4 – 23 January, 1999

The thirteenth NIAS course for senior executives, with P K Shetty as its co-ordinator, was held in January 1999. There were 18 participants in the course representing the Defence Research and Development Organisation, Defence Electronics Research Laboratory, Indian Space Research Organisation, Department of Atomic Energy, Department of Science and Technology, Ministry of External Affairs, Indian Council of Agricultural Research, Indian Army, Navy and Air Force. This three-week course attempted to analyse the nature of leadership in various sectors of our society and also touched upon the recent developments at the frontiers of knowledge in the natural and social sciences, and in technology.

The course content included a wide spectrum of topics dealt with by distinguished invited speakers, who command great respect, both nationally and internationally, in their respective specialisations. Some of the eminent speakers in the course included Field Marshal Sam Manekshaw, MC; Mr N Vittal, Central Vigilance Commissioner, New Delhi; Prof Kenneth Keniston, MIT, USA; Dr Asghar Ali Engineer, CSSS, Mumbai; Dr D M Nanjundappa, Deputy Chairman, State Planning Board, Government of Karnataka; Dr Joseph Tharamangalam, Vice President, Shastry Indo-Canadian Institute, New Delhi; Prof N R Madhava Menon, Member, Law Commission, Trivandrum; Mr N N Vohra, Director, India International Center, New Delhi; Mr H Y Sharada Prasad, New Delhi; and Dr Anil Kakodkar, Director, BARC, Mumbai. The course was inaugurated by Prof R Narasimha, Director, NIAS, while the valedictory address was given by Lt Gen (Retd) Satish Nambiar, Director, United Services Institution of India, New Delhi.

Apart from regular lectures and panel discussions, the course was complemented by self-introduction sessions, preparation of project reports or group term-papers, a lecture-demonstration on traditional Indian dance and field visits. Another highlight was Yoga which was taught to the participants at an introductory level as a mandatory component of the course.

P K Shetty

INTERNATIONAL SYMPOSIUM ON "SCIENCE IN SOCIETY: A NEW SOCIAL CONTRACT", PREPARATORY TO THE UNESCO WORLD CONFERENCE ON SCIENCE, 1999

27 – 29 January, 1999

This symposium, preparatory to the World Science Conference (WSC), to be held at Budapest, Hungary, from 26 June to 1 July,1999, was coordinated by A R Vasavi and the Sociology and Social Anthropology Unit, and sponsored by UNESCO, Paris and the Departments of Science and Technology, and of Education, Government of India.

The key objectives of the symposium were to review the fields and practices of sciences in terms of their social orientation and relevance. The symposium sought to contribute to the development of a new social contract for natural sciences that will enable them to further enrich the quality of life of the people in the twenty-first century. The symposium, with its 43 speakers, served as a forum for scholars and researchers from the social and natural sciences to discuss and debate issues pertinent to the new directions and orientation that the natural sciences could take. The perspectives and directions that emerged from this meeting will provide a long-term strategic framework for promoting cooperation and coordination among all interested persons in the scientific community, governmental authorities, non-governmental and international organizations and the private sector. This symposium will also submit recommendations and suggest amendments to UNESCO's Draft Declaration on Science and the Use of Scientific Knowledge to be adopted at the Budapest Conference. A summary of the recommendations of this symposium has been published as a Bangalore Communique and will be presented at the same conference.

Some of the key speakers at the conference included Dr Ali Kazancigil (UNESCO, France), Dr M S Swaminathan (CRSARD, Chennai), Prof Zeqi Qiu (Peking University, China), Dr Susantha Goonatilake (Buddhist Institute, Cambodia), Prof Michael Fischer (MIT, USA), Prof Yogendra Alagh, MP (New Delhi), Prof J P S Uberoi (Delhi University, New Delhi), Prof Arun Ghosh (New Delhi), Dr D Balasubramanian (Hyderabad), Prof G Padmanabhan (IISc, Bangalore), and Prof Madhav Gadgil (IISc, Bangalore)

The themes and topics, covered in the symposium, included science and civilisation; science-society linkages; environment, biodiversity and sustainable development; and science and basic human needs; technology development and poverty elimination; scientific expertise and international negotiations; gender equity in science; promotion of science education; science and ethics; implications of globalization for science; other forms of indigenous and civilisational knowledge; science, industry and knowledge as public good; and new mechanisms for funding science.

A R Vasavi

FIRST NATIONAL CONFERENCE ON "SCIENTIFIC AND PHILOSOPHICAL STUDIES ON CONSCIOUSNESS"

8 – 13 February, 1999

This first national conference on consciousness was organised by the Philosophy of Science Unit with Dr Sangeetha Menon as the coordinator. It was conducted in collaboration with the Jawaharlal Nehru Centre for Advanced Scientific Research, and was supported by the Departments of Science and Technology, and of Biotechnology, Government of India. This conference attempted to overview the current international status of research in consciousness and initiate inter-disciplinary interactions amongst scholars working in this area. The invited lectures and selected presentations covered areas like memory, neural correlates of consciousness, functional brain imaging techniques, quantum

mechanics and consciousness, physical sciences and consciousness, animal consciousness, linguistic approaches to consciousness, psychology of mystical experiences, epistemologies of consciousness in schools of Indian thought, Upanishads and Bhagavad Gita, as well as approaches to consciousness in Western thought. Some of the speakers at the meeting included Prof P N Tandon, Prof B V Sreekantan, Dr R L Kapur, Dr M Vidyasagar, Prof P K Mukhopadhyay, and Prof N Mukunda.

Sangeetha Menon

ORIENTATION COURSE ON "SOME LANDMARKS IN THE HISTORY OF PHYSICAL AND CHEMICAL SCIENCES"

15 – 17 February, 1999

The Philosophy of Science Unit organised this three-day orientation course for university and college teachers from different parts of the country. It was co-sponsored by the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, and the Centre for Theoretical Studies, Indian Institute of Science, Bangalore. The course was attended by 26 physics and chemistry teachers who have been teaching at the undergraduate and postgraduate levels.

The course, introductory and broad-based in nature, covered various developments in the tradition of natural philosophy, including the alchemical tradition and technical tradition; developments in individual domains and disciplines like history of physical thought, cosmic ray research, condensed matter physics, and biophysics; and optics and solid-state chemistry. The lectures were delivered by several distinguished speakers including Prof Robert Halleux, Dr Dhruv Raina, Prof C N R Rao, Prof B V Sreekantan, Prof T V Ramakrishnan and Prof G Ranganath. The course concluded with a special discussion on "Science in India", with two presentations made by Prof R K Kochhar on "Modern science in India upto 1900" and Dr Raina on "Theories of history in relation to 19th and 20th century science in India". Dr Raja Ramanna delivered the valedictory address on "50 years of Indian science".

The principal objective of the course was to provide a comprehensive overview of the history of science as a discipline in its own right, complementing the more formal studies of various special disciplines like physics and chemistry. It is expected that a course like this will initiate a process wherein the teachers will incorporate insights from history of science and broaden their understanding of science.

M G Narasimhan

WORKSHOP ON "NEW INITIATIVE IN THE FIELD OF ADVANCED MATERIALS DEVELOPMENT"

5 – 6 March, 1999

Based on discussions initiated by the Cosmic Science and Technology Foundation, Bangalore, this two-day workshop was organised by C V Sundaram to discuss possible new initiatives in the field of Advanced Materials Development. About twenty five scientists and engineers, drawn from national research institutions, as well as public and private sector industries participated in the workshop. The meeting was inaugurated by Prof Roddam Narasimha, Director, NIAS. Facilities for detailed characterisation of raw materials and products, a centre for synthesis of low-volume high-volume materials, a technology-proving facility (as an interface between the laboratory and industry), consultancy services for small-scale projects (with capital outlay up to Rs. 5 crores) and for problem-solving, and for developing a data-base on materials, equipment and processes were among the recommendations from the workshop. The need for actively promoting and nurturing invention, innovation and entrepreneurship was also emphasised at the workshop.

C V Sundaram

Visits

Members from an international organisation called South Asia Partnership (SAP), based in Canada, visited the Gender Studies Unit in March for discussions on possible collaborations that could be established in the future.

Prof Alice Thorner from Paris, France, and Dr K S Krishnaswamy, formerly Deputy Governor, Reserve Bank of India, visited the Sociology and Social Anthropology Unit in February, 1999.

Distinctions

M G Narasimhan

Nominated as official research supervisor for a research programme on history and philosophy of science in Kannada by the Kannada University, Hampi, Karnataka. Appointed copy editor for the Journal of Biosciences, published by the Indian Academy of Sciences, Bangalore.

P K Shetty

Elected as Vice President, Society of Pesticide Sciences (India), New Delhi, for the period of three years (January 1999 to December 2001).

C V Sundaram

Distinguished Materials Scientist of the Year Award for 1999, awarded by the Materials Research Society of India (MRSI).

Delivered the MRSI Honour Lecture at the Annual General Meeting of the MRSI, on 8 February, 1999 at Bhopal. The lecture was on "Nuclear Materials Development in India".

Publications

NIAS PUBLICATIONS

Copies of the below-mentioned NIAS publications can be purchased from the Institute. Please contact the Controller, NIAS, for more details.

I. NIAS REPORTS

R1-99 Behavioural strategies adopted by wild bonnet macaques during natural foraging and provisioning
Ram, S and Sinha, A

R2-99 Advocating for women's effective political participation
Anitha, B K, Antony, P and Gayathri, V

II. NIAS LECTURES

L1-99 Can the cultures of India survive the information age?
Keniston, K
Massachusetts Institute of Technology
Cambridge, USA

BOOKS

Vasavi, A R 1999. *Harbingers of rain: Land and life in south India*. Oxford University Press, New Delhi.

This book focusses on change in an agrarian society as it is subject to state interventions in its economy, polity and ecology. It goes beyond the portrayal of rural India in the usual categories of caste, kinship and religion, and integrates the political and economic dimensions of cultural categories and practices. The book calls attention to the importance of the political economy of cultural categories.

PAPERS

Sarukkai, S 1999. Science, knowledge and society. *Economic and Political Weekly* **34**: 779-784.

Shetty, P K 1999. Influence of metalaxyl on carbon dioxide evolution, dehydrogenase and phosphatase activities in the rhizosphere of wheat (*Triticum aestivum* (L.)). In: *Green Pesticides, Crop Protection and Safety Evaluation*
(ed. Agnihotri, N P, Walia, S and Gajbhiye, V T). Society of Pesticide Science (India), New Delhi, pp 221-230
(co-authored with S.P Magu).

ARTICLES AND INTERVIEWS

Deva Raju, A Swami Vivekananda. *March of Karnataka*, January, 1999.

Deva Raju, A Blind and visionary [A report on the Samarthanam Trust for the Disabled]. *Deccan Herald*, 26 February, 1999.

Deva Raju, A Science's savant for everyone [In honour of Prof Sethu Rao on the occasion of his being awarded the National Council for Science and Technology Communication Award for 1998]. *Deccan Herald*, 18 March, 1999.

Kumar, A Comments on the triangular dialogue. *Southern Asia Internet Forum* (www.stimson.org), 5 February, 1999.

Kumar, A Analysis on recent trends in Indo-US relations. *Website of Institute for Peace and Conflict Studies* (www.ipcs.org)

Kumar, A Comments on the Indo-Pak relations and the bus diplomacy. *Southern Asia Internet Forum* (www.stimson.org), 23 March, 1999.

Narasimhan, M G An interview of Prof M N Srinivas. *Snapshot*, October-December, 1998 (co-authored with R N Narahari).

Rajagopal, S US has tonnes of fissile material, India a few kilos – An interview by Mr Sridhar Krishnaprasad. *Times of India*, 11 February, 1999.

Shetty, P K Bioremediation – a safe eco-technology. *Sneha Chinthana*, March, 1999.

Srinivas, M N Mix sports with politics. *Outlook*, 25 January, 1999.

Associates' Programme

The Institute maintains a strong outreach with its Associates Programme. 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.

The Associates Programmes during the period from January to March, 1999, included the following talks:

✓	12 January	Leadership: Discipline and character Field Marshal Sam Manekshaw, MC Coonoor
✓	13 February	Vocal concert: Kritis of women composers Dr Shakuntala Narasimhan Bangalore
✓	16 February	Early history of experimental method Prof Robert Halleux Secretary-General International Union of History and Philosophy of Science, Liege, Belgium
✓	24 March	The threat of future climate change Dr Mike Hulme University of East Anglia Norwich, UK

Wednesday Discussion Meetings

The members of the Institute meet every Wednesday morning for informal academic discussions after a talk delivered by a member of the faculty. Wednesday meetings 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 follows these talks!

The Wednesday Discussion Meetings during the earlier part of this year have included:

24 February	Ecofeminism: Towards an integrated approach Ms Piush Antony
3 March	Shinto: Kami, samurai and shamans Prof George Williams
10 March	Genetics of hot-water epilepsy: A preliminary analysis Dr Anindya Sinha
17 March	The challenge of sustainability Prof C V Sundaram
31 March	The Bodhisattva way of peace Prof George Williams

Guest speakers at the Institute during this period were:

2 March	Impact of a national information infrastructure: Towards a coupled network design/general equilibrium model DR G N SRINIVASA PRASANNA Lucent Bell Laboratories New Jersey, USA
24 March	Dalit religion: Ellaiyamman as a symbol of collective resistance and emancipatory mythography DR SATHYANATHAN CLARKE United Theological College Bangalore

Upcoming Events

The Philosophy of Science Unit is organising a three-day workshop on "**Digitisation and Computerisation of Manuscripts**" from 5 – 7 April, 1999. This workshop envisages to acquaint archivists with new digitising methods and digital technologies for the preservation of rare manuscripts. Called the NiDAC (NIAS digital archiving and computerisation) procedure, a new approach devised as a part of the NIAS-INFOSYS project will be taught to the participants of the workshop. Specific equipment will be recommended along with crucial software, and proper configurations of equipment demonstrated. The workshop is meant for archivists, curators and librarians of manuscript archives in the country. Each archive can send one or two representatives. The registration fee for one nominee is Rs.2000/- and Rs.3000/- for two. The workshop will be led by Prof George M Williams. The contact person for the workshop is **Dr Sangeetha Menon** (smenon@hamsadvani.serc.iisc.ernet.in).

The International and Strategic Studies Unit is organising an one-day workshop on "**Energy for Rural Development**", which had been postponed earlier, on 18 June, 1999. The participants will include representatives from various departments of the government, as well as public and private sectors. The contact person for the workshop is **Prof S Rajagopal** (rajgopal139@hotmail.com).

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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 that will 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 is 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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