NIAS NEWS

A NEWS LETTER OF THE NATIONAL INSTITUTE OF ADVANCED STUDIES, BANGALORE

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This issue of the NIAS Newsletter happens to be the Tenth one, the first issue having been published in January, 1993. This also coincides with the Tenth year of NIAS activities. During the early years NIAS did not have a place of its own to build an establishment. The academic activities, nevertheless were organized for first four years in various places in India, without waiting for the development of its own infrastructure.

The fifth course for Senior Executives was held for the first time in its present location within IISc campus in September-October, 1991.

There has been phenomenal growth in NIAS activities during the last decade. From a faculty staff of five in January 1993, and with one core unit, the strength now has risen to twenty four with seven core units in the Faculty. The administrative support has also been geared up adequately with a minimum number of staff.

So also has been the progress of NIAS NEWS. From a humble beginning of a six page leaflet in January, 1993, it has grown into a full-fledged Newsletter of about thirty-six to forty pages. Its popularity has caught up in such a way that the increase in number of copies with each issue still continues to be inadequate. We thank our Director, Visiting Professors, other faculty members, Associates and Guest Speakers who have always so eagerly contributed to the News Letter in time. This has also helped the Editor to bring out all the issues so far on schedule.

NIAS functions as a "think-tank" covering a wide range of issues. The conduct of the programmes and other activities of NIAS follow the objectives laid down in the Memorandum of Association and as envisaged at the time of founding of the Institute.

The Institute has so far, conducted eleven annual residential and participatory courses for senior executives from the Government at the level of Joint Secretary as well as promising executives from private sectors showing leadership qualities in their mid-career. This specialized participatory- residential course covers a wide spectrum of lectures, seminars, workshops etc. on subjects as varied as health, history, philosophy, consciousness studies, problems related to women, international and strategic studies, economics, environment, energy and epigraphy etc. Each lecture is by an authority on the subject with enough time for the participants to interact with the speakers and amongst themselves.

Similar courses suitably modified in keeping with their requirement are also being organized for senior lecturers and junior professors of the Universities of the country with special consideration for women and those in the North-Eastern states, Jammu and Kashmir and other isolated Universities. Four courses so far conducted have been over-subscribed to and well appreciated by the participants.

The eleventh NIAS course on "An Integrated Approach to Knowledge and Information" for Senior Executives of the Government and Private Sectors was held between January 6 and February 1, 1997. In keeping with the multi-disciplinary objective of the course, a few of the varied subjects covered were Indian Economic Reforms, Foreign Policy Reforms, Judicial Activism (Panel Discussions), Alternative Energy, Labour Relations, Workshop on Gender Relations in Indian Society, Secularism and Religious Identity, History and Growth of Indian Popular Music etc.

The inaugural address was delivered by Mr. J.J. Irani, Managing Director of Tata Iron and Steel Company Ltd and the theme of his lecture was "Industry and the new economic policy".

NIAS is now preparing for the fifth NIAS course for University and College teachers scheduled to be held between October 6 and November 1, 1997.

NIAS is also preparing for a course for Indian Foreign Service Probationers in September 1997.

One of the most important Institute events of the first half of the year is the Inauguration of the JRD Tata Memorial Auditorium by Shri.H.D.Deve Gowda, former Hon'ble Prime Minister of India, in participation with Shri J.H.Patel, Hon'ble Chief Minister of Karnataka, Dr.J.J.Bhabha, Chairman, Dr.Raja Ramanna, Vice-Chairman and Director, Associates, other invited dignitaries and NIAS staff on 23 March, 1997.

Yet another important event conducted was a seminar on "Infrastructure-Key to Growth- Is Karnataka Geared up?" in the JRD Memorial Auditorium on June 13, 1997. The chief guest who inaugurated the seminar was Shri.R.V.Deshpande, Hon'ble Minister of Industries and Infrastructure, Government of Karnataka. The key note address was delivered by Shri.V.Suresh, Chairman, HUDCO, New Delhi. The seminar was a great success and a brief on the seminar appears elsewhere in the newsletter. This was jointly organized by NIAS and AAJUB (The Bangalore Chapter of the Alumni Association of Jadavpur University).

Message from the Chairman

National Institute of Advanced Studies
Bombay House, Homi Mody Street,
Mumbai 400 001.

June 28, 1997

JAMSHED J. BHABHA
Chairman of the Council

As Chairman of the National Institute of Advanced Studies (NIAS), I have great pleasure in expressing my felicitations and good wishes to Major-General Paul, Controller of NIAS, at the time of the publication of the Tenth Issue of the NIAS Newsletter, on his constructive role as its Editor, particularly as it commemorates the formal inauguration of the J.R.D. Tata Memorial Centre, and pays homage to the great citizen of India, recipient of the Bharat Ratna, who conceived and founded the National Institute of Advanced Studies.

JAMSHED J. BHABHA

From the Director's Desk

The National Institute of Advanced Studies will be completing a decade of its activities in a few months time. Most people will agree that it has made tremendous impact on the cultural and academic life of Bangalore. The Seminars held here have been greatly appreciated and with the coming of the new auditorium, we expect increased activities in classical music and art in general at the Institute. The auditorium has been built to have the best acoustics in such a way that the music is clearly spread into all parts of the hall in a natural way so that loud speakers become only accessories. It is however provided with the latest electronic equipments for recording etc. This multi-purpose auditorium is so designed that it can be converted in a few minutes to a seminar hall.

The Library of the Institute has been modernized in that it is becoming digitized and we expect to have more and more books on CDs. For the older books, however, we have to depend on the British Council and the Library of the Indian Institute of Science. There have been many doners who have gifted the library with precious books of the past.

If, however, I am asked as to which has been the most important activity of NIAS besides its academic activities, it is the interest we have taken in the civic needs of Bangalore city, so that it can remain a beautiful garden city in the years to come.

We have taken part in the life of Karnataka through our women's project to understand the problems of women directly through intensive field trips. We believe that all these help in projecting the bigger cities of Karnataka as a place to inspire us in the coming century.

THE FACULTY

The activities of various units of the faculty during the first half of the year are indicated unitwise in the succeeding paragraphs:-

UNIT: HEALTH AND HUMAN BEHAVIOUR

1. During this period, the Unit was sorry to lose the association of a very enthusiastic colleague Prof. Biswajit Sen who moved over to Calcutta to start his own private practice and continue with the McArthur Foundation-supported research on "Psycho-social Factors Influencing the Sexuality of Urban Indian Women".

2. The Unit received the permission from the sponsors to publish the report on "A Psycho-social Study of Alienation amongst Indian Youth".

3. The work on publication of "Qualitative Methods in Research" is in progress.

4. Ms. Susmita Subramanyam has completed the collection of data for her Ph.D thesis on 'A psycho-social creativity amongst Indian scientists' and is busy with the analysis.

5. Prof. R.L. Kapur participated in a national-level workshop on "Experience of Governance" organised by the Lal Bahadur Shastry National Academy of Administration, Mussoorie. The workshop was initiated by the 1958 IAS batch (now retired) who assembled to introspect on their work experience and formulate suggestions regarding improvement in the Indian Administrative Service. Prof. Kapur joined as an expert Psychiatrist to help them in the process of introspection.

UNIT: PHILOSOPHY OF SCIENCE

Dr. Sundar Sarukkai's work in philosophy in the last few months has focussed on postmodernism. His book on postmodernity in the Indian context is nearing completion. From June to August 1997, he will be collaborating with Prof. James Morley, who is visiting NIAS during this period, on the philosophy of the body. From June 1997, he will be taking up the Homi Bhabha Fellowship to continue his work on philosophy of science.

CONSCIOUSNESS STUDIES

Work is in progress in CONSCIOUSNESS STUDIES. The lecture series on related topics of consciousness continued with lectures on paranormal consciousness by Dr. M. Srinivasan (Bhabha Atomic Research Centre) and the development of consciousness amongst humans by Prof. R.L. Kapur on January 3.

Dr. Sangeetha Menon's work on Intentionality of Consciousness, Advaitic Interpretations of Consciousness and Consciousness studies in other systems of Indian thought continues. She has recently completed a paper introducing the notion of intentionality in Indian thought with particular reference to Adhyasa Bhashya of Sankaracharya, where she argues for redefinition of the Indian concept of intentionality based on tripartite cognitive functions explained. Another paper she is working on attempts at comparative study of Chalmersian 'hard problem' of consciousness and Samkarite approach to consciousness. She is also working for a specific paper on the Ethical contributions of 'Sthitaprajna' in Bhagavad Gita for the Faculty of Arts in Deakin Univeristy, Australia. Besides she is making the final draft of her doctoral thesis, the concept of consciousness in Bhagavad Gita, for publication, a chapter of which is also being published by Bharatiya Samskrti Samiti.

Dr. Anindya Sinha continues his exploration of the cognitive mechanisms that underlie the development and maintenance of social relationships in wild bonnet macaques *(Macaca radiata)*. His recent work has investigated the social knowledge that individuals might posses with regard to each other's dominance rank and allogrooming relationships. A frequent triadic interaction - displacement of one member of an allogrooming dyad by a third, more dominant, female - provides evidence that females seem to be aware of the social popularity (as measured by the grooming received from all troop members) of other individuals. That individual females might also know the relative dominance ranks of their troop members is revealed by the typical patterns of agonistic behaviour and allogrooming choices that follow such complex interactions. Finally, logistic regression models have been constructed in order to unravel the possible domains of an

individual's knowledge system that might critically influence decision-making during inter-individual interactions. These models have shown that the nature of monkey's social knowledge is egotistical in that other individuals are evaluated relative to oneself, integrative in that information about all other interactants are used simultaneously, and hierarchical in the ability to preferentially utilise certain categories of knowledge for the storage of related information from other domains.

Dr. M.G. Narasimhan is continuing his research studies on Chomskian and other psycholinguistic approaches to the study of language and mind.

UNIT: WOMEN'S POLICY RESEARCH AND ADVOCACY:

Progress of the Study of Status of Women in Karnataka:

This period marks the concluding stage of the First Phase of the research on Status of Women in Karnataka. This phase from August 1994 to June 1997, included secondary data collection and analysis, planning, design and execution of the primary research study on status of women in six districts of Karnataka state in collaboration with four NGO partners, analysis of primary data, and report writing. The final report of the study, which is currently under preparation, has two parts: Part I comprising preliminary analysis of the primary study and Part II comprising the secondary data for Karnataka.

During this six-month period, preliminary analysis of the data collected in the previous year was undertaken, and drafting of the preliminary report of the study was begun. The study report will be ready by July 15th. The preliminary report of the study will be released in the media, as well as to key government departments and Zilla Panchayats of the concerned districts. The report will be translated into Kannada by the end of the year. Thereafter, a series of district and state-level advocacy workshops have been planned, to disseminate the findings of the study and advocate appropriate changes in policies and programmes in order to raise the status of women.

Advocacy:

The energies of the Unit have been largely focussed on the data analysis and report writing, leaving little time for advocacy work. However, a few significant advocacy activities were also undertaken, including:

At the request of the UNDP, Ms. Anita Gurumurthy prepared a document on a conceptual framework for studying the status of women, entitled "Unpacking the Notion of Status of Women". This was based on the framework used for the study of the Status of Women in Karnataka, and is being published by UNDP, New York, for worldwide circulation.

Preparation of a Revised Country Strategy Paper by Ms. Srilatha Batliwala for the MacArthur Foundation's Fellowship for Population Innovations.

The Unit hosted a meeting of several NGOs with Mr. Wilmot James, head of IDASA, the South African NGO which helped usher in the transfer of power from the minority white government. Mr. James found the wide-ranging discussion on issues of democratization, decentralisation and local self-government most useful.

In collaboration with DAWN (an international women's network) and the Singapore-based NGO Engender, the Unit helped organise a planning meeting for a study of the impact of economic and environment changes on women's health. The study will be done in China, Indonesia and India.

Preparation of a module on the concept of gender and gender relations for the Karnataka State District Primary Education Project manual for primary school teachers.

Conducting a refresher course and preparation of study materials in Kannada on gender, gender relations, women's empowerment and status of women in Karnataka for the field staff of the Mahila Samakhya Karnataka Programme.

As usual, a large number of students, journalists, researchers and scholars from India and abroad have visited the Unit, and used the library and reference material on women's issues.

UNIT: ENVIRONMENT:

Dr. P.K. Shetty is progressing with his collaborative Research Programme with Prof.K.M.Madhyasta, Organic Chemistry, Indian Institute of Science, Bangalore and Dr.K.Raghu and Dr.N.B.K. Murthy, Nuclear Agricultural Division, Bhabha Atomic Research Centre, Mumbai, on 'Bioremediation of pesticide contaminated soils and effluents'.

A few selected microbial strains were screened for their ability to bring about transformation of Atrazine and Endosulfan. The fungal isolate, *Mucor* sp. was found to be efficient in bringing the transformation of endosulfan in the Czapek-Dox nutrient medium. For large scale preparation, three hundred flasks fermentation were carried out in batches by using this strain. The crude extracts were purified and the transformation products were subjected to the Mass spectra (JEOL-JMX-DX 303 instrument with JMA 5000 data system). The Mass spectral data revealed the presence of endosulfan sulfate, the major oxidation product of endosulfan and a dechlorinated metabolite of endosulfan. Further characterisation of other two unidentified metabolites is under progress. Endosulfan is a mixture of two isomers I (alfa) and II (beta) in the approximate ratio of 70:30 percent respectively. It was earlier reported that beta-endosulfan is more persistent than the alfa-endosulfan. An experiment was conducted to study the degradation of alfa and beta isomers of endosulfan by using the *Mucor sp.* It was observed that the organism degraded beta isomer of endosulfan more readily to endosulfan sulfate as compared to alfa endosulfan.

Ms. K.N. Savitha and Ms. Shubha Maiya are assisting Dr.Shetty in this programme. Ms.Namitha K.K. has completed her M.Phil programme under the guidance of Dr. Shetty. The thesis has been submitted to the Department of Microbiology, Bangalore University.

UNIT: EPIGRAPHY CENTRE:

The centre is poised to leapfrog into the next century with advanced versions of information technology for application to decipherment of epigraphic materials. Dr.H.K.Anasuya Devi, Principal Investigator of ISRO-RESPOND project along with two young Engineers is working on development of software techniques for epigraphy texts. The vital issue concerning removal of noise for better readability and removal of ambiguity from the considered texts is in progress. This would create an environment for epigraphists and archaeologists in their interpretation and classification of data on various topics.

The use of Standard techniques and a hybrid technique included in artificial intelligence, filtering techniques in digital image processing and knowledge based system for epigraphy texts are in progress.

The results obtained on sample texts of Brahmi belonging to 4th and 3rd century B.C. - include removal of the noise from the sample and partial extraction of characters from the sub-images. This helps deciphering the text automatically.

It is proposed to set up a high performance graphic workstation very soon, which is capable of processing large amount of epigraphic texts for decipherment tasks.

The unit has also been working towards setting up a good infrastructure for Electronic Connectivity at various places in NIAS and beyond.

UNIT: INTERNATIONAL AND STRATEGIC STUDIES (ISS):

The ISS Unit is continuing its ongoing project on "Global Perspectives on Technology Transfer and Nuclear Co- operation". Follow-up work to the Seminar on Nuclear Co- operation held in late 1996 is being conducted by identifying specific potential areas of Indo-U.S. nuclear technology and security co-operation and setting up joint working groups. It is expected that the reports of these working groups will have important policy influence in both countries.

A new project has been approved for the ISS Unit by the Department of Atomic Energy to analyse the technical and security aspects of selected nuclear treaties and agreements. While the study will be comprehensive in nature, it will emphasise implications for India's technical development and strategic policy. The principal

investigators are Mr. S. Rajagopal and Dr. Deepa Ollapally with the former taking the lead on this project. Dr. Ollapally is also actively building networks with research and policy institutions in Asia-Pacific in recognition of India's increasingly "Look East" foreign policy. She is editing a book on Asian security with collaborators from Japan, China, Malaysia and South Korea.

UNIT: SOCIOLOGY AND SOCIAL ANTHROPOLOGY

The newly established "Sociology and Social Anthropology" unit ties in with the interdisciplinary interests of NIAS and will provide sociological and anthropological perspectives to understanding contemporary cultural and social issues. For study and research, the main focus will be on changing cultures and societies of South Asia, with emphasis on India. A focus on changing cultures will necessarily involve studying rapid urbanisation and its effects on local social Institutions, values, ideas, and beliefs. The role of the media-both electronic and print-and advertisements and films on the people, particularly in the context of consumerism brought about by liberalisation will be of concern to the unit.

The cultural basis of agriculture, and the many changes in the lives of farmers is another area of concern. Here the initial focus will be on Karnataka, since both the members of the faculty have carried out intensive studies of villages in Karnataka, Prof. M.N. Srinivas in Mysore district, and Dr. A.R. Vasavi in Bijapur district. In addition to this focus on rural, agrarian cultures and societies, the rapid development of Bangalore and the national and international attention it is receiving, will be an area of interest. Here the unit hopes to begin this initially in a small way.

Issues pertaining to the educational system of the nation will also be addressed. This topic assumes urgency since there are attempts to make primary education a fundamental right and there is need for social research to support such endeavours. Finally, the unit's interest in autobiography as a means of studying change through focussing on individual lives, continues.

In addition to these areas of study, the unit will conduct research which will aid policy making in the fields of education, democratic decentralisation, gender equities, and civil rights. Currently the unit provides consultancy support to the Women's Policy Research and Advocacy (WOPRA) unit at NIAS. The unit will extend such consultancy to select government departments and agencies, NGOs, and education and training centres.

CANTOR'S THEOREMS AND NUCLEAR STRUCTURE:

RAJA RAMANNA

The work on unstable nuclear systems has been summerised in a new work entitled "The Systematics of Fundamental Particles and unstable nuclear systems using the concept of continuity and discreteness". This work clearly shows that many aspects of nuclear theory can be described by using the theory of discreteness and continuity as defined by Cantor. The latest work is on the internet at the following website. Web-site address is : nucl-th@xxx.lanl.gov.

VISITING CHAIRS

HOMI BHABHA CHAIR
PROF. C.V. SUNDARAM

During the period under review, surveys were carried out on the themes 'Energy Resources - Tradition and Renewably', and 'Energy Planning for India - Challenges and Choices'.

Work on the project 'Writing a Hisotry of the Atomic Energy Programme in India is in progress.

J.R.D. TATA CHAIR
PROF. M.N. SRINIVAS

Prof.Srinivas is continuing with the autobiography project. He wrote a 10,000 word paper on **"Practicing Social Anthropology in India"** for the Annual Review of Anthropology (Palo Alto, U.S.A.)

SENIOR HOMI BHABHA FELLOW
PROF. B.V. SREEKANTAN

The book on "Extensive Air Showers" written by Prof. Sreekantan in collaboration with Prof. M.V.S Rao of the Tata Institute of

Fundamental Research is under publication by World Scientific. This book describes the Extentive Air Shower phenomology, the detectors and techniques and the latest results on energy spectrum and composition of the primary radiation, the new results in the Tev and Pev astronomies and the prospects in the newly emerging neutrino astronomy.

A second book on "Cosmic rays" is nearing completion and will be finalised after the International Conference on Cosmic Rays to be held in Darban in July-August this year. On invitation by the Asiatic Society of India, Prof. Sreekentan has sent a 4000 words contribution on Cosmic Rays to appear in the Encyclopaedia Asiatica.

He has continued to work on the scientific aspects of Consciousness Studies.

He has written an article entitled "Science and Technology - Whither and Wherefore" for the benefit of College students. This has been translated into Kannada language and has appeared in the June special issue of "Sudha Kusuma."

DR. S. RADHAKRISHNAN CHAIR
MR. S. RAJAGOPAL

S. Rajagopal has joined the Internatinal and Strategic Studies Unit in March as Dr. S. Radhakrishnan Visiting Professor. Prof. Rajagopal was formally the Counsellor (Science) in the Technical Liason Mission of the Department of Atmoic Energy in Paris. Later he held the post of Secretary to the Atmoic Energy Commission and most recently he served as the Controller of Bhabha Atomic Research Centre. He brings vast expertise in nuclear technology and policy issues. Currently, he is engaged in research on "Global Non-proliferation and Implications for Indian Security and Nuclear Technology".

SIR ASHUTOSH MUKSHERJEE CHAIR

Ms. Anindita Balslev from the Danish National Institute for Educational Researcg, Denmark, has been invited for the above Chair as a Visiting Professor. She will be joining the Institute in early 1998.

VISITING FELLOW

PROF. JAMES MORLEY

Prof. Morley is in the Department of Psychology, St. Joseph's College, Hartford, Connecticut, U.S.A. He is spending June to August as a Visiting Fellow at our Institute to do collaborative work with Dr. Sundar Sarukkai on the Philosophy of the body. His research interests are in phenomenology and philosophical psychology.

ASSOCIATES' PROGRAMME

The topics of the Associates' Programme during the period were:-

1. **January 22, 1997** - **"A Piano Recital"** by Dr. Raja Ramanna. He played two complete Sonatas of Beethoven one of which was the Moonlight and the other in F # major. The other pieces were Chopin's Impromptus, Etude and Liszt's Hungarian Rhapsody No. 11 and his last work "Valse Oubliee". To end the concert was an Arabesque of Debussy. The performance was very well appreciated by the music lovers of Bangalore.

2. **January 29, 1997** - A lecture on **"What is Happening to Rural India"** by Mr. Joe Madiath, Executive Director, Gram Vikas, Berhampur, Orissa.

3. **February 28, 1997** - A talk on **"Indian Software Industry: Opportunities and Challenges"** by Mr. N.R. Narayana Murthy, Chairman & Managing Director, INFOSYS Technologies Ltd., Bangalore.

   Mr. Murthy delivered the lecture explaining the nature of the Indian Software Industry. He spoke about the parameters affecting the industry, the opportunities and challenges faced by this industry and other related topics such as globalisation and privatisation. Mr. Murthy spoke about the way the IT market evolved over the years starting from a period when the market was almost non-existent. He emphasised on increasing the premium on the IT market and outside orientation. Speaking about the software potential of a country like India, Mr.Murthy opined that around 5% of the country's population can participate in software development which is around 45-50

million, which is almost the entire population of a country like France or Britian. Since the demand for software industry is limitless and its capital to output ratio is 1:3 to 1:4, it deserves a lot of our attention, Mr. Murthy observed.

According to Mr. Murthy, the biggest competitive edge that India has its ability to mobilise large team of professionals in a very short period of time. He stressed on the high standards of communication facility necessary for collaborative software development. Mr. Murthy also observed that in todays market the solution providers are placed higher in the value spectrum compared to software developers.

Mr. Murthy said that the biggest challenge faced by the industry today is to retain the best and the brightest professionals as they have globally recognised skills and global opportunities. He criticised the idea of expecting financial incentives from the Government in a poor country like ours. He, however expected the Government to allow the Indian Companies to be listed on the stock market of U S to increase the capital investment in the industry.

4. **April 4, 1997** - A lecture on **"The Archaeology of the Lion Mountain: Perspectives in Contemporary Sri Lankan Archaeological Research"** by Prof. Senake Bandaranayake, Professor of Archaeology, University of Kelaniya and Director, Post Graduate Institute of Archaeology, Sri Lanka. A reference to the above topic appears in an article by Prof. Bandaranayake in this issue.

OTHER SEMINARS/WORKSHOPS

1. **March 13, 1997** - Seminar on **"Emerging Bangalore: Positive trends and effective programmes"**

The National Institute of Advanced Studies in association with the Parisara Vijnana Parishath, Officers Association of Directorate of Economics and Statistics, and Udhbhava, organised a seminar to evolve ideas on "Emerging Bangalore: Positive trends and effective programmes". The programme was held at the Chinnaswamy Stadium on March 13, 1997. The event had three inter-related sessions. The first session consisted of presentation of case studies on some of the effective peoples' programmes carried out in Bangalore by the Malleswaram Swabhimana Initiative, AVAS, Mythry and Waste Wise and BEL colony and factory initiatives. This was substantiated by a brief panel presentation with a few eminent people invited from different fields to present their vision of a better Bangalore. The last session was a moderated open-house dialogue which involved speakers from all the sessions and the participants. In the inaugural session, Sri.Ramesh Kumar, Hon'ble Speaker, Karnataka Legislative Assembly, urged the people and environmentalists to check the movement of polluting vehicles and suggested that the authorities concerned should be asked to discard those vehicles. The speaker expressed deep concern over the depleting forest cover in Karnataka. Presiding over the function Dr. Raja Ramanna, said that the people in the country needed to develop hygiene consciousness to fight pollution. He also said that the Government, which had to check the effluents, was not keeping an alert eye on safety measures.

2. **May 8, 1997** - One-day colloquium on **"Cultural Dynamics in South and Southeast Asia"** was held at NIAS. A brief on the colloquium appears elsewhere.

GUEST SPEAKERS

1. **January 6, 1997** - A lecture on **"Cold Fusion"** by Dr. M. Srinivasan, Associate Director, Neutron Physics Division, Bhabha Atomic Research Centre, Mumbai.

2. **April 23, 1997** - A lecture on **"Students Mental Health Problems in the IISc"**, Dr. Dharitri Ramprasad, Clinical Psychologist, Health Centre, IISc.

FACULTY LECTURE PROGRAMME

1. **March 5, 1997 "Almost minds: Cognition in wild bonnet macaques"** by Dr. Anindya Sinha.

In this lecture, Dr. Sinha discussed some of the fundamental differences underlying human and primate cognitive abilities. Different research methodologies that can be potentially

used to examine social knowledge, gestural and vocal communication, self-awareness and other aspects of social cognition in wild bonnet monkeys were also outlined.

2. **March 12, 1997 "Social knowledge in bonnet macaques"** by Dr. Anindya Sinha.

   This lecture focussed on one important aspect of social cognition in wild bonnet macaques: social knowledge. Some of the evidence to show that individual monkeys may indeed be aware of each other's positions in the dominance hierarchy and their social popularity were discussed; particular stress was laid on the development of rigorous statistical models that can throw light on the nature of such knowledge and hence, predict the outcome of complex behavioural interactions between individuals in a group.

3. **March 19 & 26, 1997** - The Development of Consciousness amongst Humans by Prof. R.L. Kapur.

4. **April 2, 1997 - "Is Consciousness Intentional? A Discussion in the context of Indian Thought"** by Dr. Sangeetha Menon.

   The lecture pertained to the development of 'intentionality' in the Indian systems of thought. In many of the systems it is the definition of consciousness that which leads to the notion of intentionality. Though intentionality is discussed both as an abstraction and a specific act, very often, the intentional process is given more significance, focusing on the conscious subject who intends. When ever we try to define consciousness it is not a definition for consciousness per se but the description of the phenomenon we mean consciousness to designate. 'Intentionality' gives the possibility to thematise consciousness which is otherwise labeled as elusive. When we ask 'Is consciousness intentional?' we need to also conceive the properties of the I-ness which intends it. Understanding intentionality depends upon the stand point we pre-define, whether it be idealistic or realistic. The presentation also elaborated the relational nexus between consciousness and intentionality with special reference to the Adhyasa Bhashya of Sankaracharya, which introduces a 'non-intentional' consciousness too for discussion.

LECTURES / ADDRESSES / PRESENTATIONS / PUBLICATIONS ETC.

(JANUARY 1, 1997 TO JUNE 30, 1997)

DR. RAJA RAMANNA
DIRECTOR

A. LECTURES/ADDRESSES:

1. **January 03, 1997** Attended the Inaugural Session of the Indian Science Congress and received the Asutosh Mookerjee Memorial Award (Gold Medal).

2. **January 22, 1997** Piano recital given at the Associates' Programme of the National Institute of Advanced Studies, Bangalore.

3. **January 29, 1997** Inaugurated the Silver Jubilee Celebrations of the Vijaya Pre-University College (Day and Evening) organised by the BHS Higher Education Society, Bangalore.

4. **February 03, 1997** Delivered lecture on "Structure of Music" to Manipal Academy of Higher Education, Manipal.

5. **February 04, 1997** Piano Recital given at Manipal Academy of Higher Education, Manipal.

6. **February 05, 1997** Delivered lecture on "Holistic Appreciation of Ancient Logic" at Manipal Academy of Higher Education, Manipal Institute of Technology.

7. **February 06, 1997** Delivered lecture on "A new approach to Nuclear Problems" at Manipal Academy of Higher Education, Manipal.

8. **February 23, 1997** Addressed at the Rotary District Conference - Vision'97 on "Technological Changes: Future Shock" organised by Rotary Club of Cochin, District 3200.

9. **February 24, 1997** Welcome Address delivered at the Workshop on the role of Registrar towards the Vice-Chancellor and vice-versa organised by the Education Department of Government of Karnataka.

10. **March 03, 1997** Addressed the gathering during the visit of Shri H.D. Deve Gowda,

Hon'ble Prime Minister of India to the Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore in commemoration of the Golden Jubilee Celebrations of India's Independence.

11. **March 13, 1997** Presidential Addressed delivered at the book release function of "Parisara Mundenu?" jointly organised by the Parisara Vijnana Parishat and Eco-passion Trust, Bangalore.

12. **March 23, 1997** Welcome Address delivered on the occasion of Inauguration of the JRD Tata Auditorium at the National Institute of Advanced Studies by the Hon'ble Prime Minister of India, Sri H.D. Deve Gowda.

13. **March 25, 1997** Lectured at the State Bank of India Staff Training College, Bangalore.

14. **March 31, 1997** Took part in the Panel Discussion on "Issues in Subsidising higher education" organised by the Department of Management Studies, Indian Institute of Science, Bangalore.

15. **April 17/18, 1997** Inaugurated the National Seminar on "Nuclear Physics and Engineering: Frontiers and Applications" and to deliver a lecture entitled "On a new approach to Nuclear Problems" at the Indian Institute of Technology, Kanpur.

16. **April 20, 1997** Delivered the Key-Note Address on "Inevitability of Nuclear Energy" at the 10th Anniversary Function of the Indian National Academy of Engineering, New Delhi at Bangalore.

17. **June 12, 1997** Convocation Address delivered at the 31st Annual Convocation of the University of Agricultural Science, Bangalore.

18. **June 13, 1997** Addressed the Seminar entitled "Infrastructure-key to Growth. Is Karnataka Geared Up?" jointly organised by National Institute of Advanced Studies and Alumni Association of Jadavpur University, Bangalore chapter at NIAS.

19. **June 14, 1997** Chief Guest for the Inauguration of the technical fete "Cyberia, 1997" and participated in the Panel Discussion on the topic "Role of the Industrial Sector in Technical Education - The Indian scenario" organised by the Institute of Electrical and Electronics Engineers, Inc. and Sri Jayachamarajendra College of Engineering, Mysore.

20. **June 18, 1997** Addressed the gathering at the Foundation Day of the Variable Energy Cyclotron Centre, Calcutta.

21. **June 30, 1997** Valedictory Address at the Workshop on "Democracy-Diversity-Stability in the Indian context - A Review in the 50th year of Independence" jointly organised by the Bharatiya Vidya Bhavan, New Delhi, Konrad Adenauer Foundation, New Delhi and Society for Peace, Security and Development Studies, Allahabad, held at Bangalore.

PROF. R.L. KAPUR

A. LECTURES:

1. **February 15, 1997**: Acted as a resource person at the monthly workshop for Bangalore School Teachers on "Promotion of Non- Violence and Living in Harmony" and spoke on 'Roots of Violence' at Sarvodaya International Trust, Bangalore.

2. **February 23, 1997:** Chaired the meeting on "Smoking and Health" at Bangalore Institute of Onchology.

3. **March 19, 1997:** Delivered a faculty lecture on "The Development of Consciousness amongst Humans" at NIAS.

4. **April 2, 1997:** Gave a talk on 'Violence amongst the Indian Youth' to trainees appearing for civil services (preliminary) examinations at J.S.S. Training Institute for Competitive Examinations at Bangalore. **April 8 - 12, 1997:** Delivered five invitation lecture at the Centre for Humanities, Manipal Academy of Higher Education, Manipal.

5. **May 12 - 16, 1997:** Spoke on 'Changing role of Indian Administrative Service in Modern India: Lessons from the experience of senior officers" in a national-level workshop on "Experience of Governance" organised by the Lal Bahadur Shastry National Academy of Administration, Mussoorie. He has further been invited to write a paper on 'Morale and Motivation of IAS Officers'.

6. **June 24, 1997**: Gave a talk on 'Child Development' to Mangalika group, Bangalore.

UNDER-PUBLICATIONS:

1. R.L. Kapur and Susmita Subramanyam: 'Creativity in Indian Science' in Psychology and Developing Societies, Allahabad, Vol. 9, No.2, 1997, in Press.

2. 'Mental Health Care in India: Changing Role of the Indian Family. Proceedings of the International Symposium on "Innovations in Psychiatric Rehabilitation", Richmond Fellowship Asia-Pacific Forum, Bangalore, 1995.

UNDER-PUBLICATION

R.L. Kapur and Susmita Subramanyam: 'Creativity in Indian Science' in Psychology and Developing Societies, Allahabad, Vol. 9, No.2, 1997, in Press.

PROF. C.V. SUNDARAM
HOMI BHABHA VISITING PROFESSOR

A. LECTURES:

1. **January 15, 1997** - Lecture on 'Energy Resources - Conventional and Renewable', at the 11th NIAS course for Executives.

2. **February 15, 1997** - 'The Role of Engineers in National Development' Convocation Address at Shanmuga College of Engineering, Thanjavur District, Tamil Nadu.

3. **May 8, 1997** - Lecture on 'Energy Planning for India - Challenges and Choices', at the Seminar on 'Energy, Environment and Health', Indira Gandhi Centre for Atomic Research, Kalpakkam.

4. **May 23, 1997** - Prof. Brahm prakash Memorial Lecture on 'The Legacy of Homi Bhabha, Vikram Sarabhai and Brahm Prakash', Trivandrum Chapter of the Indian Institute of Metals, RRL, Trivandrum.

B. PUBLICATION:

1. Rare Metal Metallurgy in the Indian Atomic Energy Programme, in the special issue of Minerals and Metals Review, New volume XXIII, No 5, May 1997, pp.87-90.

PROF. M.N. SRINIVAS
J.R.D. TATA VISITING PROFESSOR

A. LECTURES / SEMINARS:

1. **February 27, 1997** - Addressed a group of visitors sponsored by the Asia Society of New York on the subject "Whither India ?" at the West End Hotel.

2. **May 8, 1997** - Presided over the Colloquium on "Cultural Dynamics in South and South-East Asia" at the National Institute of Advanced Studies.

B. PUBLICATIONS:

1. At the invitation of the editor of the Journal Annual Review of Anthropology, Palo Alto (U.S.A), he has contributed a long paper entitled "Practicing Social Anthropology in India," for the 1997 issue. This is an account of his professional career. It will be published in September-October of this year.

2. "Caste, a Systemic Change ? This is a paper contributed to a volume on the Fiftieth Anniversary of Indian Independence edited by Prof S. N. Sridhar and Dr. Nirmal Mattoo of State University of New York, Stony Brook. The volume is likely to be published in September 1997.

PROF. B.V. SREEKANTAN
SENIOR HOMI BHABHA FELLOW

A. LECTURES:

1. **November 22, 1996** - Lecture on "Astronomy" organised by the National Institute of Advanced Studies for 10th NIAS Course participants on "Integrated Approach to Knowledge and Information."

2. **May 9, 1997** - Lecture on "Modern Astronomy" organised by Breakthrough Science Society at the MES College, Bangalore.

3. Lectures on great experiments in Science:

   (a) **June 5, 1997** - Experiment leading to "Discovery of Anti Paticles" was organised by the Indian Institute of World Culture.

   (b) **June 5, 1997** - Experiment leading to "Discovery of Mesons" was organised by Indian Institute of World Culture.

(c) **June 6, 1997** - Experiment leading to "Discovery of Pulsars and Neutron Stars" was organised by the Indian Institute of World Culture.

B. UNDER PUBLICATIONS:

1. Contributed 4000 word write-up on "Cosmic Rays" for the Encyclopaedia Asiatica.

2. "Extensive Air Showers" written with Prof. M.V.S Rao being published by World Scientific.

MR. S. RAJAGOPAL
DR. S. RADHAKRISHNAN VISITING PROFESSOR

A. PUBLICATION:

1. Mr. S. Rajagopal and Dr. Deepa Ollapally editors: "Nuclear Co-operation: Challenges and Prospects", NIAS. Tyrox, Press, March, 1997.

PROF. K. RAMACHANDRA
HONORARY VISITING PROFESSOR

1. Some local convexity theorems for the Zeta-Function-Like Analytic Functions - II, (with R.Balasubramanian), Hardy- Ramanujan J.Vol 20 (1997), 2-11.

2. On the zeros of a class of generalised Dirichlet series - XVIII, (with R.Balasubramanian and A.Sankaranarayanan), Hardy- Ramanujan J., Vol 20 (1997), 12-28.

3. On the zeros of a class of generalised Dirichlet series -XIX, Hardy-Ramanujan J., Vol. 20(1997) 29-39.

4. Fractional moments of the Riemann zeta-function, Acta Arith., 78(3) (1997), 255-265.

5. Professor Paul Erdos (1913-1996) (an obituary), Current Science Vol. 72, NO. 1, 10th January (1997), 78-80.

MS. SRILATHA BATLIWALA
FELLOW

A. LECTURES / WORKSHOPS / CONFERENCES / TRAINING PROGRAMMES:

1. **January 15, 1997** - Workshop to discuss Country Paper on "Education of Women and Girls in India", organised by ASPBAE, New Delhi.

2. **January 16-17, 1997** - Planning Workshop for Asian Research Study on "Women Re-Imagining the State", organised by the International Centre for Ethnic Studies, Colombo, at the Ford Foundation, New Delhi.

3. **January 22-23, 1997** - DAWN-Engender Planning Workshop on "Building on For Sustainable Health", St. Mark's Hotel, Bangalore.

4. **January 28-29, 1997** - Lectures on Gender and Gender Relations, Women's Empowerment, and Status of Women in Karnataka for Mahila Samakhya Karnataka Refresher Course for Field Staff, Bangalore.

5. **February 4, 1997** - Meeting and discussion with Dr. Wilmot James, IDASA, South Africa, and Trustee, Ford Foundation, NIAS Campus.

6. **March 5, 1997** - Presentation on "Role of Panchayat Raj Institutions in Promoting Women's Reproductive Health", Population Council, New York, 1997.

7. **March 28-29, 1997** - Lectuers on "Feminist Research Methodologies" and "A Framework for Studying the Status of Women", for the participants of the Summer School on Women's Studies, organsied by ASMITA, Hyderabad.

8. **March 31, 1997** - Final Selection Meeting of the MacArthur Foundation Fellowship for Population Innovations, New Delhi.

9. **April 21-24, 1997** - Keynote paper and presentation, with Prof. Gita Sen, on "Empowering Women for Reproductive Rights - Moving Beyond Cairo", at Seminar on Female Empowernment and Demographic Processes: Moving Beyond Cairo, organised by the International Union for the Scientific Study of Population, Lund, Sweden.

10. **April 25, 1997** - Lecture on "The Concept of Woen's Empowernment", at Seminar on Women's Empowernment organised by the Swedish International Development Agency (SIDA), Stockholm, Sweden.

B. PUBLICATION:

"Empowering Women", Seminar. Annual Issue No. 449, January 1997.

DR. DEEPA M. OLLAPALLY
FELLOW

A. LECTURES/SEMINARS/MEETINGS:

1. **January 8, 1997** - Lecture on "The Comprehensive Test Ban Treaty as a Case Study of Indian National Security" to the participants of the XIth NIAS Course on "An Integrated Approach to Knowledge and Information".

2. **March 27, 1997** - Lecture on "Prospects for Contemporary Indian Foreign Policy" to the Indiranagar Rotary Club.

B. PUBLICATIONS:

1. Review of Steven Hook, National Interest and Foreign Aid, (Rienner, 1995) and David Arase, Buying Power: The Political Economy of Japan's Aid, (Rienner, 1995 in Journal of Politics, February, 1997.

2. Dr. Deepa Ollapally and Mr. S. Rajagopal editors: "Nuclear Co-operation: Challenges and Prospects", NIAS. Tyrox, Press, March, 1997.

C. UNDER PUBLICATION:

1. "U.S. Arms Policy Trends and the Asian Balance of Power", submitted to World Policy Journal.

2. Editor of Volume, Asian Strategic Perspectives: Enduring Themes and Emerging Trends.

DR. A.R. VASAVI
FELLOW

A. LECTURE:

1. **May 8, 1997** - Narratives of Culture: Cultural Reconstitution in Contemporary India" at the NIAS Seminar on "Cultural Dynamics in South and South East Asia".

B. PUBLICATIONS:

1. Completed manuscript, "Harbingers of Rain: Cultural Contestations over Land and Life in South India", for publication to Oxford University Press.

2. Completed a review of the book, "Peasant Moorings: Village Ties and Mobility Rationales in South India" by Jean-Luc Racine for the Journal of South Indian Studies, Madras Institute of Development Studies.

DR. P.K. SHETTY
RESEARCH FELLOW

B. PUBLICATIONS:

1. Influence of Metalaxyl on Glomus fasciculatum associated with wheat (*Triticum aestivum L.*) *Current Science*, 72(4): 275-277, February 25, 1997.

2. Effect of pendimethalin on microbial activity and nitrification in a sandy loam soil. *Indian J. Plant Prot.*, 146- 149, 1996.

3. Effect of metalaxyl [Methyl N-(2-methoxy acetyl)-N-(2,6 xylyl)-DL alaninate] on nitrogenase activity and yield of mungbean. Prot. of Sixth National Biooraganic Symposium held at Department of Organic Chemistry, Indian Institute of Science, Bangalore.

C. BOOK:

Parisara: Mundenu?" (eds. a book related to Ecology and Environment) published by Parisara Vijnana Parishath and Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, 1997.

DR. SUNDAR SARUKKAI
RESEARCH FELLOW

A. LECTURES:

1. **January 21, 1997** - Ideology, XI NIAS Course.

2. **February - March, 1997** - Taught a module on philosophy of science to doctoral students at IIM, Bangalore.

B. PUBLICATIONS:

1. The Other in Anthropology and Philosophy. **Economic and political Weekly**, vol XXXII, No. 24, June 1997.

2. Democracy as Consumerism. To appear in **Denouement**.

C. PAPERS IN SEMINARS:

1. Dubbing - The Creation of Indian Modernity, National Seminar on **'Indian Modernities'**, CIEFL, Hyderabad, February 1997.

2. The Culture of Industrialization, National Colloquium on **'Modern Industrialization'**, IIPA, Delhi, April 1997.

D. OTHER ACTIVITIES:

1. Co-ordinator, XI NIAS Course for Executives, January 1997.

2. Visiting Faculty, Indian Institute of Management, Bangalore, February - March 1997

DR. SANGEETHA MENON
RESEARCH FELLOW

A. LECTURES:

1. **January 4, 1997** - Lecture on "The Ontological Pragmaticity Karma in Bhagavad Gita" at the World Sanskrit Conference, Bangalore.

2. **January 15, 1997** - Invited annual valedictory lecture on "Ancient values from Bhagavad Gita" at the National College, Bangalore.

3. **April 2, 1997** - Lecture on "Is Consciousness Intentional: A discussion in the context of Indian thought" at NIAS.

B. PUBLICATIONS:

1. "The Ontological Pragmaticity of karma in Bhagavad Gita", edited version of abstracts, World Sanskrit Conference.

2. "Work dynamics and Meditation in Bhagavad Gita", third volume of Veda Ganga, Veda Adhyayana Kendra, Bangalore.

3. "The concept of Consciousness in Bhagavad Gita", Encyclopedia of Indian Culture, Bharatiya Samskrti Samiti.

C. PAPER UNDER SUBMISSION:

1. "Towards a Sankarite approach to Consciousness - A discussion in the context of Chalmersian Hard Problem."

D. INVITED LECTURE:

1. Lecture on a Sankarite approach to Consciousness at the International Congress of Vedanta in Rishikesh.

DR. ANINDYA SINHA
RESEARCH FELLOW

A. LECTURES:

1. **November 14, 1997** - Invited lecture on "Social cognition in wild primates: Observations and experiments", Bose Institute, Calcutta.

2. **March 10, 1997** - Invited lecture on "What do monkeys know about each other? Social knowledge in bonnet monkeys", Department of Crop Physiology, University of Agricultural Sciences, Bangalore.

B. PUBLICATION:

1. Knowledge acquired and decisions made: Triadic allogrooming interactions in wild bonnet macaques, *Macaca radiata*, **Philosophical Transactions of the Royal Society, London, in press.**

C. OTHER ACTIVITIES:

1. Supervision of a dissertation on "Social relationships among wild bonnet macaques in the Mudumalai Wildlife Sanctuary, Tamil Nadu" by Sunita Ram for a Master's degree in Ecology at the Salim Ali School of Ecology, Pondicherry University, Pondicherry.

2. Co-ordinator of the 5th UGC sponsored course for University and College Teachers to be held in NIAS, October - November 1997.

DR. H.K. ANASUYA DEVI
RESEARCH FELLOW

A. LECTURES / TECHNICAL SESSIONS / INTERNATIONAL CONFERENCES:

1. **April 26-28, 1997** -XXIII Annual Congress of the Epigraphical Society of India and XVII Annual Conference of the Place Names Society of India. Participated and presented a technical paper on **"Image Enhancement Technique for Epigraphy Texts"** held at Tanjavur.

2. **May 8, 1997** - One day colloquium on **"Cultural Dynamics in south and Southeast Asia"** organised by Epigraphy Centre, NIAS, Bangalore. Presented a technical paper on **"Computers, Artificial Intelligence and Computer Aided Decipherment".**

B. PUBLICATIONS:

1. Computer Aids to Epigraphy, Journal of Epigraphal Society of India Vol.23 m1997. pp 114-120.

2. **Image Enhancement for Epigraphy texts** submitted to the Journal of pattern recognition letters.

C. OTHER ACTIVITIES:

1. Co-ordinator one day colloquium on **"Cultural Dynamics in South and Southeast Asia".**

2. Supervision of B.E. students from BMS College of Engineering, Bangalore, on projects entitled **Image Processing and Restoration Techniques.**

MS. SUSMITA SUBRAMANYAM
RESEARCH ASSOCIATE

Delivered a series of lectures at the National Law School of India University for fifth year students as part of the seminar course on 'Law and Psychology'. Involved in organising and evaluation of this three month seminar course.

DR. ANITHA B.K.
RESEARCH ASSOCIATE

LECTURES/WORKSHOPS/CONFERENCES/TRAINING PROGRAMMES:

1. **January 24-25, 1997** - Participated in a Workshop on Panchayati Raj organised jointly by NOVIB and ISEC.

2. **February 16, 1997** - Presented a paper on "Financing Higher Education - State Vs Private Funding", organised by St. Joseph's College of Arts and Science, Bangalore.

3. **February 21, 1997** - Presentation on the framework and methodology of the study of Status of Women in Karnataka to staff of Vimochana.

4. **March 10-14, 1997** - Attended the second module of the training programme for NGOs on Globalisation and Liberalisation, organised by IIM, Bangalore.

5. **April 22-23, 1997** - Reource Person at a workshop for high school teachers conducted by the DSERT to prepare a gender manual.

6. **April 28, 1997** - Presentation about the work of the WOPRA Unit to a team of human rights activists and scholars from the USA.

MS. ANITHA GURUMURTHY
RESEARCH ASSOCIATE

A. LECTURES / WORKSHOPS / CONFERENCES / TRAINING PROGRAMMES:

1. **December 16, 1996** - Presentation on the Status of Women in Karnataka (SWK) Project in a Seminar organised by the Department of Management Studies - Indian Institute of Science and British Council.

2. **December 17, 1997** - Participated in a consultation organised by MADHYAM on Building Linkages between the Media and NGOs.

3. **February 11-12, 1997** - Particiapted in a Consultation organised by UNIFEM and Women's Voice critique the IX Plan Approach Paper on Women.

4. **February 21, 1997** - Presentation on the framework and methodology of the study of Status of Women in Karnataka to staff of Vimochana, Bangalore.

5. **March 10-14, 1997** - Attended the second module of the training programme for NGOs on Globalisation and Liberalisation, organised by IIM, Bangalore.

6. **April 22-23, 1997** - Resource Person at a workshop for high school teachers conducted by the DSERT to prepare a gender manual.

7. **April 28, 1997** - Presentation about the work of the WOPRA Unit to a team of human rights activists and scholars from the USA.

B. PUBLICATIONS:

1. Co-edited VOL XI No. 2 of the journal MADHYAM on "Media Policy and Nation Building".

2. Prepared a paper titled "Unpacking the Status of Women" for the UNDP, to be published as a monograph.

ARVIND KUMAR
RESEARCH ASSOCIATE

UNDER PUBLICATION:

1. Monograph on "Indo-Pak Relations - a Changing Matrix"

2. U.S. Strategy - from Containment to Engagement and Enlargement

MS. HAMSA KALYANI
ASSISTANT LIBRARIAN

January 7 - 10, 1997 - Participated in a Seminar on "Information Today and Tomorrow at the National Chemical Laboratory, Pune.

NEW PERSPECTIVES IN SRI LANKAN ARCHAEOLOGY AND THE 'LION MOUNTAIN' PROJECT

SENAKE BANDARANAYAKE

Archaeology at its furthest reach is a field of fundamental research; its basic purpose is to retrieve and interpret fragmentary material residues left behind by past societies in order to try to understand and reconstruct the patterns and processes of human social existence through different periods of time. But archaeology also has other dimensions: with its roots in the humanities as much as in natural history and the social sciences, it is also concerned with the appreciation and study of the cognitive aspects of human behaviour as reflected in artistic or monumental remains and other imaginative constructs. Tangible and visible archaeological remains of a high aesthetic order -- and, in a more subtle way, readable archaeological landscapes -- are invaluable because, unlike any other form of historical material, they give us direct physical contact with societies of times other than our own.

Archaeological data is an extremely fragmentary, often fragile, and greatly endangered resource. An archaeological fabric is unique to each time and place. Like an eco-system, once damaged, changed or destroyed, it can never be reconstituted. Thus, the primary functions of the archaeologist are to identify, protect and decode the messages from the past that are embedded in human artefacts; and in doing so, to try to preserve as much of the original artefact as possible, so that future generations, with better retrieval and interpretative techniques, can repeat experiments in the recovery and decipherment.

Transdisciplinary field

It is notions such as these, along with a series of new investigative techniques -- derived largely from post-war developments in physics and other natural science applications -- and multi-disciplinary approaches in the social sciences, that influenced the New Archaeology, from about the mid-1960s onwards. As a result, archaeology became a unique transdisciplinary field, its components extending from nuclear physics and palaeobotany at one end of the spectrum to art, literature and philosophy at the other.

It was from the early or mid 70s that the new archaeology affected the archaeological enterprise in Sri Lanka, as it did in India at research centres such as the Deccan College in Pune and the PRL at Ahmedabad. The new directions in Sri Lankan archaeology, covered four distinct but interrelated areas. The first was a significant quantitative increase in the archaeological education infrastructure and university enrolment, in research, resource allocation and job opportunities - best illustrated in the jump from about 10 professional or research appointments in 1975 to about 200 in 1990.

The second (of special relevance to the present theme) was the emerging importance of theoretical issues and multi-disciplinary approaches in research. These included such things issues as: (a) the application of ecological models in prehistoric research; (b) the study of transformations and historical dynamics as principal foci of research interest; (c) the study of social and spatial organization: such as settlement patterns, pre-modern urbanism, the relationship between monumental architecture and state formation, between monastery form and polity; (d) new program issues in field archaeology, such as material indicating internal and international trade, mineral source indicators and various forms of non-agricultural production, especially iron production; the study of irrigation technology and building techniques; (e) the social organization of production; (f) the study of human-environment relationships and climate history; (g) the integrative concept of 'the study of the total archaeological landscape', and, (h) the archaeology of the base of the social pyramid, i.e. the 'archaeology of the village'.

The most important consequence of the 'total landscape' approach was that we began to see that the apprehend the totality of the country's archaeological resources should be a key strategic principles governing national archaeological policy.

The research problems and approaches remained programmatic rather than mature achievements. To carry out such programs it was necessary to train a whole generation of

archaeologists; to master new investigative techniques; to fine tune research at micro-levels; to incorporate a range of natural science applications; and so on. Above all, we required -- and still require -- time and continuing resource allocations to maintain the trajectory of development. The preliminary results are already to be seen and, no doubt, there will be a multiplying research product within the next decade.

At the same time, the 'old' archaeology was not neglected. The study of monuments, of art, of epigraphy, of numismatics, was looked at in new ways and a number of new discoveries were made. Sri Lanka's historical chronicles, dating from about the 3rd or 4th century AD or earlier, and continually updated till the 19th, are unique in South Asia and archaeologists began to make new readings of these in relation to field research.

The third area of innovation was the creation of new institutions - foundations, trusts, councils, institutes -- the most important of which was the Central Cultural Fund (CCF). The CCF is a large polycentric organization incorporating government agencies, university departments and institutes, and private sector consultants. It has a powerful governing body, chaired by the Prime Minister, but raises its own funds independently of the Treasury. Its major undertaking has been the 15-year Cultural Triangle Project, a comprehensive research, development and management program, covering five of Sri Lanka's six World Heritage archaeological sites

The formation of new institutions was closely associated with a fourth area of activity: the introduction of the notion of Archaeological Heritage Management, a comprehensive new field of applied archaeology in which archaeological monuments and sites were recognized as important foci of contemporary culture and public interest. Heritage management has its own economic basis and rationale and involves special skills to ensure preservation of archaeological integrity and research potential, to prevent modernization, vulgarization and 'commodity-fiction', while making sites and monuments more accessible and understandable to the public.

Sigiriya Cultural Triangle Project

Field archaeology in Sri Lanka is carried out by several different teams and institutions. The broad national canvas of theoretical and empirical research is -- as in most countries -- wide-ranging, multi-locational and covers various subjects and themes. How the new archaeological perspectives in Sri Lanka have worked out in practice can best be demonstrated by examining a Cultural Triangle Project site. This may give you an overall picture of the kind of work that is being done and some idea of the theoretical and programmatic issues informing this work.

The World Heritage site of Sigiriya -- 'Sinha-giri'-- the Lion Mountain (or Sigiri-nagara, 'the Lion Mountain City') is best known at home and abroad for its paintings of apsaras, celestial nymphs, belonging to a school of Sri Lankan painting similar to the contemporaneous Indian schools of Ajanta, Bagh and Sittanavasal.

The site is also famous for its massive 200 metre rock, a Precambrian geological formation or inselberg, which forms the centre of the Sigiriya complex. The rock has a 1.5 hectare plateau on its summit on which is located the 5th century royal palace. This 'aerial' palace stands 360m above sea level and 200m above the surrounding plain. It is accessed by stairways and covered walks, including the 'Mirror Wall', a wall with a high-polish plaster finish. The final staircase leading directly to the palace was through a massive, sphinx-like dvara-mandapa in the form of a lion, symbolizing 'the Lion Mountain'. (The lion was the millennia-old symbol of Sri Lankan royalty and is today the principal emblem on the national flag.)

The threefold objectives of the Sigiriya Project were research (and training), conservation and presentation. Archaeologists had been working at Sigiriya for nearly a hundred years when the Cultural Triangle program began in 1982. Our attempt was to totally re-investigate the site, with the minimum disturbance to the complex as we found it. Our excavations helped to completely reinterpret its chronology. We now understand it as a multi-faceted and multi-period site, occupied over a time-span of perhaps 10,000 years or more,

from prehistory to about the 17th century, with periods of abandonment between phases of occupation.

The earliest evidence of human habitation is from the rock-shelters of the mesolithic period, with an occupational sequence starting nearly 7000 years ago and extending to early historic times. The microlithic stone tools are of a type which have been dated elsewhere in Sri Lanka to about 25,000 BC. Human remains have been found from about 4500 BC and one of the rock shelters has produced the earliest date so far for the smelting of iron in Sri Lanka, in the 9th century BC.

The historical period at Sigiriya begins in the 3rd century BC with the establishment of a Buddhist monastery on the hillslopes around the rock. As in other similar sites of this period, partially man-made rock-shelters or 'caves', with deeply-incised protective drip-ledges, were created in the bases of large boulders. Donatory inscriptions carved below their drip-ledges date these shelters, to the 3rd-1st century BC, and record the granting of these cave-residences to the Buddhist sangha.

Sigiriya comes dramatically into the political history of Sri Lanka in the late 5th century,in the reign of King Dhatusena I (AD 459-477), who ruled from the ancient capital at Anuradhapura. A palace coup by Prince Kasyapa, the king's son by a non-royal consort, and Migara, the king's nephew and army commander, leads to the seizure of the throne and the execution of Dhatusena. Kasyapa, reviled as a parricide, establishes his new capital at Sigiriya. The crown prince, his half-brother Moggallana, is exiled in India. Kasyapa I (AD 477-495) and his master-builders give the site its present name and are responsible for most of the structures and the urban plan we see today.

With the return of Moggallana and the defeat and death of Kasyapa, Sigiriya is once more becomes a Buddhist monastery, with the king's uncle as its first abbot. The monks maintain and develop the gardens over several centuries, while the city continues as an urban centre. Visitors from various regions of Sri Lanka-- early tourists -- come to see the abandoned palace, the lion and especially the paintings, and inscribe graffiti in the form of poems on the polished surface of the Mirror Wall.

The post-Kasyapan era lasts until the 13th or 14th century. Sigiriya then disappears from the historical record until the 16th and 17th centuries when it appears as an outpost of the Kandy kingdom, the last Sri Lankan state to resist colonial invasion until the British conquest of 1815. Soon after, antiquarians take an interest in the site, followed decades later by archaeologists who have been working there since the 1890s.

Urban morphology and landscape

The newly-clarified urban form at Sigiriya consists of a series of rectangular precincts, three km long and centred on the great rock. Flanked by an even older fort, Buddhist monasteries, suburban settlements and a man-made lake with a 12km long dam, it is one of the best-preserved Middle Historic cities in South Asia, along with sites such as Taxila, Hampi, Fatehpur Sikri, and Angkor in Cambodia, Xian in China, and Nara in Japan. Its clear urban morphology gives us a window into the spatial and social organization of a type of feudal society that was widespread in Asia. As an example of urban planning on a grand scale it anticipates Angkor by nearly 500 years. In its total conception, the grandeur and complexity of Sigiriya's urban core presents a brilliant combination of symmetry and asymmetry, a deliberate interlocking of module-based geometrical plan and natural topography.

Sigiriya also makes an important contribution to the relatively new field of garden archaeology and garden history. The gardens at Sigiriya are a unique example of a well-preserved, ancient garden complex. One of the earliest surviving gardens in Asia, it is pre-dated in world garden history only by the Roman gardens of Europe. Three distinct but interlinked forms occur at Sigiriya: symmetrical water gardens; asymmetric boulder gardens; and terraced, 'hanging' gardens encircling the rock. The attempt to explore the ornamental botany of the gardens led us into the more basic study of palaeobotany and palaeoclimatology, just as the investigation of building and irrigation technology required new applications in geology, hydrology and mechanics.

Above all, the new approaches at Sigiriya convinced us that to study the high-visibility royal and urban complex alone was not enough. It was only the apex of the social pyramid. We began to look at the site's entire social hinterland, and from that developed what we called 'the study of the total archaeological landscape' - which meant that we looked at all the signs and remains of human activity over a whole territory, through all periods of time, from prehistory to contemporary ethnography. Sigiriya now appears as a complex archaeological landscape, a diachronic palimpsest of the signs and remains of human occupation of the area over millennia.

What was seen previously only as a 5th-century palace and moated fortress, with beautiful paintings and water gardens, is now understood as walled-and-moated capital city -- a unique concentration of urban planning, architecture, engineering, garden design, hydraulic technology, and painting, sculpture and poetry -- set in a rich archaeological landscape of historic village settlements, irrigation works, Buddhist monasteries, military fortresses, iron-production centres and marble quarries, and a centre of trans-territorial communication.

Research, training and conservation

The most remarkable aspect of the research effort has been the combined research and training program. From the beginnings of the project, which began with a handful of archaeologists and the most basic human and material resources, Sigiriya was viewed as a training ground and laboratory for multi-disciplinary research, directly or indirectly connected with archaeology and conservation. The multi-pronged research and training effort included different university groups and consultants and researchers from a whole range of disciplines. Undergraduates studying archaeology, architecture and allied disciplines were encouraged to use the site in field schools. As a professional recruiting ground, archaeology graduates were employed, until they got other jobs or decided to join on a permanent basis. Other specialists and graduate researchers used the site for project work in their own fields.

A broad-based environmental program included garden and forest conservation, floral and faunal surveys, palaeobotanical, palaeoclimatogical and ethnobotanical research. A botanical garden, herbalorium and forest arboretum of Dry Tropical species indigenous to the area is being established alongside environmental education programs.

Conservation work matched research effort. Over the years, a philosophy of minimum intervention came to be emphasized, going against the grain of strongly restorationist traditions. Fresh excavation and part restoration was restricted to previously excavated sectors. About 75% of the site remains untouched. Key areas have been 'clarified' by limited interventions, almost leaving things as found, but making them readable to the visitor. In the presentation of the ancient gardens a policy of retaining existing organic flora and removing modern exotic introductions was developed, 'allowing the gardens to speak for themselves'. The principle is that visitors should be able to read the 'archaeological text' for themselves, without much intervention by the archaeologist, while the 'archaeological integrity' of the site is preserved for future investigations.

Early in the project the importance of protecting the hinterland of the site was realized. Forest conservation was highlighted and an area of about 25 sq. kms was declared a sanctuary. Community needs and support were recognized and a comprehensive program of combining protection, conservation and development has been formulated, with the immediate site itself subject to zoning and building controls. A user-friendly policy of visitor management and information is being put in place, while freeing the site as far as possible of contemporary usage and occupation.

The present phase of the Sigiriya project draws to a close at the end of this year, and a three-year publication program will present research results. The project leaves behind a self-sustaining management system and a framework of policies and perspectives for the future with the establishment of a Sigiriya Heritage Foundation.

(This is a shortened version of the NIAS Associates' lecture given by Prof. Senake Bandaranayake on 4 April 1997. Prof. Bandaranayake is Professor of Archaeology, University of Kelaniya, and Director, Postgraduate Institute of Archaeology (PGIAR) in Colombo. He has been Archaeological Director of the CCF Cultural Triangle Projects at Sigiriya and Dambulla since 1982. Elected as an inaugural Ananda Coomaraswamy Fellow of the Sahitya Akademi of India, he has utilised this opportunity in spending a two-month working - sabbatical at NIAS.)

TIME AND CONSCIOUSNESS IN THE BRAHMANICAL TRADITION

ANINDITA N. BALSLEV

Reflections on the themes of time and consciousness in the Brahmanical tradition form an immense domain of philosophical investigation... Brahmanism, like Buddhism is not just one but a matrix of systems... Historically, seen, the insiders of the Brahmanical tradition are undoubtedly inspired by the exegetical texts of the Upanisads which hold 'the knowledge of the self' to be the 'highest knowledge' (Atmavidya hi parama vidya). The key philosophical idea of this tradition is that of the self (Atman), which has earned the designation - Atmavada. Granting that there is an unanimous agreement among the Brahmanical thinkers in discerning that this idea is absolutely central to the soteriological quest, it triggered an intense philosophical search...

With the rise of the philosophical schools and sub- schools, we find the Brahmanical philosophers establishing the ontological reality of self by pointing to experience (Vyavahara) or on the basis of other accepted valid means of cognition (Pramana), such as perception, inference etc. and on the evidence of linguistic usage (Sabda-prayoga). This was also necessary in order to meet the challenge of such opponents for whom scripture was not counted as an evidence whatsoever. The record of these controversies bear witness to a progressively sophisticated philosophy of self, beginning from a relatively simplistic analysis.

Before citing an example of such controversies, it is interesting to recall that quite at an early stage, the Carvaka materialists were already present to mock at such ideas that are widespread in the Brahmanical traditional thinking, where the self is said to be different from the body, the sense-organs and the mind and in the final analysis even held to be unoriginate and indestructible. For the Carvakas, the self which is the doer, the enjoyer and the knower in the empirical frame of experience is nothing more than the living body. It is subject to birth and is annihilated to death.

In a reply to the Carvakas, who made the sarcastic remark that such a view of self as the Brahmanical philosphers propose can indeed find support only in the revealed literature, a Vaisesika philospher observes that it is not revealedliterature alone but also the linguistic usage of the word 'I' (Aham) establishes this claim and he proceeds to demonstrate that the pronoun in the first person, singular number can be said to have absolutely no other referrent than the self.

Note that this is just the beginning of an important analysis of pronouns which reached a great deal of sophistication by the time of Gadadhara. Other Brahmanical schools also delved into philosophy of language and have discussed at length about similar issues. Among the prominent Vedantic thinkers of this century concerned with this question, one could cite the work of Professor K.C. Bhattacharya.

The controversy that ensues about I-consciousness, notice that it has has nothing to do with whether there is an awareness (Pratiti) of I or whether there is word (Pada) 'I',; it is about what forms the basis of such an awareness and about what does the word really point to. For the Carvakas what the word 'I' discloses about the self is demonstrated in such everyday examples as I am thin (Aham krsah), I am deaf (Aham vadhira) or I am happy (Aham sukhi). Accordingly we find them advocating either the idea that the body is the self or that the sense-organ is the self or that the mind is the self, termed in sanskrit as dehatmavada, indriyatmavada or manatmavada. Consciousness for all of them, despite these

different versions is held to be an epiphenomenon of physical processes.

The strategy which is then sought in the ancient text of the realists (Nyaya-Vaisesika, Mimamsa) is one where the self - which is the referrent of the word I and the basis of I-consciousness is to be demonstrated as a substance apart from the body, sense-organs or mind (Deha-mana-indriyatirikta). They indicate that what the Carvakas allude to cannot be taken as the primary (Mukhya) meaning of the word 'I' but only as secondary. Sometimes the texts indicate that the secondary meaning are mere ascriptions (Upacara).

To cut the long story short, for the Indian realists belonging to the Nyaya-Vaisesika schools, the idea of self as a category of thought and as having an ontological basis, cannot be dispensed with but at the risk of leaving experiences unexplained and unaccounted for. Through an analysis of such phenomena as memory, recognition and the knowledge-situation itself, they attempted to demonstrate the reality of self. They insisted as well that moral and soteriological strivings will be meaningless without it...

Turning to the Sankhya and the Yoga literature a new insight can be obtained. These offer a more complex analysis of subjectivity. Unlike the Nyaya-Vaisesika position which is akin to the common-sense notion of I as simple and homogeneous, the I appears in this context as composed of heterogeneous elements. The I-consciousness is analyzed into its dual aspects. It is recognized as an empirical subjectivity, deriving its support on the one hand from a principle of transcendental subjectivity - Purusa, and anchored to the ever-changing, insentient Nature - Prakrti, on the other. The notion of Purusa is modeled after the Upanisadic view of Atman. This principle of consciousness is described as one that remains ever constant, no distinction is sought between self and consciousness...

The idea of the self of the Nyaya-Vaisesika schools, mentioned before, is in fact, worked out in a conceptual frame in which the notion of absolute time plays a significant role. Time is discerned to be all-pervasive and unitary. All pluralistic usages of time such as days, months, years etc. are said to be nothing but conventional usages made possible with the help of any standard motion (such as the solar motion). They maintained that without time, we will be confronted with a static universe where nothing can occur. It is the substrata (Adhara) for all that is contingent. Thus in this pluralistic metaphysical systems time, like self (rather selves), also figures in the list of eternal entities to which no beginning or end can be attributed.

Noteworthy is this position for it makes a clear-cut distinction between consciousness and self. Consciousness, they maintained is a quality that belongs to the self (as an attribute to a substance). It emerges whenever there is a collocation of mind (Manas), sense-organ (Indriya) and the object (Visaya). Thus consciousness is contingent, hence temporal in character i.e. it has a beginning and an end. This, however, does not affect the non-temporal character of the abiding self.

This notion of absolute time had to face the challenge of not only the Buddhists and the Jainas, it was under attack from the quarters of other Brahmanical schools as well. Both the Sankhya and the Yoga schools rejected the idea of an absolute time. The old school of Sankhya accepted the reality of change but questioned the necessity for postulating the notion of an empty time as a separate category of reality. They thought that the idea of the dichotomy between Purusa and Prakrti, the ever- constant principle of consciousness and the ever-changing principle of matter and their interplay is enough to account for the three time-phases.

The Yoga school, however, advocated a theory of discrete time. Here the temporal datum is the moment. 'Since no two moments can be said to exist simultaneously', all such ideas as that of a collection of moments or that of sequence are said to be nothing but conceptual constructions. The implications of these views for the understanding of self is itself an engaging task.

However, despite their differences in the understanding of time, self and consciousness it can be observed that the self is always conceived by the Brahmanical thinkers in a manner that it is shown to possess a non-temporal dimension.

Apart from these, other questions have also been discussed such as whether consciousness of an object and consciousness of consciousness involve a temporal sequence or are these to be treated as simultaneous happenings. To such a query, as mentioned above, the Nyaya-Vaisesika philosophers affirm the first position. They maintain that 'consciousness of consciousness' is an episode which is subsequent to the 'consciousness of an object' (technically termed, Anuvyavasaya), whereas the Vedantins of the Advaita school maintain consciousness to be self-revealing (Svyamprakasa)...

However, this idea of the abiding self - in and through all its variations, which was defended by Brahmanism received a severe challenge with the advent of Buddhism. Buddhism as a tradition decried the notion as an unwarrantable assumption, and regarded it to be logically absurd, psychologically superfluous, ethically and soteriologically even a hindrance. In fact, the controversies centering this theme bring out the profound philosophical tension between Brahmanism and Buddhism, one postulating and the other denouncing the idea of self. These controversies form some of the most fascinating chapters of history of Indian philosophy.

Since the Buddhist idea of momentariness (Ksanabhangavada) leaves no room for a notion of Atman as that which remains constant in the midst of the changing flow of consciousness, the Brahmanical philosophers challenged the idea. The polemical literature is philosophically illuminating in many ways and the relevant documents bear witness to the fact that in the face of all attacks, the Brahmanical philosophers remained uncompromising in maintaining that the Atman is ontological, that it is unsublatable by time and that it can never be reduced to the changing states of consciousness.

(Dr. Anindita N. Balslev is the Senior Advisor to the Danish National Institute for Educational Research, Denmark. This is an extract from the guest lecture given by her to the faculty of NIAS)

RAMANUJAN AND CIRCLE METHOD

By

K.RAMACHANDRA

There are many books which give account of food habits of S.RAMANUJAN (such as idli, dosa, vada and so on) and also his utter poverty, his failure to pass examinations in an inelastic education system, inspite of his invincible originality and great achievements in Mathematics. But for the help given to him by the Cambridge Professor G.H.HARDY his name would not have been heard of today. Sometimes with serious applications in view and sometimes for its own sake, he used to play with integers and this was responsible for the comment of G.H.HARDY and J.E.LITTLEWOOD that every positive integer was one of Ramanujan's personal friends. In this connection G.H.HARDY recalls that even while in his bed due to serious illness he could comment on the taxi-cab number 1729, which they engaged to pay a visit to Ramanujan in the hospital. G.H.HARDY and J.E.LITTLEWOOD told Ramanujan that the number 1729 was a dull one. Immediately Ramanujan told them that $1729=10^3+9^3=12^3+1^3$ and it is the smallest number which can be expressed as a sum of 2 cubes in two different ways like 1729. These are intelligible to any common man and certainly, he can remember this property of 1729, and the taxi-cab incident, but it requires some maturity and effort to understand "CIRCLE METHOD" (whose original startegies in a certain form were due to RAMANUJAN) developed jointly by G.H.HARDY and S.RAMANUJAN. This method has many important applications to almost (previously) inaccessible problems such as WARING'S PROBLEM and GOLDBACH PROBLEM.

About WARING'S problem of expressing positive integers as sums of squares, cubes etc. it suffices to say (it is a little technical and I will not state this) that the problem is in a sense solved completely thanks to the work of S.RAMANUJAN, G.H. HARDY, J.E. LITTLEWOOOD, I.M. VINOGRADOV, H. DAVENPORT, S.S. PILLAI (and independently L.E. DICKSON) CHEN-JING-RUN, R.BALASUBRAMANIAN, J.-M.DESHOUILLERS, and F.DRESS and finally by K.MAHLER. WARING'S problem for squares and

cubes was solved by LAGRANGE and WIEFERICH (and KEMPNER). This was not very difficult. However higher powers needed CIRCLE METHOD (which is very very complicated and very very difficult even for experts). What is now necessary is to make MAHLER'S theorem {effective} (a terminology coined by mathematicians to determine all constants involved). Effectivisation of MAHLER'S theorem looks impossible at least for a few more decades to come.

It is easy to state GOLDBACH PROBLEM. In simple language it says "Every even integer ≥ 4 is a sum of two primes". For example 4 = 2+2, 6 = 3+3, 8 = 3+5, 10 = 5+5, 12 = 5+7, 14 = 3+11, 16 = 5+11, 18 = 5 + 13, 20 = 7 + 13 and so on. This is one of the toughest challenges in number theory. It will remain unsolved for many centuries to come. But spectacular contributions have been made in this problem. These are due to S.RAMANUJAN, G.H. HARDY, J.E.LITTLEWOOD, I.M.VINOGRADOV, T.ESTERMAN, van - der - CORPUT, N.G. TCHUDAKOV, R.C. VAUGHAN, H.L. MONTGOMERY and R.C. VAUGHAN and CHEN-JING-RUN, PAN-CHENG-DONG and LIU-JIAN-MIN. Some important contributions to the problem are also due to Yu.V.LINNIK, K.RAMACHANDRA, H.MIKAWA, A.PERELLI and J.PINTZ, JIA-CHAO-HUA, LI-HONG-ZE, K. RAMACHANDRA, A. SANKARANARAYANAN and K.SRINIVAS (the contributions of the last three mathematicians is joint work). In order to reduce the size of this article I state only the following result due to H.L.MONTGOMERY and R.C.VAUGHAN. Let $2n_1 < 2n_2 < \ldots$ be the list of possible exceptions to the conjecture. Of course this list may not end (we do not know). Then the number of such numbers below 2N does not exceed N^{θ} where θ (independent of N) is a certain number < 1. CHEN-JING-RUN, PAN-CHENG-DONG and LIU-JIAN-MIN have shown that θ can be taken to be 19/20 (for all N exceeding a certain constant).

MENTAL HEALTH CARE IN INDIA:CHANGING ROLE OF THE INDIAN FAMILY

R.L. KAPUR

(This abridged version of paper was presented at the International Symposium on "Innovations in Psychiatric Rehabilitation" organised by the Richmond Fellowship Asia-Pacific Forum, Bangalore, between 23 and 25 November, 1995)

Many years ago, when I was pursuing my Ph.D studies at Edinburgh University, I came across an announcement that there was going to be a seminar on "Family Therapy". My colleagues seemed to be very excited about this new revolution in psychiatric care. The seminar proposed to show and did show that family could be involved in the diagnostic process, in therapy and in subsequent care of the chronically ill. After the seminar was over, I was a little perplexed and said to my colleagues, "look, that is what we have been doing in India all the time. What is so new about this so called new discipline?"

I reminded them of the story of Dr Vidya Sagar's enterprise. In the 1950's, Dr Vidya Sagar was running a 900 bedded hospital at Amritsar. Since he had no ancillary staff to support him, he had the brain-wave of asking the family members of the patients to stay on in the hospital and help him in looking after these patients. He pitched up tents within the precincts of the hospital and it became a tradition for the family to stay in these tents with the patient from a few days to a few weeks and then take the patient back with them. After a few years of this experiment, he said to me; "Ravi, this particular exercise has given many more dividends than I originally intended. What I initially wanted was extra hands but the involvement of families in the management of the mentally ill had done a lot more". And indeed it had. Firstly, It reduced the hostility of the patients against their families for being abandoned in the hospital. Secondly, as the relatives saw the patients getting better, stigma against the illness decreased. When you see patients getting better you do not think that the illness is in any way mysterious. Thirdly, the relatives learnt humane ways of dealing with the patients. Finally relatives

themselves picked up mental health principles by being involved in the group discussions which took place every evening. Dr Vidya Sagar's path breaking experiment was subsequently repeated in NIMHANS and in Vellore and then in many other institutions.

The success of Dr Vidya Sagar's programme and others that followed is generally ascribed to the particular dynamics in the Indian family which makes the latter more receptive to the idea of taking care of the mentally ill. It is further believed that since most Indians live in an extended family system, not just parents but also uncles, aunts and other relatives would be available to take care of a person if he falls ill.

After completing my training at Edinburgh, I came back to India in 1970 and started a fairly ambitious research project, studying mental health patterns in a Karnataka village. By that time the reputation of Indian family as a far better care-taker of the mental patients than the Western family had already been fairly well established in international academic circles. But when I started working in the field I was in for quite a shock. I carried out a small preliminary survey of mental illness in a village about 14 kms from the premier institute of this country, the National Institute of Mental Health and Neuro Sciences at Bangalore. As I went from house to house inquiring about psychiatric illness, I found a patient who had been quite sick for many years, but staying at home with the family. I very warmly congratulated the family and told them how wonderful it was that they were able to take care of the patient themselves and had not dumped him into the hospital?" The answer was, "Doctor, if we had the money to take this patient to the hospital we would have gone and left him there. We just do not have that kind of money. That is why he is here". The reality became even clearer when I carried out my survey. I found that there were many chronically ill psychiatric patients who stayed at home but were often locked up in their rooms, some of them even tied to the bedposts. There were others who had just been abandoned. When asked what happened to them the answer usually was, "Oh, he just went away!". As I looked around not only in the villages but also in the towns I noticed many psychotic patients begging or just moving around; certainly not being taken care by this famous 'family' which India had been so proud of. Most Indian psychiatrists are aware of this reality but continue to eulogise the magical Indian family because such a delusion gives a feeling that in some way at least, a poor country like India is able to do what the advanced western nations cannot!

Our wishful thinking about the role of the family in the care for the mentally ill continued to influence various innovative community mental health programmes which were devised in the 1970's. The aim in all these programmes was to train the primary health workers in the recognition and basic management of the mentally ill and through them, treat the patients in the family setting. One such programme was evaluated (I.C.M.R., 1987) and it was found that the care of the mentally ill through primary health centre personnel was in fact not as successful as we had expected. More to the point, in spite of education programmes the attitudes of the family regarding patients remained poor!

From the above discussion, it would be clear that too much is claimed on behalf of and expected of the Indian family with regard to the care of the mentally ill. In real life, people have to work hard to eke out their living. Providing one person to attend to the patient is a luxury not many can afford. It should be kept in mind that as the economic situation in the country improves, employment rates increase and more children start going to school, the availability of family members at house will become even less. Does this mean that we should revert to hospital based treatment? Certainly not. Since at least 1 - 2 per cent of the population suffers from serious mental disorder, it will not be possible to create sufficient number of hospital beds for decades. Also, hospital based treatment has been shown to be dehumanising. What then is the answer? Firstly, we must build up ancillary services. We should have enough trained psychiatric nurses. Training a nurse is much cheaper than training the doctor and these nurses, as shown in our experiment can do an adequate job of treating patients at home when some family help is available. Secondly, mental hospital must continue to look after the chronically ill when

families for various reasons cannot take up the responsibility or when the place of residence is far away from any kind of psychiatric service. Elsewhere (Kapur, 1994) I have warned against mental hospitals aping the philosophy of general hospital psychiatric units which are meant to provide only short-term residential care. Just by discharging the patient from the mental hospital, one does not automatically ensure community care! Indian families do care for their sick members (as do families in other cultures). They must not, however, be expected to care 'more' than it is socially and economically possible, just because this fits in with our pet theories about the wonderful Indian family.

Another issue which has extolled the virtues of family based treatment in a big way is research finding that prognosis of schizophrenics in the developing countries is far better than in the developed countries (WHO, 1979). It has been assumed that this is due to better family care. This may well be an illusion. More likely is the explanation offered by Warner (1985) who says that prognosis would be better in those countries where the wage labour system has not yet developed, and hence, one is not expected to work from 9 to 5 in return for a fixed income. More primitive economic systems offer flexible work roles. In such a system a handicapped schizophrenic would stand to benefit because expectations are not standardised. For example, in a land holding family if the schizophrenic member comes along and sees to it that birds do not eat the seeds planted by the healthy members it is considered to be a good enough contribution. In other words, a partial fulfillment of the economic role is acceptable. But with the advent of the wage labour system this becomes difficult. It is my fear that as India gets modernised and work roles became standardised, the prognosis of schizophrenia in India will start matching that in the richer countries.

It has been my aim in this paper to critically examine some assumptions about family care of the mentally ill in India. It is my hope that programmes for the care of chronic mental patients are devised keeping in mind the limitations of the Indian family, limitations which are only going to increase as India 'advances' towards more modern economic systems.

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ONE DAY COLLOQUIUM ON CULTURAL DYNAMICS IN SOUTH AND SOUTHEAST ASIA

Epigraphy centre of NIAS organised a one day colloquium on "Cultural Dynamics in South and Southeast Asia" on 8th May 1997. The colloquium was inaugurated by Dr.Raja Ramanna and chaired by Prof.M.N.Srinivas. The panel of speakers consisted of

Dr.Raja Ramanna	Prof.M.N.Srinivas
Prof. Senake Bandaranayake	Dr.M.K.Dhavalikar
Dr. A.R.Vasavi	Dr.Iravatham Mahadevan
Dr.K.V.Ramesh	Dr.H.K.Anasuya Devi
Dr.Navarathna	Dr.S.Rajaram

Prof.S.Settar

The main objective of the colloquium was to have an open ended discussion on various aspects of history and culture in the region including such diverse aspects as historical dynamics, climate changes and human response, cultural narratives and reconstitution, development of early scripts and languages, artificial intelligence and computer decipherment of inscriptions.

It was a useful colloquium on cultural dynamics for the first time conducted at NIAS. Prof.Bandaranayake emphasised on the law of internal dynamics. Prof. M.N.Srinivas stressed on the sum total of the posession of materials passed from one generation to another. Prof.Dhavalikar spoke on culture as adaptation and environment is solely responsible for shaping the culture. Prof.Settar concentrated on culture as human settlement and habitation, while Dr.Vasavi spoke on culture as caste identity. Mr.Iravatham Mahadevan strongly stressed for the chronological concepts of Tamil Brahmi. Prof.Rajaram mentioned about Jha's decipherement of indus scripts and spoke on sulabha suthras. Dr.K.V.Ramesh mentioned about the pre-Indo Aryan Brahmi writings. Finally Dr.H.K.Anasuya Devi highlighted the use of artificial intelligence techniques for decipherement of epigraphic texts and how computers can aid in solving problems in cultural dynamics.

MATTER, LIFE AND CONSCIOUSNESS

(B.V. SREEKANTAN)

The very fundamental issues relating to the external world of animate and inanimate matter, and the internal world of experiences, thoughts, feelings, responses, in short the objective and subjective aspects of our everyday life and activities, have been deliberated upon for several millennia by scholars, intellectuals of different parts of the world and a variety of methodologies have been adopted for finding answers to the questions that have arisen. The most recent and perhaps the most powerful method is that of science developed over the past four hundred years. In the attempts to find solutions to such questions, science broadly split up into the physical and life sciences and these in turn have divided further into a variety of subdisciplines. Science in all these disciplines followed very successfully the reductionistic approach of explaining the whole in terms of parts and in this the development of more and more powerful instruments played a crucial role. This methodology of reduction worked very rewardingly in the field of physical sciences which concentrated on the explanation of all phenomena related to inanimate matter only. Essentially all problems were reduced to identification of constituents and interactions. The analysis of constituents became the major task of chemistry and led to the realisation that all terrestrial matter can ultimately be reduced to the combination of one or more of just 92 elements - hydrogen to uranium. Later it was found that the same is the case with all matter in the universe. The physicists went further and showed that there is additional astounding simplication, namely, that all the elements themselves are constituted of just three types of particles, the protons, the neutrons and the electrons. In addition, they showed that most of the physical phenomena could be explained in terms of the interactions caused by one or more of just four fundamental forces - the gravitational, the electromagnetic, the nuclear and the weak. These explanations however, needed one important input namely mathematics and the mathematical formulations were based in the first instance on concepts like space, time, and causality and attributes like mass, charge, energy, spin of the constituents and certain principles like conservation of mass, energy, momentum and some universal constants of nature which had to be assigned specific values. The success of the scientific method was gauged by the success in prediction of new phenomena followed by verification by new experiments and perhaps by the universality of the explanations for a wide range of phenomena and most importantly by the tremendous applications that emerged out of these efforts. The technological developments in turn helped the scientists to proceed further and delve deeper into the question of the constituents of the constituents and to explore in great detail the nature of interactions. These efforts extending over several decades of the present century opened up on the one hand the microworld of elementary particles and their interactions, and on the other to the ramifications of the macroworld of the very distant objects the stars, the galaxies etc. that constitute the universe. Thus the physical and astronomical sciences broadened the issues relating to matter many fold, both in terms of space and time. It became abundantly clear that one is dealing not only with what is happening to-day but also what did happen not just a few hundred

or a few thousand years ago, but billions of years ago, and in the future too; not only here on the earth but in the far off corners of the universe. Naturally, the attempt was to find a scientifically acceptable scenario that is operative all through space and all through time. In this grand endeavour the astronomical findings of the expanding nature of space that is observed as continuous receeding of the galaxies from each other at increasing speeds with distance, and the existence of a universal microwave radiation, are pointing in the direction of a plausible scenario in which the entire universe originated in a single explosion some 10 billion years ago. These same observations also gave an idea of the temperature

($\sim 10^{28^{o}}$K) immediately after explosion. The developments in the field of high energy physics have helped to create a quantitative theory of such a possibility which incorporates also evolution of the various stages of matter in the universe. This theory of the universe called the Big Bang theory incorporates the relevant aspects of particle physics, General and Special theory of relativity and all the laws of physics according to Classical and Quantum Mechanics. What is most staggering and at the same time most encouraging is that quantitative aspects of the theory have been worked out almost to within 10^{-43} seconds of the Big Bang explosion. However, what happened between 0 and 10^{-43} Sc. is vital. It has to be assumed that by this time, space and time are created, mathematically formulated laws of physics are defined and begin to operate, and constants of nature are fixed. For the validity and operation of this theory, an extremely fine tuning of all the parameters (for example the mass of the electron, the mass of the proton, the electronic charge, the inverse square law of electrical and gravitational forces etc.) is required. In this formulation the question as to what happened before the Big Bang does not arise since time itself was created at the Big Bang. Actually, what is supposed to be created is a four dimensional space - time continuum (according to more sophisticated theories, the string theories, a 11 dimensional space-time is required to be created; we shall not go into this here). For the physical explanation of events as we perceive them, this four dimensional space-time is to be broken up into 3-dimensions of of space and one dimension of time which is always moving forward. This space that is created now is more than just the empty nothingness that we visualized in our everyday life, and with which all earlier physical explanation was done. It has to have very special properties. It is a dynamic entity in which the quantum mechanical fields corresponding to all the fundamental particles are ever present in a normally non-interacting state with each other. This space gets suitably modified in the neighbourhood of masses, charges etc. and is responsible for the transmission of forces through the creation and annihilation of the field particles. A very important and very special aspect of this space is that right from the time of its creation it is not quiescent, but is continuously fluctuating. The fluctuations are subject to what is known as the Heisenberg's Principle of Uncertainty, which governs the conditions under which spontaneous creation of particles takes place. Clearly all these are preconditions that must exist, the origin of which we cannot question to find answers. Given these we can proceed to formulate a scientific theory.

Now, let us examine in a similar way what the current status is in our understanding of animate matter. The most significant early development was the recognition of "the Cell" as the unit of life, whether it is in the single celled 'Amoeba' or the trillion celled 'Man.' What is most intriguing and at the same time has enormously helped in the advancement of this field, is the recognition that the chemical constituents of the cell are no different from those that constitute ordinary matter. Also there is no evidence of any additional new force in the cells or in the body as a whole, different from the physical forces. Perhaps the most outstanding discovery is that a single long chained molecule, the DNA molecule, controls the entire chemistry that goes on in the cell and that the constituents of the DNA molecule are the same in the Amoeba and in Man and in the entire domain of living matter - the difference being only in the relative ordering and the number of the constituent molecules in the DNA sequence. The genes which are sublengths, sometimes even overlappping, of the DNA molecule have been identified as the carriers of heredity factors and the

specific physical forms and functions of the organs. A well known example is the colour of the eye which is determined by a particular gene. Some of the functions are simultaneously controlled by multiple genes.

While the original Darwinian Theory of evolution spelled out struggle for existence, survival of the fittest and natural selection in the context of external evironment as the contributing factors for speces development and emergence, no specific physico-chemical bodily mechanisms associated with these processes, were defined. Now, we know that all these have to get translated necessarily into the chemical reactions that go on in individual cells and how they multiply, differentiate from cell to cell for the organism to grow. The most exacting efforts in the field of molecular biology over the past 50 years have been in hunting for and identifying these chemical mechanisms on the basis of protein and enzyme chemistries. The main assumption is that evolution of the species is only through random mutations caused by chance. There is no scope for any of the acquired characteristics to feed back to the genes for either speeding up development or to make the organisms more efficient in specific ways. Now with the advent of genetic engineering, all this is changing.

The general feeling among the biologists is that most of problems connected with life processes can be handled at the level of chemistry and it may not be necessary to go further down to the level of particle interactions falling in the domain of physics. However, it has to be pointed out that with all the developments in biology and chemistry, it has not yet been possible to synthesise even a single celled organism or even to define the exact stage when the chemical becomes an organism. The general answer given is that the chemistry that goes on is too complicated, very much more than in the most sophisticated chemical laboratory. Is it just that or are some deeper level processes involved ?

The scientific approach to the problem of mind (and consciousness) has been that it is essentially a result of processes going on in the brain and the associated nerve system connected to all organs. The most important developments have been the recognitiion of the role of billions of neurons as carriers of information in the form of electrical pulses and of electrochemical processes in the synapses and the corteces resulting in the release of special types of chemicals called neutro-transmitters. These electrical signals (action potentials) are generated by the various sensors like the eyes, the ears, the nose, the skin etc. and the information to be conveyed is coded in the form of bursts of signals, spacing between signals, firing of multiple signals in adjacent netrons. The signals from different sensors terminate in specific regions of the brain - the visual cortex in the case of eyes, the auditory cortex in the case of ears etc. The detailed neuronal networks and the role of intervening synapses which outnumber the neurons by a factor of a thousand and control and monitor the signals by having access to other neurons and information centres, the dendrites, have been explored. It is conjectured that the synapses may hold the key to the question of long term memory, and additional synapses may be grown when required.

The whole exercise in the field of unearthing the modalities of brain functions has been to establish the neuronal correlates of specific events and happenings either in the outside world or within the brain itself. This exercise is proceeding vigorously especially with the availability of a series of new scan instruments - the NMR, the PET etc. While these instruments are providing the necessary spatial resolution, the temporal resolution is still very poor. Therefore, the progress has not been fast.

While the physicists are still facing serious problems in reconciling the discrete quantum mechanical states with the continuum of General Relatively, the non-detection yet of some of the predicted fundamental particles, difficulties in quantizing gravity and non-detection of gravitons etc., the general trend is certainly towards a basic 'oneness' underlying all physical phenomena ranging from the microworld of elementary particles to the macroworld of the universe with all its ramifications. Since all biological phenomena have necessarily to come in between these extremes in terms of any acceptable explanation,

clearly the 'oneness' aspect has to permeate this field also.

What is the rleation between the sensations, the feelings, the thoughts etc. that we experience and these electrical signals and the neuro-transmitter chemicals ? Going by some kind of anology we may say the latter i.e. the electrical signals and the chemicals, perhaps, correspond to the magnetic recording of a viodeo tape. However, a video tape requires a video player and a viewer to make any sense or meaing of what is recorded. We do not know yet what the latter correspond to in the case of the brain. This problem is in principle, perhaps a more complex analogous version of the action at a distance problem that we have in physics, as for example in the case of the electrical interaction between the proton and the electron in the hydrogen atom or the gravitational attraction between the sun and the moon. These could be explained only by bringing in the idea of fields and more recently through the concept of quantum mechanical vacuum. This whole approach resulted finally in the recognition that everything the proton, the electron, the field, the sun, the earth etc. are all interconnected and manifestation of the quantum mechanical vacuum which ofcourse had to be endowed with special properties as discussed earlier. The mind-body problem may ultimately find a similar resolution. The physical reality of the quantum mechanical vacuum and the creation and annihilation of virtual particles was established by experiments like Lamb Shift, the Casimir Plates etc. It is conceivable that more detailed high resolution experiments with the brain may reveal some similar subtle effects. Experiments on these lines are going on in some of the laboratories. There are indications that the microtubular structures in the neurons give rise to large scale coherence effects and the assemblies of neurons behave in some respects like liquid crystals.

What exactly have we gained by recognizing in the field of science too, this underlying oneness ? Since much of physical explanation has become increasingly mathematical, is this oneness solely connected with the mathematical way of handling physical problems ? What is the connection between mathematics and physical reality ? Are we in some sense reformulating Plato's Forms ? Are we coming closer to the philosophical approach of Spinoza who saw no difference between subject and object, between humans and environment ? Or are we reasserting a modern version of the still older pronouncements of the Vedas according to which there was only one thing namely Brahman and nothing else ?

The objective of the present article was to bring out the relavance of raising such questions in the context of developments in the field of modern science. We will deal with answers to them in a subsequent article.

The open-minded approach one has to have in these matters is most appropriately emphasised by none other than the great Einstein almost 60 years ago in his most readable book 'the Evolution of Physics' in the following lines:

"Physical concepts are free creations of the human mind and are not, however, it may seem, uniquely determined by the external world. In our endeavour to understand reality we are somewhat like a man trying to understand the mechanism of a closed watch. He sees the face and the moving hands, even hears its ticking, but he has no way of opening the case. If he is ingenious he may form some picture of mechanism which could be responsible for all the things he observes, but he may never be quite sure his picture is the only one which could explain his observations. He will never be able to compare his picture with the real mechanism, and he cannot even imagine the possibility of the meaning of such a comparison."

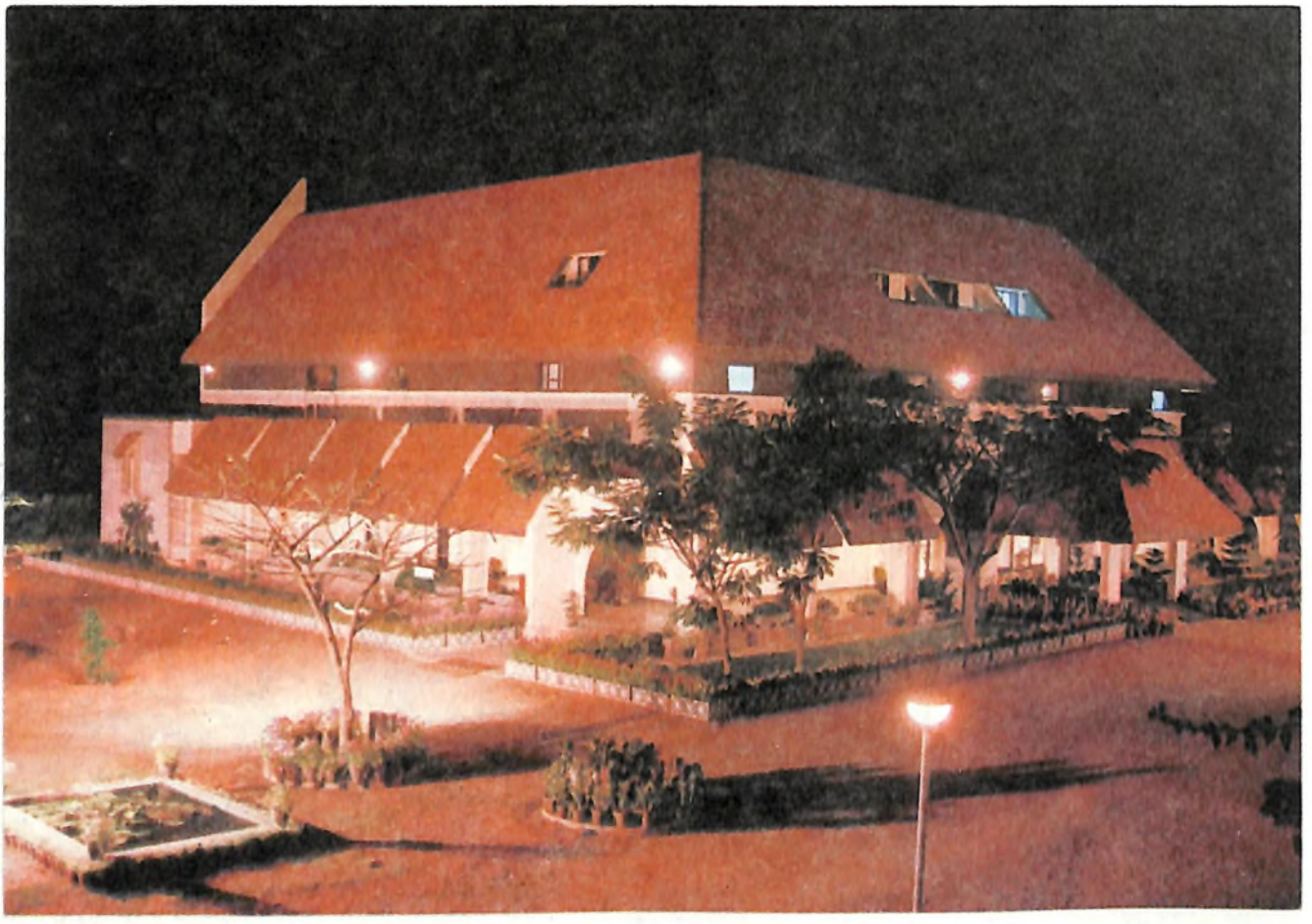
SEMINAR ON
INFRASTRUCTURE - KEY TO GROWTH.
IS KARNATAKA GEARED UP?

Mr R V Despande Hon'ble Minister for Industry and Infrastructure, Government of Karnataka delivering his inaugural address for the above seminar

The above Seminar was organised by National Institute of Advanced Studies & Alumni Assoication of Jadavpur University, Bangalore Chapter and supported by the Government of Karnataka. This was held at J.R.D. Tata Memorial Auditorium (NIAS) on 13th June, 1997.

The Seminar was inaugurated by Mr. R.V. Deshpande, Hon'ble Minister of Industry and Infrastructure, Government of Karnataka. The key note address was delivered by Mr. V. Suresh, Chairman, HUDCO, New Delhi. This technical Seminar was a very well attended one and the participants from the Departments of the Government who deal with the development of the infrastructure of the State, Multinational companies, Corporate Houses, Private Companies and Scientists, Engineers and senior citizens, Students and NGOs who have concern for the subject took active part in the deliberations. Dr. D.M. Nanjundappa, Deputy Chairman - State Planning Board and Prof. M.N. Srinivas also took active part in the above seminar.

THE JRD TATA MEMORIAL AUDITORIUM



JRD Tata Memorial Auditorium at NIAS

This multi-purpose modern Auditorium is a prominent, aesthetically pleasing presence in the NIAS campus. The motif chosen for the exterior architecture - with sloping roofs clad with bright-red Spanish tiles from Mangalore, and arch-ways in the corridors - is essentially the same as adopted in the Main Building that has already come up. In fact these distinctive features had been suggested to the Architects by JRD Tata at the time of original planning. The use of local granite also had a special appeal for him.

Maximum attenton has been given to acoustic design, so that voice and sound from the stage will reach every part of the hall, without any distortion and without any need for sound reinforcement. In addition to basing the design on modern methods of mathematical analysis and computer modeling, great care has been devoted to the details of interior architecture - the side walls and the canopy - and to the choice of appropriate materials. The Trapezoidal shape of this hall has also a bearing on the acoustic design.

A distinctive feature in the acoustic design is the use of 'polycylinders' which are diffusive resonators. The side walls, though they appear to be monolithic are actually made up of multiple resonators, individually tuned - some using air as the medium, and others with different types of glass-wool packing. Systematic treatment for absorption and dispersion has been aimed to add brillance and life to sound. Though the general intent has been to avoid sound-amplification, a sophisticated sound re-inforcement system has also been provided, for any special requirement.

The facility in its entirity has been designed by Sri. Burjour Mistry and others of M/s. Patell Batliwala Manohar & Associates. We are thankful to them.

But for our Chairman Dr. Bhabha's inspiration and resourcefulness and our Director Dr. Raja Ramanna's day to day guidance and laying down stringent and fine-tuned parameters on acoustics and sound system, we could not have the Auditorium as it is to-day. We are indebted to them.

VISITS ABROAD

MS. SRILATHA BATLIWALA:

1. **April 21-25, 1997** - Visit to Lund and Stockholm, Sweden for

a) Seminar on Female Empowerment and Demographic Processes:
Moving Beyond Cairo, organised by the International Union for the Scientific Study of Population and Department of Demography, University of Lund; and

b) Seminar on Women's Empowerment organised by the Swedish International Development Agency (SIDA).

DR.DEEPA M. OLLAPALLY:

2. **April 24, 1997** - Attended the Conference on "A New Look at International and National Security" organised by Women In International Security at the Brookings Institution, Washington, D.C.

COUNCIL OF MANAGEMENT, ANNUAL GENERAL & SPECIAL GENERAL MEETINGS

The Seventeenth meeting of the Council of Management and Seventh Annual General and Special General meetings of the Society of NIAS were held in the Institute on March 23, 1997.

These meetings were attended by Dr. J.J. Bhabha (Chairman), Dr. Raja Ramanna (Vice-Chairman and Director, NIAS), Mr. R.M. Lala, Prof. V.S. Ramamurthy, Mr. H. Nagaraja Setty, Mrs. Tara Ajai Singh, Prof. R.L. Kapur and Maj. Gen. M.K. Paul [Retd] (Secretary). Prof. M.N. Srinivas attended the Council meeting by invitation and the Annual General and Special General meetings as a member of the Society. Prof. C.V. Sundaram and Prof. B.V. Sreekantan also attended the meetings by invitation.

The Eighteenth meeting of the Council of Management was held in the Board Room of the Tata Sons at Bombay on June 24, 1997. Dr. J.J. Bhabha, Dr. Raja Ramanna, Prof. C.N.R. Rao, Dr. V.S. Arunachalam, Dr.R.Narasimha and Maj. Gen. M.K. Paul (Retd) attended the meeting.

NIAS LIBRARY

Two major objectives of the library has been to develop a collection of reading materials which cater to the needs of our faculty and also to build a collection of books of general nature mainly for the benfit of participants attending the courses conducted by our Institute.

The library has acquired more than one hundred books during the last six months. The new acquisitions include Annual Reviews of Anthropology, Neuroscience, Sociology and Psychology. The new subscriptions are Foreign Policy, Asian Survey, Foreign Affairs and International Security. The two recently acquired CD-ROMs are "Gandhi an apostle of peace and non-violence" and "Challenge of the Universe". Access to INTERNET has not only helped to retrieve information but also to distribute papers worldwide.

THOSE WHO JOINED US

The following have joined the Institute:

Sl. No.	Name	Appointment	Date
(a)	Ms.R.Vijayalakshmi	Library Asst.	01.01.1997
(b)	Ms.J.N.Sandhya	Steno-Typist	01.01.1997
(c)	Mr.Satish S.Moogi	Technical Asst.	17.02.1997
(d)	Mr.V.R.Vignesh	Technical Asst.	17.02.1997

Both Satish & Vignesh are Graduates in Electronics and Communication Engineering and they are participating in the Epigraphy Project.

(e)	Prof.S.Rajgopal	Visiting Prof. Dr.S.Radhakrishnan Chair	03.03.1997
(f)	Dr.A.R.Vasavi	Fellow	01.05.1997

Dr. Vasavi joined the Sociology and Social Anthropology unit. She has a doctorate in social anthropology from Michigan State University (U.S.A). She was earlier an Assistant Professor at Tufts University (Medford, USA) and at the Ravi Matthai Centre for Educational Innovations at the Indian Institute of Management (Ahmedabad). Her interests are in critical anthropology, rural cultures, educational sociology and ethnographic methods.

(g)	Mr.N.Rajesh	Helper	01.05.97

Participants of the Eleventh NIAS Course with the Faculty

NAMES OF PARTICIPANTS OF THE ELEVENTH NIAS COURSE

1. Mr V.P. Balakrishnan
   Scientist 'G'
   Fuel Processing Unit
   Bhabha Atomic Research Centre
   Trombay, Mumbai - 400 085

2. Capt Brijesh
   Officer-in-Charge
   Signal School
   Naval Base, Kochin

3. Mr S V Dhanraj
   Scientist F
   Combat Vehicles Research
   & Development Establishment
   Avadi, Chennai - 600 054.

4. Brig. K.S. Duggal
   Defence Services Staff College
   Wellington
   Nilgiris - 643 231, Tamil Nadu

5. Air Commodore Rajesh Lal
   JDPO (A)
   Air Headquarters, Vayu Bhavan
   New Delhi - 110 011

6. Dr A N N Murthy
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   Technology Bhavan
   New Mehrauli Road
   New Delhi

7. Mr Shankar Narayan
   Accountant General (Audit)
   Kerala, Thiruvananthapuram - 695 039

8. Mr R C Pandey, IFS
Joint Secretary
Ministry of External Affairs
Apartment No. 110
External Affairs Hostel
Kasturba Gandhi Marg
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9. Dr U Srinivasa Raghavan
Postmaster General (Mail Management)
Office of the PMG
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10. Mr C Ramakrishnan
Senior Deputy General Manager (Finance)
Tata Engineering & Locomotive
Company Ltd, Bombay House
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11. Mr M N Saraf
Scientist F
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& Development Establishment (DMSRDE)
DMSRDE Post Office
G.T. Road
Kanpur - 208 013

12. Mr B K Sinha
Deputy General Manager (Personal)
Tata Steel
Jamshedpur - 831 001

13. Mr P Swaminathan
Head, Electronics and
Instrumentation Division
Indira Gandhi Centre for Atomic Research
Kalpakkam - 603 102

14. Mr V.A. Thomas
Group Director (PPEG)
ISRO Satellite Centre
Airport Road
Bangalore - 560 017.

15. Mr Ibrahim Vayani
Senior Superintendent
(Electrical Engineering)
Tata Chemicals Ltd
Mithapur - 361 345
Okhamandal
Gujarat State.

16. Smt Lakshmi Venkatachalam
Commissioner
Bangalore Development Authority
T Chowdaiah Road
Kumara Park West Extn
Bangalore - 560 020

THOSE WHO LEFT US

Prof. Biswajit Sen, moved over to Calcutta to start his own private practice and continue with the MacArthur Foundation Project.

HONOURS & AWARDS

1. Volume IV of the five-volume festscgrift to Prof. M.N. Srinivas was published in June 1997. Its title is **Development and Ethnicity: Social Structure and Change** edited by Professors A M Shah, B.S Baviskar and E.A Ramaswamy, and published by Sage Publications, New Delhi, 1997.

2. Prof. K. Ramachandra, Hon. Visiting Professor of NIAS has been awarded **SRINIVASA RAMANUJAN MEDAL** from the Indian National Science Academy for 1997. This award is made once in two years for Excellence in Mathematics (Some of the former recipients of this award are K. Chandrasekharan, S.D. Chowla and R.P. Bambah for work in the area close to Ramanujan's).

3. Dr. Sundar Sarukkai, Research Fellow of NIAS has received the **HOMI BHABHA FELLOWSHIP** from June, 1997.

LETTER TO THE EDITOR

Dear Sir,

Sad thoughts and nostalgia constitute the strongest components of my wakeful self as I try to gather my thoughts into a coherent stream. My five years in NIAS have been a learning experience par excellence, unique in its many dimensions. I do believe that there is no institution in India which could match the quality of experience and training which I obtained here working in collaboration with Professor Ravi Kapur. I am deeply thankful for this.

There are two aspects of NIAS which, though not unique, are certainly uncommon in the Indian academic arena. One is the exceedingly pleasant ambience which often taken an outsider's breath away on first entering the NIAS campus. The second is the non-intervention - followed almost as a principle - in the academic affairs of faculty members, allowing them freedom to follow whatever path they choose. The combination of the two qualities should make this institution an envy of many others.

On a more personal front, I would like to put on record that whether it is the Director's office or the administration, cordial co-operation has been given uniformly whenever requested. I would also always remember with gratitude the fact that members of the faculty and other staff offered me respect and affection to the extent that they became friends, no less.

It is a disappointment for me that I have to leave for my home town, Calcutta for reasons that are so compelling that they brook no delay. It would not be an exaggeration to state that had this institution with all its qualities, were in Calcutta, there would not have been any reason for me to leave at this moment.

At this moment of departure, I wish NIAS the very best that academics can bring and many years of proud existence.

Sincerely,

BISWAJIT SEN

NIAS NEWS

THE TENTH ISSUE

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