

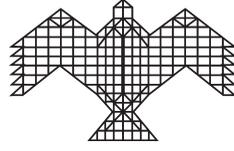


NATIONAL INSTITUTE OF ADVANCED STUDIES

Bengaluru, India

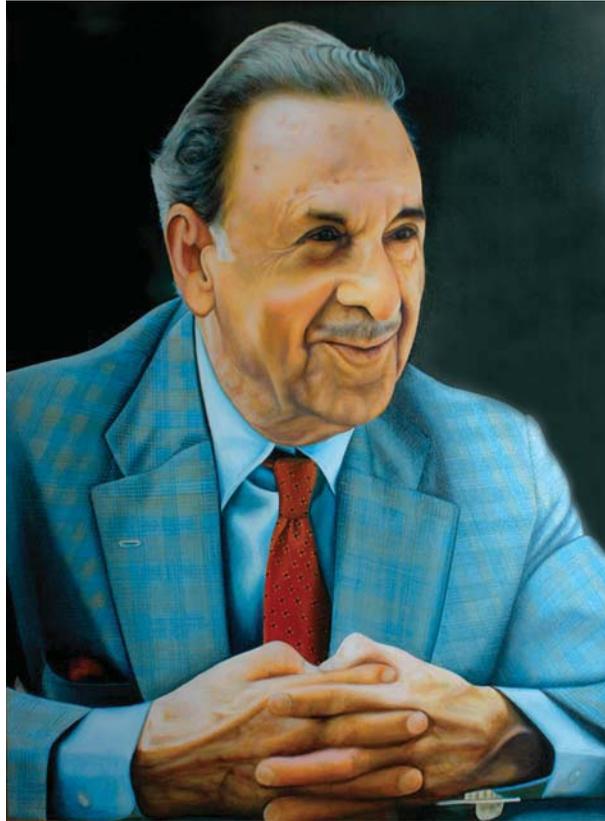
**ANNUAL REPORT
2017 – 2018**





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JRD Tata
Founding Chairman

The Vision and Mission of NIAS

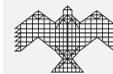
To integrate the findings of scholarship in the natural and social sciences with technology and the arts through multi-disciplinary research on the complex issues that face Indian and global society.

To assist in the creation of new leadership with broad horizons in all sectors of society by disseminating the conclusions of such research through appropriate publications and courses as well as dialogues with leaders and the public.

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FROM THE DIRECTOR



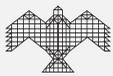
The National Institute of Advanced Studies (NIAS) has been engaged in promoting multi-disciplinary approaches to address impacts of scientific and technological advances on today's society in the historical, social, cultural, political and economic contexts. During last thirty years, NIAS has made outstanding contributions by discovering new and innovative approaches to understand various societal issues. NIAS has provided a platform to interact with leaders in science, technology, social sciences and humanities from the academia, industry, government and voluntary organizations.

During the 2017-18, NIAS has made significant progress in all major programmes. Some of the highlights of the research programmes provided below.

Under the Education Programme, a curriculum was designed for school teachers to identify the gifted and talented children as well as an approach to mentor them. The pilot project for identifying such children from the rural areas of the Mysuru and Chamarajanagar districts was accomplished. This approach has been now submitted to the National Council for Teachers Education (NCTE) to be included into 4-year Integrated Programme for Pre-Service Teacher Training Programme. Inputs on women in science, technology, engineering and mathematics; gaps in vocational and higher education and nurturing gifted and talented children, were also provided to the Dr K Kasturirangan Committee for drafting new Education Policy.

The Energy and Environment Programme looks at how to balance the energy requirement for improved living standards and accelerating industrial growth while meeting stringent environmental standards. The documentation about emerging technologies in the field of renewable energy and required policy to ensure growth of such technologies was provided to the Department of Science and Technology (DST). The key findings in the renewable energy were presented at the COP23 Summit in Bonn, Germany to showcase the Indian Government initiations to renewable energy. Inputs were provided for the development of the Nuclear Fuel Cycle Simulation System (NFCSS) for the International Atomic Energy Agency (IAEA). NFCSS can be used for illustrative scenario planning for research, education and policy purposes.

The Inequality and Human Development Programme focuses on different form of inequalities and their interactions. Efforts are being made to understand the nature of agrarian transition in the country and its impact on the inequities that are generated. Nation-wide surveys have been conducted and are being analyzed to get insight into this issue. An econometric model is being developed to understand macro picture of causes of farmers' suicides on basis of in-depth studies in selected villages in Maharashtra, Karnataka and Kerala. Inputs on 'fiscal space' were provided for the 6th Pay Commission of the Karnataka government. The recommendations provided on the identification of specific areas of creating fiscal space were included as one of the chapter in the Sixth Pay Commission report.



The Heritage, Science and Society Programme explored linkages of science and technology with culture, society and civilization. A book on Digital Hampi: Preserving Indian Cultural Heritage presented technologies for digital archiving and representation of tangible and intangible cultural heritage of Hampi. A monograph on Chola and Vijayanagara Bronzes: Archeometallurgical Mapping of Shifting Iconographies was published.

Two books on 'Inviting Death: Historical Experiments on Sepulchral Hill' and 'Perusing Death: Philosophy and Practice of Voluntary Termination of Life' have been republished. These books provided significant input on the case where the ritual death practiced by the Jain community is not same as suicide was successfully argued in the Rajasthan High Court. The Supreme Court has also approved as selective euthanasia under medical supervision.

The space images have been used to identify archeological mounds of Buddhism sites like Nalanda, Bodhgaya and Vikramsila. Various photogrammetry techniques have been used to measure orientation of sacred structures and their astronomical association have been established.

An edited book on 'Self, Consciousness and Culture: Interdisciplinary Converges on Knowing and Being' was published by the Consciousness Studies Programme through Springer Nature. Theoretical information from 22 primary Sanskrit poetics about three emotions, envy/jealousy, pride, shame/guilt/embarrassment, have been documented and 3 models that facilitates understanding of mental state have been studied. A novel concept has been proposed Compression-Complexity-Causality (CCC) for causality testing for noisy and asynchronous measurements. The CCC will be useful for developing a usability based scientific measures of consciousness in Neuroscience. The study about bacterial communication and pattern formation has been undertaken to understand human cognitive system and consciousness research.

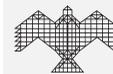
The Urban and Mobility Studies Programme analyzed the social and economic consequences of the policy and urban governance which leads to social transformation in cities, towns and rural areas. Field work has been carried out in Bangalore and Jakarta to undertake comparative studies in changes in land use, property relations, livelihoods and urban ecologies in the context of rapid urban growth and circulation of financial capital into real estate sector. The linkages between migration, skilling, livelihoods and social mobility among construction and low-end service sectors in two cities Bangalore and Raichur in Karnataka are being examined.

The Animal Behaviour and Conservation Programme addressed issues related to social behavior and communication, especially of primates and elephants. Research findings on human-elephant conflict helped to develop mitigation strategies and now being adopted by the Karnataka and Tamil Nadu governments. In another study, it was observed that during the ancient times, sacredness was not a defining characteristic of human-primate relations. The deification of monkeys occurred much later as popularity of Ramayana grew. Based on understanding of human-primate conflict, the Forestry Department of the Himachal Government was advised various field-based methods to reduce crop raiding.

Studies were undertaken to understand and predict interactions between natural systems through dynamical modelling. The effect of human intervention and land use changes such as change in forest cover, increase in grassland, etc. on larch budmoth insect outbreak cycle was modelled to predict future outbreaks.

The Conflict Resolution Programme engaged in the developing inclusive knowledge data base about conflicts that affect India. In one such study, it was observed that skewed natural resources distribution led to conflicts in Maoists affected areas in Orissa. The volunteerism is an another area of conflict. India has long tradition of volunteerism and the Gandhian concept of volunteerism was shared with the German collaborators who wanted to shift from permanent system of volunteerism to spontaneous system of volunteerism. Based on these interactions, a curriculum for training of the Karnataka State Fire and Emergency Services, was developed. A book on 'Reasoning Indian Politics: Philosopher Politicians to Politicians Seeking Philosophy' has been published through Routledge.

The International Strategic and Security Studies Programme addressed issues related to promoting and ensuring national security. Based on the aeronautical research in few leading countries, it was inferred that the lack of indigenous aircraft development has hampered the research initiatives in India. We need to prioritize research



related to aviation safety and unmanned air systems. A comprehensive study on the China's space capabilities and North Korea's missile and nuclear capabilities has been completed. Software tools for assessing performance of the missile capabilities of selected Asian countries and target identification have been developed. Studies related to Weapon Systems and Deterrence Strategies as well as technological aspects of aerial, submarine-based weapon systems, space-based and high-energy weapon systems have been undertaken. A major effort has been made to map, categories and forecast trajectory of sectarian violence in Pakistan. The evaluation of the impact made by the Indian Space Programmes on industrialization in India and impact of medical tourism have been undertaken.

A joint venture between the NIAS and Open Source Pharma Foundation launched a project to select and prioritize the target and lead molecules to support academic community and research workers. It is envisaged that this initiative will impact the speedy development at low cost of new drug candidates for tuberculosis and Chickungunya through application of bioinformatics, chemoinformatics and data analytics tools.

Important contributions were made to develop curriculum for philosophy subject for BA and MA has been developed for Bangalore Central University. An ICT integrated module on 'Ecology' was developed in association with the Massachusetts Institute of Technology, USA and Tata Institute of Social Sciences, Mumbai.

The leadership training programmes are core to activity to create leadership in the country with a duration of one to two-weeks. Training programmes related to science policy, science and sustainability, innovation, science, technology and society have been conducted.

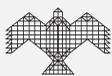
We also need to focus on future activities. What should be our strategy for next ten years or so?

The greatest challenge of the century is how to balance between our developmental goals and at the same time protect our environment. With global human population to rise to 9 billion by 2050, it is of paramount importance that we synchronize the development goals with the conservation of the Earth's environment for sustainable development. We need to view this scenario as an opportunity to find innovative ways to find solutions to sustain development and to improve quality of life.

NIAS has been ideally placed to address all these issues affecting humanity having an ideal mix of natural scientists, technologists and social scientists. We have contributed significantly to various aspects related to water, education, health, energy, climate change, urban habitat, conflict resolution, governance, etc. from a multidisciplinary angle. Such a scenario provides us ample opportunities to undertake sustainability science research by bringing together expertise on global, regional and local perspectives from the natural and social sciences, engineering, humanities and healthcare.

NIAS has an environment where young and creative minds, open to new ideas, can interact across disciplines and institutions. We need to induct such young people regularly. We need to ensure internal funding and time, in order to allow such young minds to discover and apply knowledge to societal issues. The PhD programme and leadership training programmes will support this task. I am sure with the support of everyone, we can certainly achieve success in addressing issues regarding sustainability.

As NIAS symbol is of eagle, we need to fly high and provide broad and synoptic view of the earth and its sustainability to all concerned. We need to take lead to address sustainability science, so that instead of being a net consumer of knowledge, we can be a net producer and exporter of knowledge on sustainability.



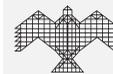
ACKNOWLEDGEMENT

The National Institute of Advanced Studies acknowledges its gratitude to its funding agencies, organizations, institutes and the people for their support in various forms to conduct the research activities, organising training programmes, doctoral programme, meetings, workshops, seminars and symposia successfully.

Our gratitude to:

Sir Dorabji Tata Trust
Tata Education and Development Trust
Tata Education Trust
Tata Social Welfare Trust
TCS Foundation
Department of Science and Technology
Department of Space
Department of Atomic Energy
Defence Research and Development Organization
Ministry of Earth Sciences
Ministry of New and Renewable Energy
Indian Council of Social Science Research
Science and Engineering Research Board
Office of the Principal Scientific Advisor to the Government of India
Tata Institute of Social Sciences
Vijaya Bank
Azim Premji University
Government of Karnataka
Grand Challenges Canada
Indian Council of Philosophical Research
Tata Steel
Sundaram Finance Limited
University of Exeter
University of Oxford
National Science Foundation
Indian Academy of Science
Rajiv Gandhi National Institute of Youth Development

NIAS looks forward to receiving continued support from our well-wishers, funding agencies and all others towards actualizing our research and academic mandate.



TRIBUTE



Prof Baldev Raj, Director, NIAS passed away on January 6, 2018.

Prof Baldev Raj, Mentor of Par Excellence

An outstanding scientist, technologist, leader par excellence and a good human being. Provided leadership in diverse domains, be it development of new materials or finding applications to explore newer domains for getting better understanding. A visionary who possessed the innate ability to think ahead and identify the techno-scientific problems to be pursued and above all in identifying the colleagues with potential and guide them for achieving leadership positions.

Under his leadership, IGCAR has achieved many important benchmarks, such as successful operation of Fast Breeder Test Reactor (FBTR) to achieve a burn-up higher than 150 GWd/t and development of state-of-art reprocessing facilities for the carbide fuel and many vibrant R&D programs. He facilitated well-coordinated effort with BHAVINI in getting regulatory clearances for the construction of Proto Type Fast Breeder Reactor (PFBR) and taking the project forward. He has been responsible for starting, nurturing and enhancing international collaborations of high merit of relevance and eminence with several countries.

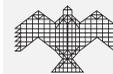
He has passion for teaching, communication and mentoring. Education and Human Resource Development has been one of his priority areas. He played very important role in starting of Homi Bhabha National Institute (HBNI) at the Department of Atomic Energy. Under his leadership, IGCAR has seen the rise in the number of research scholars from single digit to two hundred and several of them pursuing their doctoral programs in interdisciplinary domains.

One of his high impact contributions in the domain of Human Resource Development has been the starting of BARC Training School at IGCAR. Three new courses, Nuclear Reactor Physics, Nuclear Fuel Cycle Technology and Material Science, have been started at IGCAR. These courses have filled the gap and provided well trained human resources for working in the domains of reactor design, safety, reprocessing technologies and materials development. He nurtured young talent by facilitating opportunities of carrying out internships of large number of students. Bringing awareness to the school and college teachers, especially those coming from rural and semi urban areas has been one of his priority.

Above all he is a very passionate about human resource development with emphasis on ethics. He readily spares his time for students. His passion to interact with students and young minds has benefited many in a big way.

The best way to pay tribute to a person of his stature is to start living his dream and a challenge many of his colleagues, admirers are gearing up while coping up his untimely departure from this mortal world.

by Dr M Sai Baba



EXECUTIVE SUMMARY

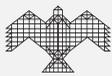
The following is a summary of the major outcomes and achievements through various Programmes and initiatives at NIAS.

CONFLICT RESOLUTION PROGRAMME

- A book on “Reasoning Indian Politics: Philosopher Politicians to Politicians Seeking Philosophy”, published by Routledge India, Eds. Narendar Pani, Anshuman Behera. This volume examines the multiple forms of reasoning in Indian politics and explores a framework to understand them. In the process, it looks at a series of issues involving the relationship between politics and philosophy, including the status of political theory, political practices, identity politics, and political ontology. The book argues that in the years leading up to and soon after independence, the task of conceptualizing politics was largely in the domain of practising politicians who built theories and philosophical methods, and further took those visions into the practice of their politics. It maintains that Indian politicians since then have not been as inclined to articulate their theories or methods of politics. The book traces the transition from philosopher politicians to politicians seeking philosophy in Indian polity in the post-independence era and its implications for current practices. It views Indian political philosophy from the standpoints of political theorists, philosophers, and practitioners.
- Indo-German project on Vulnerabilities and Volunteerism: Global economic changes initiate a movement in Germany from permanent systems of volunteers to spontaneous volunteering. India has long tradition of spontaneous volunteers with relatively less developed permanent systems of volunteers. Empirical and theoretical interactions with the German side leading up to contributions to the curriculum for training of the Karnataka State Fire and Emergency Services Indian side led by NIAS.
- Study of Empirical Insights from India: Socio-economic and cultural analysis of a village in Uttarakhand that provided volunteers for the floods in 2013 by Dr Anshuman Behera.
- Natural Resources, Conflict and Consciousness: Study of patterns and processes involved in the natural resource distribution that leads to conflicts in Maoist affected areas of Odisha. Study of linkage between skewed resource distribution and people’s movements in tribal majority district in Odisha.

CONSCIOUSNESS STUDIES PROGRAMME

- An edited book titled “Self, Consciousness and Culture: Interdisciplinary Convergences on Knowing and Being”, Eds: Sangeetha Menon, Nithin Nagaraj and Binoy VV – Springer Nature, Singapore 2018. This book brings together well-known experts from across the world in the 24 chapters of the book, which addresses themes connecting self, culture and consciousness, for the first time in an interdisciplinary manner. The collaborative work is the result of developing an overarching conceptual bridge connecting the interdisciplinary features of self, culture and consciousness, collaborating with Profs. Georg Northoff (Director, Brain Imaging and Neuroethics Research Unit, Institute of Mental Health Research, Royal Ottawa Mental Health Centre, Ottawa), Michel Bitbol (Director, Archives Husserl CNRS/ ENSParis), Stephen Post (Director, Center for Medical Humanities, Compassionate Care, and Bioethics, School of Medicine, Stony Brook University, Stony Brook), Owen Flanagan (Director, The Center for Comparative Philosophy, Duke University, Durham), Frank Krueger, Lysenko Victoria, Vashishtha Narayan Jha, and many other collaborators in India, to develop a focus theme for the book divided into five main thrust areas: Emergence of Consciousness; Healing, Agency and Being; The Social Self, Culture and Cognition; The Self and Alternative Epistemologies; Consciousness, Experiential Primacy and Knowing.
- In collaboration with Indira Gandhi National Centre for the Arts – Southern Regional Centre, conceptualised a Joint internship programme, focusing on Indian wisdom traditions, titled “Kalaatmika Internship Programme”, for young scholars.
- Workshops and Seminars:
 - i. “Minds and Machines: Debates on The Nature of Intelligence and Experience”: A One Day Workshop with Experts from Machine Intelligence, Big Data, Philosophy of Science, Information Theory, Brain Imaging Technologies, Social Cognition & Consciousness Studies.
 - ii. “Beyond the Rasa Theory: A One Day Seminar on New Directions in Understanding the Natyasastra”, Co-organised with Indira Gandhi National Centre for the Arts, Regional Centre Bangalore.



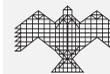
- iii. "Altruism, Wellbeing and Purpose: Vantage views on Planetary life, and its meaning from Biology, Indian philosophy and the Arts", co-organised with METI-International.
 - iv. NIAS Consciousness Studies Programme Interinstitutional Brainstorming Meeting-1 on "Charting the Path for the Future of Consciousness Studies in India", organised along with Indian Institute of Science, S-VYASA, NIMHANS, and IGNC-SRC.
- Doctoral thesis was submitted by Shankar Rajaraman titled: A qualitative approach to the psychology of three self-conscious Emotions from Sanskrit poetics: Documenting theoretical information from 22 primary texts spanning two millennia and isolates 3 indigenous models that facilitate understanding of mental states.
 - Two new projects funded by the Tata Trust have been initiated:
 - i. Study and documentation of the alternate and indigenous healing and wellness traditions of Kerala.
 - ii. Study and documentation of Kashmir Saivism, its philosophy and aesthetics, and a comparative approach in understanding Causality in Information theory.
 - Two Projects supported by DST-CSRI and DST-SATYAM have been initiated:
 - i. Causality testing in Cognitive Neuroscience with Applications to Measures of Consciousness.
 - ii. Consciousness Measures and Synchrony between Brain and Cardiovascular Dynamics in Yoga Experience.

ANIMAL BEHAVIOUR AND COGNITION PROGRAMME

- Land use changes as a driver of human-primate conflict in the Northern India.
- Human-street-dog cohabitation and rabies prevention in Chennai.
- Intra-specific variation in ecology and behaviour of slender loris, communication and cognition of bonnet macaques, drivers of human- rhesus macaque conflict.
- Behaviour ecology and physiology of Asian Elephants in human-dominated landscapes.
- Research findings on human-elephant conflict have led to recommended mitigation strategies being adopted by the forest departments of Karnataka and Tamil Nadu.
- Revitalising school education through environment related modules.
- Diversity and behaviour of indigenous fish species.
- Human social cognition and decision-making.

EDUCATION PROGRAMME

- NIAS leads the National Programme on "Identification and Mentoring Gifted Children aged between 3 – 15 years". The team has developed an Indian based model to identify and mentor gifted children (3-18 years). The rural Initiative of identifying the gifted and talented is completed during the last year. 60 children are identified from Mysore and Chamarajanagar districts of Karnataka. This was a collaboration with Government of Karnataka.
- NIAS played a crucial role in facilitating the inclusion of educating the gifted and talented in the current 4-year integrated curriculum for pre service teacher training in India. That is submitted to NCTE. She was part of the core team to prepare this curriculum.
- Secretary, MHRD, Government of India has asked NIAS to work with three states – Karnataka, Maharashtra and Kerala in the pilot phase for Identification and mentoring Gifted education.
- Social Exclusion and Education team at NIAS has been part of core committee to revisit the code for Ashram schools (Government of Maharashtra initiative).
- Design, of gifted and talented education and its inclusion pre-service teacher education programme.
- Training of teachers (913) to identify gifted children.
- Launching of Advanced Learning Centres (ALCs) to provide continuous nurturing support.
- 15 students were provided a fellowship of Rs. 50,000 per year and mentorship through NIAS.
- MAIYA Prodigy Fellowship Programme.
- 120 women from different S&T organizations were interviewed. Data is being analyzed
- Focusing on the skill gaps and aspirations of the ITI and diploma holders in manufacturing sector.
- Promotion of Quality Education through Child Centred Play in 4 Government schools Quality Education to Government Primary School Children.



- Summer Vacation Bridge Programme for 64 school children admitted under 'Right to Education' provision, enabled them to fit in with ease to the 1st standard in 4 private schools, over 10 sessions, conducted for each group.

HERITAGE, SCIENCE AND SOCIETY PROGRAMME

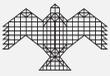
- 'Digital Hampi', an edited volume of papers emerging from the DST project led by NIAS on digital technologies in visualisation of Hampi world heritage site.
- A monograph on Chola and Vijayanagara bronzes and archaeometallurgical finger-printing, with topical relevance for authentication of antiquities.
- Geospatial insights on Buddhist sites (Nalanda).
- Indian and Greek Art and Bronzes and Archaeometry and Archaeometeorology Chola and Indian Bronzes and metals in antiquity.
- Disseminating archeology to school children.
- Geospatial techniques in Archeology.
- Megaliths and later Monuments.
- Workshop on Iron and Steel smelting.
- Exploring India's medieval coastline using geospatial analysis and historical records.
- Archaeological mounds at the Nalanda using digital terrain models and the archaeological extent of other similar Gangetic valley Buddhist sites.
- As part of the NIAS-TCS metal crafts heritage initiative, workshops were held on "Artisanal and Metal Craft Technologies and Experimental Archaeology", "Traditional Iron Smelting with Building of Furnaces along with Local Blacksmiths and Potters", and bronze casting workshop for the "India and the World" exhibition at National Museum, New Delhi with a photo-exhibition on traditional icon making in Thanjavur Area.
- A/V content from fieldwork and interviews with master craftspeople being compiled for dissemination through cultural platforms of IGNCA on oral histories of last practitioners of declining wootz steel makers and high tin bronze musical cymbal makers in Telangana, Kerala & Cauvery Region; and for Sahapedia.
- Under the project "Understanding the Past: Intervention Through Dissemination", funded by Sundaram Finance, two workshops were held for 6th and 7th grade students and one also involving school teachers.
- Workshops were held for the broader public in collaboration with INTACH-BENGALURU including a fieldtrip to the Jain site of Aratipura and an experimental flint knapping workshop at NIAS.
- Project awarded by Arts and Humanities Research Council, UK with EXETER University on politics of performance in the margins of urban peripheries in south India.

INEQUALITY AND HUMAN DEVELOPMENT PROGRAMME

- Normative and Descriptive Inequalities and their relationships to gender relations as well as Farmers suicides.
- The Mission: Enhance knowledge on inequalities in India in order to influence public discourse as well as policy.
- Two projects sponsored by Tata Consultancy Services.
- Conceptualizing inequality: Data from a robust all-India sample generated both for inequality and for circular migration.
- Inequalities in the transition out of agriculture.
- Mapping spatial inequalities between the release of labour from agriculture and the availability of non-agricultural jobs.

INTERDISCIPLINARY APPROACHES TO ECONOMIC ISSUES PROGRAMME

- A report on Financial Inclusion emphasized in the diverse preferences for the formal and informal forms of finance.
- Input on 'fiscal space' for the Pay Commission. The emphasis of the fiscal health of a state comes at a cost of ideal welfare outcomes.



- The Mission: Introduce the methods of other disciplines to understand economic issues
- Financial inclusion in rural Karnataka:
 - Two projects, one on financial instruments and the other on the relationship between formal and informal financial institutions.
 - Established the co-existence and inter-dependence between formal and informal financial systems in rural Karnataka.
 - Three volume combined report based on a large sample survey.
 - Sponsored by Vijaya Bank.

ENERGY AND ENVIRONMENT PROGRAMME

- Global Technology Watch Group – RE Technologies – DST completed. Policy briefs prepared for DST at COP23 summit at Bonn.
- Benchmarking of Talent Management Practices – Tata Steel.
- Sustainable Pathways to Energy Utilisation – SERB.
- Two Ph.D. students registered in Manipal Academy of Higher Education.
- Determinants of Nuclear Risk Perception in India- BRNS.
- 1st Workshop conducted at NIAS with experts from various areas.
- Annual School on grassroots organisation – DST.
- 1st workshop organised at NIAS with 42 participants.
- Facilitating the target of 100 GW Solar by 2022 – MNRE.
- Workshops completed & recommendations submitted to MNRE.
- Interactions between Earth and Human systems – MOES.
- New five-year project approved in March 2018.
- HSK Nathan awarded NASI Scopus Young Scientist Award in Social Sciences by Elsevier for the overall quality, uniqueness and outcomes of his research.

INTERNATIONAL STRATEGIC AND SECURITY STUDIES PROGRAMME

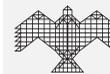
- Development of strategy on “Rare Earth”.
- Development of software tools to assess the performance of missile capabilities of selected Asian countries and capability of space assets for target identification.
- Input for draft guidelines for operation of Unmanned Aerial Vehicles (UAVs).
- Training programme for Fiji National Security Officials.

DRDO Sponsored Projects:

- Comprehensive study on China’s Space Capabilities was completed. Another completed study included Revisiting Aeronautical Research in India.
- The study on Borderland and National Challenges relating to gaining better understanding of socio-cultural, religious and economic profile of the Monpas of Tawang in Arunachal Pradesh
- Two other studies, one related to Weapon Systems and Deterrence Strategies and the other related to Advance Weapons are underway. While the first study examines weapon systems for strategies like Anti-Access/Area Denial (A2AD), the latter examines the technology aspects of a) aerial weapon systems, b) submarine based weapon systems, c) space weapons and d) high energy weapon systems.

COMPLEX SYSTEMS PROGRAMME

- Prediction of insect infestation outbreaks and human intervention. The mathematical model captured irregularities and variations in pest infestation outbreak cycles in forest. The model has been validated based on 310 years of recorded data in pest outbreak cycles.
- Calculate change and pressure for an oscillating gas bubble in a liquid, driven by ultra-sound. Useful for diagnostic medical devices and operation of machinery in undersea environments.
- Model correctly predicted population explosion of jellyfish blooms around world due to global temperature rise – Posing problems to fisheries and tourism in Goa and Kerala coasts.



URBAN, TRANSNATIONAL AND MOBILITY PROGRAMME

- Social impacts of the development of the new capital city of Andhra Pradesh.
- Real estate development and urban social and environmental change in Bengaluru and Jakarta.
- Speculative Urbanism: Land, Livelihoods, and Finance Capital:
Comparative study of real estate development and urban social and environmental change in two cities of the Global South – Bengaluru and Jakarta.
Collaboration with University of Minnesota and UCLA, funded by National Science Foundation (USA).
- India's Changing Cityscapes: Work, Migration and Livelihoods:
Trace connections between changing urban occupational structure, migration, skill acquisition, employment, and social mobility.
Collaboration with Institute for Social and Economic Change, funded by ICSSR.
- Special Issue of *Journal of South Asian Development*: 'Reconsidering the Region in India', edited by C. Upadhyaya and L. Koskimaki, August 2017.
- Provincial Globalization in India: Transregional Mobilities and Development Politics. Edited by C. Upadhyaya, M. Rutten and L. Koskimaki, London: Routledge, 2018

PHILOSOPHY PROGRAMME

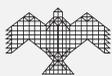
- Developed philosophy syllabus and curriculum for BA and MA for Bangalore Central University.
- Book: Experience, Caste and the Everyday Social, with Gopal Guru, Under review.
- Academic Writing Workshop, for PhD students at the Department of Sociology, University of Hyderabad.
- Alochana Yatre (Workshop on Thinking), series of public workshops on Introduction to Philosophy in Rural Karnataka, January 1 to 6, 2018.
- Introduction to Philosophy, Vedica Program on Leadership for Women, Vedica Institute, Delhi.
- Initiated Tata Trust funded project on Philosophy in Action.

SCIENCE AND RISK COMMUNICATION PROJECT

- Studying various dimensions of the perception of risk from novel and emerging technologies.
- Developing platforms for enhancing interaction between scientists and general public using conventional and novel methods.
- Outlining strategies based on S&T communication to manage the fear of public about the risks from novel technologies.
- Develop a road map to strengthen the bridge between the science and society using effective communication strategies and enable informed decision-making in a democratic environment.

MAJOR EVENTS

- Programme on Space in India's Foreign Policy Technology- Policy- Security Considerations.
- NIAS-DST Training Programme on Science Policy and General Management.
- 32nd NIAS Programme for Senior Executives on From Excellence to Eminence: Facilitating Thought Leadership – Be an Impact Leader.
- NIAS-DST Training Programme for Women Scientists on Science for Progress in India: Focus on Sustainability.
- Sixth NIAS-DST Training Programme on Policy for Science and Science for Policies.
- The Fifteenth Annual NIAS DST Training Programme on Multidisciplinary Perspectives on Science, Technology and Society.
- NIAS Foundation Day and also the Birthday of JRD Tata, the founder of NIAS was celebrated on July 29, 2017.
- Annual Memorial Lectures were given by Prof S Ranganathan, Prof Ravinder Kaur, Dr K Kasturirangan, Dr S Jaishankar, Prof Michel Danino and Prof Gilles Bibeau.



PHD PROGRAMME

- The second semester of NIAS academic year ended in April 2017 with the four Schools offering various courses for the NIAS PhD scholars. 10 candidates were selected for the 2017 August intake after an entrance test and two rounds of intensive personal interviews.
- The new batch students (2017-18) successfully completed the course work of the first semester. The next step for the students was the qualifying examination. The Student Advisory Committee (SAC) was set up after the students passed the qualifier exam. Ten first-year students gave their proposal presentation to the NIAS community.
- The Institute offered various courses for students and research associates in the second semester of the academic year, which runs from January to April 2018.
- The senior batch students completed their research and presented their final colloquium to NIAS community and submitted their thesis to the concerned Universities.

MAJOR RECOGNITIONS

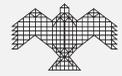
- Prof Rajaram Nagappa
Member, ICWA Delegation to China.
Chairman, Research Council, Advanced Systems Lab, DRDO, Hyderabad.
- Prof Sharada Srinivasan
Featured by Condi Naste Magazine amongst the top ten women scientists in their Make in India (2017) issue.
- Prof S Settar
The Doordarshan-Chandana Award for Literature for the year 2017 conferred on November 13, 2017. The Government of Karnataka on February 27, 2018, conferred one of the highest awards instituted by it in the name of a 10th Century Kannada Poet, Kavicharkaravarti-Ranna.
- Dr MB Rajani
Elected Member of Indian National Young Academy of Science for a period of five years from 2018 to 2022.
- Prof Anindya Sinha
International Advisor, Twenty-Eighth International Biology Olympiad, Coventry, UK; 18 to 30 July 2017.
- Dr Hippu Salk Kristle Nathan
Received the 'NASI Scopus Young Scientist Award – 2017' in Social Sciences by Elsevier and National Academy of Science India (NASI) conferred on October 31, 2017 at New Delhi.
- Dr VV Binoy
Elected as the Joint Secretary of the Ethological Society of India.

OUTREACH

- NIAS has initiated various measures of outreach and extending the news and updates of academic achievements through several modes such as monthly reports, quarterly newsletters, social media and website.

NIAS ADMINISTRATION AND FINANCE

- Like in the past, this academic year too the NIAS Administration and Finance team led by its Head, facilitated the smooth management of the projects, estate upkeep, general administrative and financial requirements. During the year 2017-18, the total expenditure incurred on various activities was Rs.2,305 lakhs as against the budgeted estimate of Rs.2,155.75 lakhs. The Institute implemented the 7th Pay Commission recommendations for all its employees. The expenditure includes the amount spent on the PhD programme as well as funded research activities. As far as earnings are concerned, the Institute generated Rs.2,311.78 lakhs as against the budgeted estimate of Rs.2,155.75 lakhs. This includes grant from the Tata Trusts amounting to Rs.781 lakhs and Rs.1,008 lakhs, being the grants received for research activities. The Institute received 22 new research projects with a total value of Rs.1,012 lakhs, which includes projects funded by foreign sources valued at Rs.231.60 lakhs.



SCHOOLS

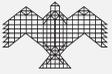
Each faculty member belongs to one of the four Schools, School of Conflict and Security Studies, School of Humanities, School of Natural Sciences and Engineering and School of Social Sciences, by virtue of his or her academic background.

The School of Conflict and Security Studies was created in May 2016 to bring together the Programmes in a domain and build further synergy within and across disciplines. The Conflict Resolution Programme and the International Strategic and Security Studies Programme form part of this School. The focus areas of the School include a) conflicts influencing certain outcomes in/for the country, examining empirical evidence leading to conflicts and recommendations towards their resolution and b) security and strategy concerns relevant to the country including technological, doctrinal and structural issues.

The School of Humanities is engaged in research in the broad areas of philosophy, psychology, literature, fine arts, and culture. Various programmes of the School currently focuses on philosophical foundations of sciences; cognitive sciences; scientific and philosophical studies of consciousness; Indian psychology and philosophy; archaeometallurgy and analysis of ancient metals; and translations of literary classics in Kannada into English.

The School of Natural Sciences and Engineering covers research in the field of engineering and mathematics, ecology, energy, environment and conservation biology. Current research interest of the faculty members includes various aspects of signal and image processing; cryptography; number theory; mathematical modelling of complex chaotic systems; studies on agro-ecology and plant and animal bio-security; conservation of wildlife; primate behaviour; energy and environment policy.

The School of Social Sciences consolidates its efforts to research problems facing India's economy, polity and society, and to disseminate the results to the bureaucracy, industry and civil society. In keeping with the overall thrust of the institute towards programmes, the School played a leading role in four programmes: education; urban and mobility studies; interdisciplinary approaches to economic issues; policy research initiative on inequality and human development.



SCHOOL OF CONFLICT AND SECURITY STUDIES

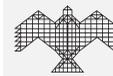
Members

D Suba Chandran, *Professor and Dean*
S Chandrashekar, *JRD Tata Chair Visiting Professor*
V Bhujanga Rao, *ISRO Chair Professor*
Rajaram Nagappa, *Visiting Professor*
Srikumar Pullat, *Visiting Professor*
PM Soundar Rajan, *Visiting Professor*
N Ramani, *Visiting Professor*
Lalitha Sundaresan, *Visiting Professor*
M Mayilvaganan, *Associate Professor*
Anshuman Behera, *Assistant Professor*
Amit Mukherjee, *Assistant Professor*
Prakash Panneerselvam, *Assistant Professor*
Muralidhar Lakkanna, *Post-doctoral Associate*

SCHOOL OF HUMANITIES

Members

Sangeetha Menon, *Professor*
Sharada Srinivasan, *Professor and Dean*
Sundar Sarukkai, *Professor*
Sisir Roy, *TV Raman Pai Chair Visiting Professor*
KM Suresh, *Visiting Professor (upto September 30, 2017)*
S Ranganathan, *Honorary Visiting Professor*
S Settar, *Honorary Visiting Professor*
BV Sreekantan, *Honorary Visiting Professor*
Smriti Haricharan, *Assistant Professor*
Nithin Nagaraj, *Assistant Professor*
MB Rajani, *Assistant Professor*
Srikumar M Menon, *Principal Research Officer*
S Udayakumar, *Post-doctoral Associate*
Ravi Yadav, *Post-doctoral Associate*



SCHOOL OF NATURAL SCIENCES AND ENGINEERING

Members

Anindya Sinha, *Professor*
Sindhu Radhakrishna, *Professor and Dean*
Janaki Balakrishnan, *Professor*
R Srikanth, *Professor*
PS Goel, *Raja Ramanna Chair Visiting Professor*
M Sai Baba, *Principal Scientist*
Sheela K Ramasesha, *Principal Scientist*
TS Gopi Rethinaraj, *Associate Professor*
VV Binoy, *Assistant Professor*
Shoibal Chakravarty, *Assistant Professor (upto June 30, 2017)*
Hippu Salk Kristle Nathan, *Assistant Professor*
Samira Agnihotri, *Post-doctoral Fellow*
Sravanthi Choragudi, *Post-doctoral Associate (upto May 1, 2017)*
Sudharsana V Iyengar, *Post-doctoral Associate*
Paula A Pebsworth, *Post-doctoral Associate*

SCHOOL OF SOCIAL SCIENCES

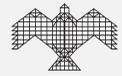
Members

Anitha Kurup, *Professor and Dean*
Narendar Pani, *Professor*
Carol Upadhya, *Professor*
Malavika Kapur, *Visiting Professor*
SS Meenakshisundaram, *Visiting Professor*
N Shantha Mohan, *Visiting Professor (upto July 31, 2017)*
Shivali Tukdeo, *Associate Professor*
Sumedha Bajar, *Assistant Professor*
Shalini Dixit, *Assistant Professor*
Kshitija A Joshi, *Assistant Professor*
Abha S Rao, *Assistant Professor*
Jeebanlata Salam, *Assistant Professor*
Leya Mathew, *Post-doctoral Associate*
Musarrat Parween, *Post-doctoral Associate (upto July 31, 2017)*
Sindhuja CV, *Post-doctoral Associate*
Pratheebha Vimlanath, *Post-doctoral Associate (upto January 5, 2018)*

SCHOOL OF CONFLICT AND SECURITY STUDIES

Programmes

- Conflict Resolution
- International Strategic and Security Studies



HIGHLIGHTS

Conflict Resolution Programme

The Conflict Resolution Programme took several important theoretical and empirical studies toward understanding vulnerability and volunteerism as a part of an Indo-German project. The preliminary results of the project were presented in Berlin as well at the Friedrich Schiller University, Jena, Germany by Narendar Pani and Anshuman Behera.

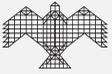
The empirical work was primarily focused on a field survey carried out by Anshuman Behera and Ghulam Qadir Bhat carried around 300 households in Kandara village in Rudraprayag district of Uttarakhand.

An important highlight of the year for the Programme is the publication of a book on political theory titled Reasoning Indian Politics: Philosopher Politicians to Politicians Seeking Philosophy. Edited by Narendar Pani and Anshuman Behera the book provides fresh insights into the nature of Indian political processes.

International Strategic and Security Studies Programme

Dr S Jaishankar, Foreign Secretary, Government of India delivered Subrahmanyam Memorial Lecture titled "Navigating an Uncertain World" on August 4, 2017. Members of International Strategic and Security Studies Programme held discussion with Dr Jaishankar.

NSCS requested ISSSP to organise a training programme for officers of Fiji National Security Agency. M Mayilvaganan organised a series of lectures and interaction on topics relating to national security for the officials (Ms Pickering and Ms Raves) during July 17 to 22, 2017. Positive feedback was received from the Fiji officials and the overseeing officer at NSCS.



CONFLICT RESOLUTION PROGRAMME

Introduction

The Conflict Resolution Programme was set up in 2009 with the aim of developing an inclusive knowledge base that would help effectively address major conflicts that affect India or have the potential to do so. The Programme tries to achieve its objectives by being sensitive to the interface between the understanding of individual conflicts and the larger conceptualization of conflict. It studies individual conflicts in depth with the twin purpose of identifying elements that can be used to resolve them, as well as to further develop the overall understanding of conflicts and their resolution. The Programme also disseminates knowledge about conflicts in a way that influences both popular perceptions and policies aimed at conflict resolution.

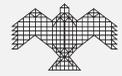
Research Activities

A major research area that the Conflict Resolution Programme worked on during this period was on Indian political theory. A book titled *Reasoning Indian Politics: Philosopher Politicians to Politicians Seeking Philosophy*, has been published on this theme. Edited by Narendar Pani and Anshuman Behera, the book has been published by Routledge Publications, London. This edited volume examines the multiple forms of reasoning in Indian politics and explores a framework to understand them. In the process, it looks at a series of issues involving relationship between politics and philosophy, including the status of political theory, political practices, identity politics, and political ontology. The book argues that in the years leading up to and soon after independence, the task of conceptualising politics was largely in the domain of practicing politicians who built theories and philosophical methods, and further took those visions into the practice of their politics. It maintains that Indian politicians since then have not been as inclined to articulate their theories or methods of politics.

A second research area of the Programme has been on studying 'Social and Political Aspects of Vulnerability and Volunteerism'. An Indo-German collaboration project funded by the Department of Science and Technology, Government of India, this study attempts to explore an aspect of conflict that has not been adequately understood in the Indian Context: Volunteerism. Volunteers can work both to reduce the pains of conflict as well as to enhance conflict. It is thus necessary to understand what prompts individuals to volunteer. In order to understand the aspects of vulnerability and volunteerism, the programme conducted a survey in Kandara village of Uttarakhand which was affected by the flash floods in 2013. The findings of the survey and the Gandhian perspectives on volunteerism were shared and discussed with the German collaborators when the team of Conflict Resolution Programme visited Germany in September 2017. The final reports of the study are in the process of being written. This would be a substantial and important contribution to understand various types of vulnerabilities and volunteerism.

A third research study which has been initiated recently is on *Understanding Natural Resources, Conflict, and Consciousness: Dissecting People's Movements in Odisha*. Funded by the Indian Council for Social Science Research, the project aims to study the patterns and processes involved in the natural resource distribution that leads to conflict in the Maoist affected areas of Odisha.

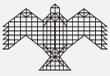
The year also saw considerable progress being made in understanding the nature of regions. Regional identities have periodically asserted themselves in Indian politics, both before and after independence. The intensity of this regionalism has, however, tended to vary quite substantially from state to state and over time, ranging from a somewhat benign influence on state politics to demands for secession. These differences are typically explained in terms of specific local political conditions. In research published during the year Narendar Pani argued that a larger theoretical explanation is also possible: Once we recognize that regionalism operates in multiple spaces, it becomes evident that the way these spaces are experienced has its influence on the practice of local politics. The article went on to match its theoretical expectations with the politics of regionalism in the neighboring south Indian states of Karnataka and Tamil Nadu. Narendar Pani also took William Cronon's concept of first nature to the southern Karnataka district of Mandya to argue that despite the success of the Krishnaraja Sagar dam first nature ensured the continuation of small peasant agriculture, leaving it dependent on state capital.



Outreach

The outreach activities of the programme are mainly in form of presentation of research papers in national and international conferences, lectures and writings in popular media. Narendar Pani contributed a number of articles in popular media and appeared on television as a discussant on various social, political and economic issues. Anshuman Behera also wrote in the popular media. The programme organised a lecture by Dr Venkat Iyer, Editor in Chief, Commonwealth Journal of International Affairs on Brexit: A leap in the Dark? on December 18, 2017.





Members of the Conflict Resolution Programme

Narendar Pani, *Head*

Anshuman Behera

Doctoral Students: Anamika Ajay, Shyam Hari, Surya Sankar Sen



Anshuman Behera

Assistant Professor
School of Social
Sciences

Room No. A 1
Tel: 080-2218 5051
Fax: 080-2218 5028
Email:
beheraisanshuman@
gmail.com

Joined NIAS on: January 31, 2014

Major Research Contribution for the Academic Year

One of the major distinctions between volunteerism in India and in Germany has been the difference in their approach to spontaneity. Volunteerism in India has always had a prominent place for spontaneous volunteering. In contrast, in Germany, especially after the Second World War, the stable work environment allowed for long-term volunteers. They could learn the skills required for, say, fire-fighting, during weekends and do regular work during the year. If there was an emergency the trained volunteers would leave their jobs for the duration of the crisis and take on the role of volunteers. The government then compensated the companies the volunteers worked for. The coming of globalization and the high attrition rates made this German system less viable. There is thus a felt need for an approach that contributes to spontaneous volunteering. Narendar Pani argued in a presentation in University of Jena that this could be done by a focus on the action of volunteering rather than on the volunteer. In elaborating how this could be done he used his interpretation of the Gandhian method.

Lectures

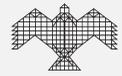
Presented a paper on Political Inequality and Maoist Violence in Odisha, in a Conference organised by CSCS, Bhubaneswar, March 3, 2018.

Presented a paper on Local Conflicts under a Revolution Brand: The Maoist Movement in Odisha, in an International Conference on Social and Political Movements in Odisha: Past and Present at IIT, Kanpur, February 22, 2018.

Understanding Fragility and Indicators for Fragile Context in India, World Vision India, Chennai, February 16, 2018.

Internal Security and Society, NIAS-DST Training Programme on Multi-Disciplinary Perspectives on Science, Technology and Society, December 20, 2017.

Presented a paper on Mass Organisations and Maoist Conflict: The Case of Chasi Mulia Adivasi Sangh in Odisha, in a National Seminar on Odisha 2036: Society, and Politics, Ravenshaw University, Odisha, December 7, 2017.



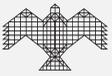
Presented a paper on Internal Security in India: Alternative Perspectives, in a National Seminar on Contemporary Challenges to Indian State and Society, jointly organised by NIAS and Christ University, November 16, 2017.

Managing Internal Conflicts in India, to the Fijian Security Delegations at NIAS, July 21, 2017.

Academic Courses

Classroom teaching for the NIAS students is an important mandate of the Conflict Resolution Programme. A course on Philosophical foundations of Understanding Conflict, provides a broad overview of issues relating to conflict. The course includes major theoretical and philosophical positions, and debates on understanding conflict. The first portion of the course brings together theoretical positions, both Western and Indian, to better conceptualize conflict. The second part of the course analyses conflicts in India as case studies. While this course is primarily for the NIAS PhD students, it has been taken by students from other institutes in Bengaluru as well.

Approaches to Understanding Conflict Resolution, is another course the programme offers. Major approaches leading to resolving conflicts are taught in this course. Case studies involving the best practices of conflict resolution across the countries is an important component of this course.



INTERNATIONAL STRATEGIC AND SECURITY STUDIES PROGRAMME

Introduction

The primary objectives of International Strategic and Security Studies Programme (ISSSP) are to study the political, military, technological, economic and security developments in India's neighbourhood and the world in general; prospects and the policy challenges of promoting and ensuring India's national security; study the impact of technology on security; and implement projects, organize conferences on pragmatic themes, as well as provide policy inputs on these issues. The Programme embarked on research studies that examined the contemporary challenges, which have bearing on India's national interest and security from a strategic, political, economic and policy outlook, combined with science and technology perspective. Research proposals on these lines have been generated and are being followed up. During the year space and policy related studies have fructified providing opening for further follow-on studies. Headway also has been in respect of sponsored studies relating to Borderland, Deterrence Strategies and Advanced Weapon Systems. The sponsors have reviewed other strategic studies being pursued by the programme and appropriate instalment of funding has been realized. There is interest in the strategic community in the inhouse developed QuoVadis missile trajectory programme and in the space situational awareness programme. These are being addressed.

Research Activities

The DRDO sponsored research work on Revisiting Aeronautical Research in India was completed and report submitted. The study examines the aeronautical research in some leading countries, the Indian research approach and concludes that lack of indigenous aircraft development capability has hampered the research initiatives. A set of recommendations prioritizing research related aviation safety; unmanned air systems with emphasis on micro air systems have been provided.

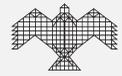
In addition, the Programme made headway on a special study taken up. Documentation of the research output was completed and provided to the sponsor. Further progress has also been made in the application of the in house developed missile trajectory analysis software Quo Vadis. An additional requirement for incorporating space domain awareness is being attended to. Project review by the sponsoring agency has been satisfactory and funds have been realized based on successful completion of milestone.

A study entitled Borderland and National Challenges: Towards Better Understanding of The Social Behaviour and Socio-Cultural, Religious and Economic Profile of Border People in Tawang was funded by DRDO during the year. The Project is led by Mayilvaganan as PI and has made substantial progress. The highlight of the Project was the convening of a Round Table of specialists having domain expertise and knowledge of the region, which has provided very meaningful insights. The Round Table organised on December 18, 2017 had the theme Focusing the Frontiers: The Borderland, Identity, Perceptions, and Imaginings of Monpas of Tawang in India-China Border.

The missile launches of DPRK of different ranges have drawn international attention. S Chandrashekar has studied the launches of the Hwasong - 12, 14 and 15 closely and simulating the missile trajectory concluded that different parts of the US are within the Hwasong missile range with varying throw weights. Chandrashekar was invited to Middlebury Institute of International Studies, Monterey, California for discussion. He delivered a talk titled The Joker in the Pack - North Korea Kim Jong Un and the Asia Pacific on January 9, 2018.

Rajaram Nagappa was a member of Indian Council for World Affairs (ICWA) delegation to participate in the 2nd India-China Think Tank Forum, Beijing, June 24 and 25, 2017, where he made presentation on





innovation and strategic communication. He was invited to be a panellist in Asia-Pacific Regional Space Agency Forum's (APRSAF) Working Group Meeting on Supporting Regional Development Efforts using Space Technology, at Bengaluru on November 14, 2017.

D Suba Chandran was a member of the ICWA led delegation to Russia during November 10 to 13, 2017.

M Mayilvaganan in association with Delhi University convened a conclave on ASEAN@50 and India-ASEAN Relations on December 7 and 8, 2017. The event was part of the commemoration of the Golden Jubilee year of the establishment of ASEAN and Silver Jubilee year of its dialogue partnership with India. The conclave he was a great success and a report of the deliberations was brought out.

Srikumar Pullat was invited to present paper on UAVs in National Air Space at the meeting chaired by Minister of State for Civil Aviation on December 5, 2017. The event was organized to obtain feedback on the draft guidelines framed by DGCA for operation of Unmanned Aerial Vehicles in the civil air space in India.

Prakash Panneerselvam was invited as a keynote speaker in the opening session of Christ School of Business Studies and Social Sciences Model United Nation (CSBSMUN) Conference, February 23, 2018.

Outreach Activity

Emerging Opportunities and Challenges of Indo-Pacific: Challenges and Opportunities of Japan-India Cooperation, Public Talk by Prof Tosh Minohara, Kobe University, December 6, 2017.

Interaction with Bangladesh Institute of Peace and Security Studies, October 23 and 24, 2017.

Seminar on Making a Strategic Partnership Special: Defense Production and Aerospace in India- Korea Relations. The seminar was organised in association with the Indian Embassy in Seoul and HAL and explored cooperation in critical aeronautical technologies, September 1, 2017.

India and US: Converting the Defence Relations into a Strategic Partnership, talk by Prof Amit Gupta, USAF Air War College, Alabama, USA, August 31, 2017.

NIAS-Christ University Workshop on Nuclear India: Revisiting Issues, Challenges and Threats, August 24, 2017.

Recognising India's Opportunity in the Neighbourhood: Challenges and Prospects, talk by Dr Sreeradha Datta, Director, Maulana Abul Kalam Azad Institute of Asian Studies, Kolkata, August 10, 2017.

Meeting with Officials of Japan Foundation, New Delhi – Kauro Miyamoto, DDG and Kousuke Noguchi, Director, August 2, 2017.

Discussion Meeting with Stimson Centre Officials – Travis Wheeler and Akriti Vasudeva, July 31, 2017.

Discussion Meeting on Recent Development in Korean Peninsula, July 19, 2017.

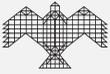
Talk by Lt Col Peter Garretson, USAF and Namrata Goswami, Great Power Attitudes and Aspirations toward Expansionism, Territoriality and Resource Nationalism in Space, July 14, 2017.

Public Talk on L'Affaire Human Shield – What Does It Signify? by Gen Prakash Menon, May 30, 2017.

Indian Nuclear Submarine Program during the Cold War Years, talk by Dr Yogesh Joshi, April 25, 2017.

Book Discussion Meeting on Pakistan: Courting the Abyss by Tilak Devasher. Discussants: Dr Changappa and Prof Suba Chandran, April 4, 2017.





Members of the International Strategic and Security Studies Programme



Rajaram Nagappa, *Head*

D Suba Chandran

S Chandrashekar

Srikumar Pullat

PM Soundar Rajan

N Ramani

Lalitha Sundaresan

M Mayilvaganan

Prakash Panneerselvam

Amit Mukherjee

Senior Research Fellows: Mrunalini Deshpande, Riffath Khaji

Junior Research Fellows: Sourina Bej, Nasima Khatoon, Avinash Pushparaj

Doctoral Students: Murali Murti, BR Guruprasad, Sherin Ajin

Rajaram Nagappa
Visiting Professor
School of Conflict and
Security Studies

Room No. F 07
Tele: 080-22185087
Fax: 080-22185028
Email: r.nagappa@
gmail.com

Joined NIAS on: February 1, 2007

Major Research Contribution for the Academic Year

Analysis of Pakistan's submarine launched cruise missile, Babur-3 proved to be an interesting study. The launch video released by the Inter Services Public Relations and the accompanying text claimed certain capabilities of the missile. Frame-by-frame analysis of the video was carried out and it could be determined that the missile was launched from a submerged pontoon rather than a submarine as claimed in the media.

Pakistan launched a MIRV capable missile Ababeel on January 24, 2017. From the limited imagery available, features of the bulbous heat shield were derived and the number of miniaturized re-entry vehicles that could be accommodated on the missile was estimated. Limited fissile material availability, priority clashes, absence of test/test data of plutonium based weapon, miniaturization were critiqued in a meeting. A summary paper was brought to the attention of national experts.

Study of space weapons was taken up. Literature survey and classification of weapon systems was completed.

Lectures

Space Weapons Trends, Course on Space in India's Foreign Policy, NIAS, March 21, 2018.

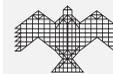
Science, Technology and Security, NIAS-DST Course on Science Policy and General Management, March 1, 2018.

Security Perspectives of Space Policy, NIAS-University of Tokyo 4th RT on Space Policies in AP Region, November 14, 2017.

Panelist in Asia Pacific Regional Space Agency Forum (APRSAF) Working Group Meeting on Supporting Regional Development Efforts using Space Technology, November 14, 2017.

Exploring Development, Science and Strategy of Different Kind of Missiles, Carnegie Endowment for Peace-Central University Gujarat organized Workshop on Strategic Issues for Young Scholars. November 10, 2017.

India's Missile Program at the NIAS-Christ University workshop on Nuclear India-Revisiting Issues, Challenges and Threats, organized at Christ University, Bengaluru, August 24, 2017.



Was a member of the ICWA led delegation to the 2nd India-China Think Tanks Forum to China. During the Forum meeting in Beijing gave lectures on a) Strategic Communication and b) Innovation, June 22 to 27, 2017.

Training Course

Planned and organised the training course on Space in India's Foreign Policy during March 19 to 23, 2018. This was organised as a paid course and 21 participants from Government Departments and Security agencies attended.

Other Information

Rajaram Nagappa's expertise on space and propulsion topics is being used in projects of national importance. During the year, he chaired design and post-flight analysis meetings for DRDO. He was a member of the small satellite review committee and chaired a Peer Review Committee for recommending the development of turbocharger at Gas Turbine Research Establishment. He also reviewed the status of Anusat-2 cubesat at Anna University, Chennai.

Presented and discussed topics of "Science and Technology Perspectives of National Security" with Officials of the Fiji National Security Council.

Reviewed a paper titled Outer Space and Precarious South Asian Regional Strategic Stability for the Elsevier published Space Policy Journal.

Awards, Memberships

Member, ICWA Delegation to China.

Chairman, Research Council, Advanced Systems Lab, DRDO, Hyderabad.

Member, Research Council, Aeronautical Development Establishment, DRDO, Bengaluru.

Member, Cluster Advisory Council, Aeronautics Cluster.



D Suba Chandran

Professor and Dean
School of Conflict and
Security Studies

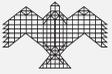
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Joined NIAS on: November 18, 2015

Major Research Contribution for the Academic Year

Have strengthened the new series of NIAS publication – NIAS Strategic Forecast, a brief authored by scholars from within and outside the Institute, focussing on contemporary global security challenges. Finalised a regional study (led by the Bangladesh Institute of Peace and Security Studies, BIPSSS, Dhaka) on the impact of Climate Change on Food Security, Water Security and Displacement. Worked on a larger proposal to create an "International Peace Research Initiative" within NIAS; the idea is likely to materialise during the following academic year (2018-19).

A significant effort during 2017 has been to map, categorise and forecast the trajectory of sectarian violence in Pakistan. Preliminary findings of the study have been published as a journal essay in the *Faultlines*. The more extensive research is



likely to be published as a book. A portal has been launched on Pakistan – www.pakistanreader.org, where analysis of contemporary developments has been published. Around 30 analyses have been published in Pakistan during 2017-18 as a part of the above.

An attempt has been made during 2017 to map the conflicts at South Asia level. In 2018, a beginning has been made with an analysis of ten conflicts to watch for in South Asia. During the following academic year, an exclusive portal on violence, peace and conflicts in the region is likely to be launched.

Lectures

- The Future Conflicts, Pondicherry University, March 15, 2018.
- Pakistan: Clash between Civilisations, Jawaharlal Nehru University, New Delhi, March 6, 2018.
- Causes of Muslim Radicalization in India, in Policy Perspectives, New Delhi, March 5, 2018.
- Crisis Forecast and Early Warning: Exploring a Regional Approach in South Asia, in NESADialogue, Kathmandu, January 31, 2018.
- Youth and Peace, in Bangalore University, January 11, 2018.
- India and Russia: India-Russia Track-II Dialogue, New Delhi, December 5, 2017.
- Statelessness in South Asia: Sui Generis – A Case of Pakistan, TISS, Mumbai, November 19, 2017.
- India and the Rohingyas, Takshashila Institution, Bengaluru, November 18, 2017.
- India-EU Strategic Partnership: Are there lessons for India and Russia?, in India-Russia Track-II Dialogue, Moscow, October 12, 2017.
- Understanding Pakistan's Perspectives, in Naval War College, Goa, September 6, 2017.
- Pakistan: Towards PML-N minus Sharif, in Jammu, July 31, 2017.
- Pakistan Forecast 2017, in Airwar College, Hyderabad, July 18, 2017.
- India-Russia Energy Bridge, in India-Russia Track-II Dialogue, Moscow, June 15, 2017.
- Sectarian Violence in Pakistan, in Central University of Jammu, April 29, 2017.
- Pakistan's Water Challenges, in KAS-TERI Dialogue, Goa, April 13, 2017.

Academic Courses

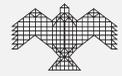
Summer Course on Conflict, Peace and Regional Security in South Asia; The course provided an introduction to bilateral and internal conflicts in South Asia for those students who would like to pursue a summer course or internship as a part of their post-graduate and graduate programmes. The primary objective of the course is two – first, to enhance the understanding of bilateral and domestic conflicts from a regional perspective in South Asia. And second to provide necessary research skills to make a coherent argument, effective presentation and effective writing regarding oral and writing styles.

Effective Research Writing: The course aimed to provide necessary skills in effective writing – covering different types of publications – short commentaries, journal essays, chapters in books, books etc. The course helped the scholars in how to reference, what and how much.

The Course also aimed to help the scholars with preparing research proposals for funding support, along with how to prepare a good budget. It also assisted the scholars in preparing powerpoint presentation.

Training Course

Coordinated (along with R Srikanth) the 32nd NIAS Annual Programme for Senior Executives on From Excellence to Eminence: Facilitating Thought Leadership – Be an Impact Leader, February 5 to 10, 2018.



S Chandrashekar
JRD Tata Visiting
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Joined NIAS on: July 2, 2004

Major Research Contribution for the Academic Year

North Korea as a nuclear and missile power – In 2017 North Korea launched a number of long range missiles that directly threatened the US mainland and its allies in the Asia Pacific region. It also carried out a sixth nuclear weapon test. Through a series of briefs posted on the ISSSP website the technical details of these tests were linked to the strategic signals that North Korea was sending out to its adversaries. The implications of these tests on the geopolitical power structure of the region especially with respect to the US are specifically addressed in these briefs.

China's Space Programme update – The three volumes 250-page report on China's Space Programme has been updated to include events and happenings in 2016.

Lectures

Space Requirements, Capability and Capacity, NIAS ISRO MEA Training Programme on Space in India's Foreign Policy: Technology – Policy – Security Considerations, NIAS, March 19, 2018.

Space, War and Deterrence – A Strategy for India, 4th ORF Kalpana Chawla Annual Space Policy Dialogue organized by the Observer Research Foundation (ORF), New Delhi, February 16, 2018.

The Joker in the Pack – North Korea Kim Jong Un and the Asia Pacific, Middlebury Institute of International Studies (MIIS) at Monterrey, California, USA, January 9, 2018.

China's Space Programme – Implications for India, Presentation to DRDO, New Delhi, December 12, 2017.

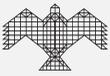
Space in India's Foreign Policy – A Strategy for India, NIAS–MEA–ISRO Workshop, NIAS, May 2017.

Memberships

Member of the Board of Trustees of the RBANMS group of educational institutions.
Member of the Governing Council of the MVJ College of Engineering.

Other Contribution

Conducted two case study discussions on Crisis Management in Complex Systems, for students of corporate strategy in Indian Institute of Management Bangalore (IIMB), February 17, 2018.



Srikumar Pullat
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Joined NIAS on: May 24, 2017

Major Research Contribution for the Academic Year

Survey of current and emerging trends worldwide in the Development and Deployment Unmanned Aerial Systems and Technologies.

Analysis of emerging scenario, and issues involved, in the Deployment of Drones and Unmanned Aerial Vehicles (UAV) in National Air Space (NAS) in various countries. The study looks at how the various stakeholder agencies across the world are gearing up for accommodation of UAVs in NAS in the near future and integrating them into the NAS in the medium to long term.

Lectures

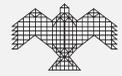
Panelist in discussions during Indo-US workshop on Emergency Medical Delivery Systems (EMeDS) integrating Unmanned Aerial Vehicles, Indian Institute of Science, Bengaluru, March 6, 2018.

UAVs in National Air Space – the Good, Bad and Ugly Scenarios, All India Seminar on Technologies for Identification, Tracking and Neutralisation of Unauthorized Drones, organized by NDRF, Bengaluru in association with NIAS. Also participated in a panel discussion during the seminar, November 23 and 24, 2017.

Opportunities for MSMEs for Value Addition in Aerospace and Defence, Seminar on The Akash of Opportunities, organized by Defence Innovators and Industry Association (DIIA) and NIAS at Bengaluru, July 8, 2017.

Memberships

Aeronautical Society of India.
Astronautical Society of India.



PM Soundar Rajan
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Joined NIAS on: May 17, 2017

Major Research Contribution for the Academic Year

Studied the air power situation in India's Neighbourhood (India, China, Pakistan) taking into account Technologies in the area of Avionics Systems. This include areas such as Sensors like phased array radar, Infrared Search and Track Systems, Navigation Systems, Electronic Warfare Systems etc.

Conducted a Workshop on Defence Production and Aerospace in India-Korea Relations. Coordinated the workshop, including selection of topics for discussions and speakers for the same. Senior DRDO, HAL and RoK representatives made presentations making a case for cooperation between the two countries Research Organisations

As part of the DRDO sponsored project, Advanced Weapon Systems, researched Directed Energy Weapons. Directed Energy Weapons share the concept of delivering a large amount of stored energy from the weapon to the target, to produce structural and incendiary damage effects at the speed of light. High Energy Laser (HEL) weapons and High Power Microwave (HPM) weapons fall into the category of Directed Energy Weapons. This research will continue.

Committee member with Chairman DRDO to study the requirements for Defence System Safety Regulatory Authority (DSSRA).

Studied Cyber Security Policy; AI in Defence Applications; Aerospace Cyber Security, in order to assess India's Security issues (On Going Process).

Lectures

Secure Cyber Physical Systems, NIAS-DST Training Programme on Science Policy and General Management, March 9, 2018.

Cyber Security for Aerospace Systems, Workshop organised by French Embassy and Ramaiah University of Applied Sciences, RUAS Campus, Bengaluru, January 29, 2018.

Electronics Warfare Techniques for Drone Neutralisation, Conference on Counter Drone Technologies, NIAS, November 23, 2017.

Defence Innovators and Industry Association, Panel Discussion on DPP16 and Technology Development Fund, Hotel Lalith Ashok, Bengaluru, July 8, 2017.

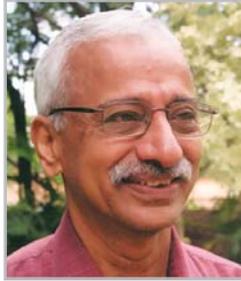
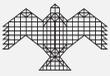
Awards, Memberships

Senior Member, IEEE.

Member, Aeronautical Society of India.

Fellow, IETE.

Chairman, Aerospace Electronics Systems Society, IEEE, Bengaluru.



N Ramani

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Joined NIAS on: November 1, 2007

Major Research Contribution for the Academic Year

Development of a tool, Veni Vidi Vici, to identify, locate and track targets using a constellation of different kinds of ISR Satellites, ELINT, Optical and SAR is in progress. Problem involves fetching the most appropriate Orbital Information of chosen Satellites, computation of the coverage patterns of individual satellites based on their respective onboard sensors, Sun illumination where appropriate and the Quality of Coverage of the Target(s).

An extremely user friendly User Interface is being developed separately. We should be able to take up the integration the GUI with the computational part in the next six months. Detailed validation of the tool will be carried out subsequently. This will be the fully functional final version of the tool. In that form it will be a vastly improved version compared to our initially envisioned one.

A detailed mid-term review of the tool capability was completed.



Lalitha Sundaresan

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Joined NIAS on: May 14, 2008

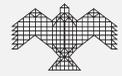
Major Research Contribution for the Academic Year

During the year Image Analysis continued to be an area of interest. The focus during the year was in understanding the nuclear capability of Pakistan and the connections that could possibly exist among Pakistan, DPRK and China.

Lectures

Open Source Imagery Analysis, Workshop on Strategic Issues for Young Scholars, jointly organised by CUG and Carnegie Endowment for International Peace, Washington DC, at Central University of Gujarat, Gandhinagar, November 10, 2017.

Innovation in S&T in China to the Young Minds of C3S, Chennai Centre for China Studies, July 15, 2017.



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Joined NIAS on: November 2, 2010

Major Research Contribution for the Academic Year

Major research study on Towards Better Understanding of Border Community Monpas of Tawang in India-China Borderland was taken up as an outcome of the completed research study on Myanmar. The study on Monpas and Tawang is an effort to comprehend the changes that take places within the borderland and border community in the Tawang sector. Given the paucity of literature and research work from the national interest perspective the ongoing study is an attempt to fill that gap. Concurrently, part of the research work on Myanmar and Indo-Pacific, a major event, regional conclave was organised at the institute that brought Diplomats, Academia and Researchers from seven different countries in ASEAN.

Lectures

Potential Demographic Change and Conflict in South Asia: A Case Study of Climate-Related Population Mobility from Maldives and Bangladesh to India and Its Impact, International Conference on Climate Disaster Governance, organised by Asia Research Institute, National University of Singapore (NUS), Singapore, September 22, 2017.

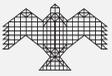
India and the Up-Country Tamils in Sri Lanka, ICES Conference on Up-Country Tamils: Charting a New Future, Colombo, Sri Lanka, August 3, 2017.

Dynamics in the Korean Peninsula and its Implications for Global Security, the Defence and Strategic Studies Plenary Session of 10th International Research Conference, General Sir John Kotelawala Defence University, Sri Lanka, August 3, 2017.

Indian Ocean: Understanding India's Naval Aspirations and Maritime Strategy, International Conference on India and Indian Ocean, UGC Centre for Indian Ocean Studies, Osmania University, Hyderabad, May 8, 2017.

Outreach

Organised and coordinated NSCS sponsored one-week training programme for Fijian Officials at NIAS, July 17 to 22, 2017.



Prakash Panneerselvam
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Joined NIAS on: December 1, 2015

Major Research Contribution for the Academic Year

Research is focused on geopolitical dimension of maritime security. Published analysis on Maritime Component of CPEC: India-China Competition in Arabian Sea in *Maritime Affairs*. The study on role of additive manufacturing in aerospace and defence sector is also published in a *Journal of Defence Studies*. The study highlights the need for coherent policy to encourage additive manufacturing in India.

Lectures

Global Politics, Keynote Address, Conference Model United Nations by Christ University, February 23, 2018.

India-ASEAN Relationship: Strategy for Practical Cooperation in the region in the Regional Conclave on ASEAN@50 and India-ASEAN Relations, December 8, 2017.

Maritime Component of China-Pakistan Economic Corridor (CPEC): India-China Competition in Western Indian Ocean, Conference on Changing World Order: India and China in Contemporary Times, Jawaharlal Nehru University, April 14, 2017.

Others

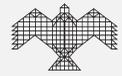
Participant, Maritime Industry, Naval Power and Marine Environment, organised by Gujarat National Law University and US Naval War College, April 15 to 22, 2017.

Training Course

Co-coordinated the NIAS-DST Training Programme on Science Policy and General Management, for Senior Scientists, February 26 to March 9, 2018.

Course Offered

Trade Networks in Indian Ocean, 1500-1800 (1 Credit, Reading Course) for NIAS PhD Scholars.



Amit Mukherjee
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Joined NIAS on: October 3, 2017

Major Research Contributions for the Academic Year

The primary research area focuses on application of GIS for Defence and Strategic Studies. Present engagement on a project for the North East involves Geo-Spatial analysis for verification and validation of certain geographical conditions of the region. An assessment for internal stability of the region is being carried out based on the social dimensions of development. Another work relates to development of a software based database system for creating events and identity based analysis model for evaluation of Indian ocean region countries and its impact on India. This work integrates GIS, AI and Strategic Studies. Its aim is to be able to provide forecast analysis and deliver projections for defined parameters through simulation. Under the current area of research object based image analysis for automated and semi-automated object identification and classification is being pursued. The distinct advantages for feature identification and classification through object based image analysis over legacy methods makes this area aptly suited for studies of strategic interests. Research on algorithms for OBIA is a current activity. This research would also lead to applying artificial intelligence methods in geo-computational analysis for studies in counter terrorism and counter insurgency, homeland security, maritime security, weapons and warfare, military affairs and strategy, border security among others.

Another area of interest includes pursuing India - Israel strategic partnership. Under the concurrent (honorary) fellowship in India-Israel strategic cooperation, a continuation of work is being carried out based on the past and current research work.

Lectures

GIS Methods for Geospatial Intelligence Analysis, National Seminar on Science and Technology and India's National Security: North Maharashtra University, February 28, 2018,

Geospatial Intelligence with Fuzzy Logic: Reducing the Fog of War, Geospatial World Forum Conference on Defence and Public Security, Hyderabad, January 18, 2018.

GIS for Internal Security of India. (Terrorism, Anti-Maoist Operations, Maritime Coastal Security); Tailored for the Mid-Career Training Programme of the Indian Police Services, National Police Academy Hyderabad, November 17, 2017.

Memberships

Fellow (Honorary), National Strategic and Security Studies Center, University of Israel (2016-2019).

Associate Member IACSIT, Computer Science, Singapore.

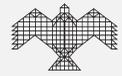
Others

Invited Participant at Carnegie-CUG Scholar Workshop, November 6 to 10, 2017.

SCHOOL OF HUMANITIES

Programmes

- Consciousness Studies
- Heritage, Science and Society



HIGHLIGHTS

Consciousness Studies Programme

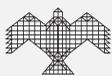
An edited book has been published by Springer Nature, Singapore Private Limited in February 2018 – “Self, Consciousness and Culture: Interdisciplinary Convergences on Knowing and Being”, Editors: Sangeetha Menon, Nithin Nagaraj and Binoy VV.

Funding for two major projects were received from the Tata Trusts focusing on the indigenous healing tradition and practices of Kerala, and a comparative work of causality in Kashmir Saivism and Information Theory, respectively.

Shankara Rajaraman submitted his PhD thesis which focused on a psychological approach to self-conscious emotions in Sanskrit poetry, with implications for psychiatric practice.

Heritage, Science and Society Programme

The book Digital Hampi: Preserving Indian Cultural Heritage, Springer (2018) with Sharada Srinivasan as co-editor, presents technologies for digital archiving and representation of tangible and intangible cultural heritage of the World Heritage site of Hampi, Karnataka, as a culmination of a DST funded India Digital Heritage-Hampi project at NIAS (2009-2018) coordinated by S Settar, S Ranganathan and Sharada Srinivasan. Under the NIAS-TCS Metals Crafts Heritage Initiative, major smelting workshops with craftspeople were organized, with fieldwork especially along the Cauvery at Thanjavur, Srirangapatna and Coorg involving Sharada Srinivasan, MB Rajani, Smriti Haricharan, Srikumar Menon and with a dynamic increase in research staff.



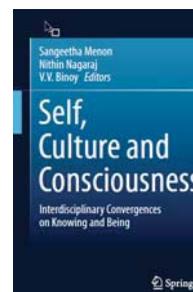
CONSCIOUSNESS STUDIES PROGRAMME

Introduction

The NIAS Consciousness Studies Programme is the only academic programme in India that focuses on the humanistic and health aspects of consciousness along with a critical approach to the empirical theorization of the self in humans and animals. The Consciousness Studies Programme currently has groups working on human communication examining behavioural decision-making, communication and social cognition, information theory, conceptual mathematics, and quantum approaches to consciousness.

Research Activities

An edited book has been published by Springer Nature, Singapore Private Limited in February 2018 – “Self, Consciousness and Culture: Interdisciplinary Convergences on Knowing and Being”, Editors: Sangeetha Menon, Nithin Nagaraj and Binoy VV. This book has brought together well-known experts from across the world in the 24 chapters of the book, which addresses themes connecting self, culture and consciousness, for the first time in an interdisciplinary manner.



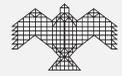
In March 2018, the Tata Trusts have sanctioned the two following projects for NIAS through Sangeetha Menon as the PI. Nithin Nagaraj and Binoy VV are the respective collaborators with her for these two projects.

Project 1 – Causal Structures, Vimarsa and the Pratyabhijna: A Comparative Research Study on Kashmir Saivism and Information Theory – Rs.161.15 Lakhs over four years (2018-2022).

Project 2 – Documentation and Study of Alternate and Indigenous Psychiatric and Psychological Practises of Healing and Wellness (With a Pilot Project of Model Building Focusing on Kerala State) – Rs.125.91 lakhs over four years (2018-2022)

Shankar Rajaraman submitted his thesis on “A Qualitative Approach to the Psychology of Three Self-conscious Emotions from Sanskrit Poetics” under the research guidance of Sangeetha Menon. Self-conscious emotions, such as envy, jealousy, pride, shame, guilt, and embarrassment, are a class of emotions that require the capacity for self-awareness (the ‘I’ self) and the ability to form self-representations (the ‘me’ self). In spite of their late arrival into the field of emotion studies, self-conscious emotions have created a revolution of sorts by distinguishing themselves as different from the ‘basic’ emotions in several respects. In contrast to contemporary Western psychology, Indian psychology - an approach to psychology founded on ideas and practices that evolved over centuries in India - has not made significant progress in understanding these emotions. Though this sad state of affairs is partly because the study of self-conscious emotions is itself a recent phenomenon, a more pertinent cause is the absence in Indian psychology of coherent models that can explain indigenous psychological constructs (including those that correspond to self-conscious emotions) and their mutual interactions. It is in the context described above that this thesis assumes importance. In the process of studying three mental states - asUyA, garva, and vRIDA - described in Sanskrit poetics and corresponding to the self-conscious emotions of envy/jealousy, pride, and shame/guilt/embarrassment respectively, this thesis not only performs the function of documenting theoretical information from as many as 22 primary texts spanning across two millennia but also isolates three indigenous models that facilitate understanding of mental states as communicated to us through literary characters.

While model 1 is explicit in that Sanskrit aestheticians frequently employ it, the remaining two models are more or less implicit and have been constructed de novo by bringing together their constituent elements that lie scattered in the vast corpus, not just of Sanskrit poetics but also of the SAMkhya and NyAya philosophical systems. Model 1 looks at isolated mental states, removed from their context and understood in terms of stimulus-response pairs. Model 2 looks at mental states in their dynamic interaction with other mental states. Such interaction can take at least 15 different forms. The schematic representation of a character’s interacting mental states at any given point in the narrative constitutes his/her ‘mental state signature’ at that moment.



A drastic change in the character's 'mental state signature' indicates a change in his/her life-goal, a conclusion that the thesis reaches by invoking model 3. According to model 3, constructed mostly on the basis of Bhoja's SRungAraprakASa, a character's personality (uddhata, lalita, udAtta, or SAnta) is closely related to his/her life-goals (artha, kAma, dharma, or mokSha), life-goals bring about evaluation of objects as goal-congruent or goal-incongruent, and evaluation of objects as goal-congruent and goal-incongruent evokes pleasurable and displeasurable mental states respectively. Thus, model 3 links mental states to personality type.

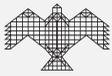
This thesis employs the models described above for analyzing three vignette verses provided by Sanskrit aestheticians to illustrate asUya (of Parashurama, in the play MahAvIracarita), garva (of Parashurama, in the play MahAvIracarita), and vrIDA (of Rama, in the play AnargharAghava). Finally, this thesis compares and contrasts the indigenous concepts of asUya, garva, and vrIDA with their counterpart self-conscious emotions. The implications of this thesis for exploring other indigenously documented mental states, understanding the mental states of real-world actors, and therapy are discussed.

Siddharth S under the research guidance of Sangeetha Menon works on a study that focuses on panpsychism and its importance in understanding experience and consciousness, and is in the third year of his research work. Aditi Kathpalia has completed her qualifiers and is guided by Nithin Nagaraj. Her thesis is in the area of brain and complexity studies.

Nithin Nagaraj guided a Research Intern: Vignesh Shriram (Amrita University, Kollam, Kerala, February – August 2017), and along with Sangeetha Menon guided Runita Shirdhankar (Sophia College, Mumbai, June – October 2017), and along with Sangeetha Menon, and Shalini Dixit guided Bhavna Rawat (Teach for India, Delhi); jointly with LM Patnaik guided the NIAS Mani-Bhaumik Fellow, Aahan Singh (MSRIT, Bengaluru, 2017).

The Programme continued its short term NIAS Mani Bhaumik Fellowship Programme for bright students. During this period the topic of their study and supervisors are as following: Anindya Chaudhuri guided by Anindya Sinha worked on "Generativity in Prosimian Personality Traits: The Curious Case of the Mysore Slender Loris". Ashni Kumar Dhawale guided by Anindya Sinha worked on Changing Ecologies, Shifting Behaviours: Behavioural and Cognitive Generativity in Lion-Tailed Macaques in a Complex Ecological Landscape. The latest study completed is "Conscious Agent for Spatial Awareness" by Aahan Singh, jointly guided by LM Patnaik and Nithin Nagaraj.





Nithin Nagaraj is Principal Investigator, Causality Testing in Cognitive Neuroscience with Applications to Measures of Consciousness, funded by Cognitive Science Research Initiative (DST, Government of India). He is also the Principal Investigator, A Study of Consciousness Measures and Synchrony between Brain and Cardiovascular Dynamics in Yoga Experience, funded by Science and Technology for Yoga and Meditation (SATYAM, Department of Science and Technology, Government of India), jointly with NIMHANS and IISc and is awaiting the result.

Outreach

The Programme organized the following events with Sangeetha Menon and other colleagues: Three public lectures by Prof Roy Perrett, Prof Stuart Hameroff, and Prof Kisor Kumar Chakrabarti (sponsored by ICSSR) were organized on behalf of the Consciousness Studies Programme.

Public Lecture by Prof Stuart Hameroff, Director Centre for Consciousness Studies, Tucson, Arizona on November 14, 2017.

Along with Siddharth S, Sangeetha Menon organized “Minds and Machines: Debates on the Nature of Intelligence and Experience” – A One Day Workshop with Experts from Machine Intelligence, Big Data, Philosophy of Science, Information Theory, Brain Imaging Technologies, Social Cognition and Consciousness Studies at NIAS on December 27, 2017.

“Beyond the Rasa Theory: A One Day Seminar on New Directions in Understanding the Natyasastra”, December 8, 2017, Co-organised with Indira Gandhi National Centre for the Arts, Regional Centre Bengaluru.

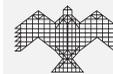
Altruism, Wellbeing and Purpose: Vantage views on Planetary life, and its meaning from Biology, Indian philosophy and the Arts at NIAS, February 1 and 2, 2018, Co-organised with METI-International.

NIAS Consciousness Studies Programme Interinstitutional Brainstorming Meeting -1 on “Charting the Path for the Future of Consciousness Studies in India” at NIAS on November 17, 2017 along with Indian Institute of Science, S-VYASA, NIMHANS, and IGNC-SRC.



ALTRUISM, WELLBEING & PURPOSE
 Vantage views on Planetary life and its Meaning from Biology, Indian Philosophy and the Arts
 An International Seminar presented by METI (Messaging Extraterrestrial Intelligence), USA and NIAS (National Institute of Advanced Studies), India
 organised by NIAS Consciousness Studies Programme
 1-2 February, 2018
 JRD TATA AUDITORIUM
 NIAS, Bangalore, India
 Seminar Speakers: [List of speakers' photos]
 Seminar Directors: Sangeetha Menon, NIAS; Abhik Gupta, METI; and Doug Vakoch, METI





Members of the Consciousness Studies Programme



Sangeetha Menon, *Head*
BV Sreekantan
Sisir Roy
Anindya Sinha
VV Binoy
Nithin Nagaraj
Doctoral Students: Shankar Rajaraman, Siddharth S

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Joined NIAS on: January 8, 1996

Major Research Contribution for the Academic Year

The latest edited volume published by Springer NATURE, titled "Self, Culture and Consciousness" was the result of developing an overarching conceptual bridge connecting the interdisciplinary features of self, culture and consciousness, collaborating with Profs Georg Northoff (Director, Brain Imaging and Neuroethics Research Unit, Institute of Mental Health Research, Royal Ottawa Mental Health Centre, Ottawa) , Michel Bitbol (Director, Archives Husserl/CNRS/ENSParis), Stephen Post (Director, Center for Medical Humanities, Compassionate Care, and Bioethics, School of Medicine, Stony Brook University, Stony Brook), Owen Flanagan (Director, The Center for Comparative Philosophy, Duke University, Durham), Frank Krueger, Lysenko Victoria, Vashishtha Narayan Jha, and many other collaborators in India, to develop a focus theme for the book divided into 5 main thrust areas: Emergence of Consciousness; Healing, Agency and Being; The Social Self, Culture and Cognition; The Self and Alternative Epistemologies; Consciousness, Experiential Primacy and Knowing.

Collaborative work ongoing with three faculty from NIMHANS: Prof Naren Rao: Ongoing DST Project on Yoga and Self-reflection Prof Bindu Kutty: Ongoing SATYAM project on Wellbeing Prof John P John: Developing a project proposal for Artificial Intelligence

Collaborative work ongoing with Indira Gandhi National Centre for the Arts – Southern Regional Centre: With Prof Deepti Navaratna – Conceptualised a joint seminar on Rasa and Natyasastra bringing in the implications from cognitive sciences, psychology and philosophy.

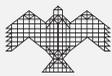
Conceptualised a joint internship programme focusing on Indian wisdom traditions, titled "Kalaatmika Internship Programme".

Lectures

Desire, Life purpose and the Altruistic self: A discussion on Indian Philosophy, International Seminar on Altruism, Wellbeing and Purpose: Vantage views on Planetary life, and Its Meaning from Biology, Indian Philosophy and the Arts, NIAS, February 1, 2018.

Minds and Machines: Debates on the Nature of Intelligence and Experience. Introduction, Seminar at NIAS, December 27, 2017.

Being What is Consciousness in Indian Traditions, First Indic Thoughts Festival 2017, Grand Hyatt, Goa, organised by Indian Foundation, New Delhi, December 18, 2017.



That Which Melts the Heart, But Still Has a Reason: A First Person Approach to Emotions and the Self in the Natyasastra, Seminar on Beyond the Rasa Theory: New Directions in Understanding the Natyasastra at NIAS, Co-organised by NIAS and Indira Gandhi National Centre for the Arts, Southern Regional Centre, December 8, 2017.

Imagination and Knowledge Acquisition: Exploring the Creative Expressions of the Learning Mind Chairperson's Introduction, ISME South Asia Regional Conference, NIAS, November 28, 2017.

Body Narratives and the Self: Exploring Consciousness through the Experience-beholder Invited Lecture, National Conference on Culture, Design and Cognition (CDC) 2017, organised by National Institute of Design (NID), Indira Gandhi National Centre for the Arts - Regional Centre Bangalore (IGNCA RCB) and National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, November 3, 2017.

Beyond Mind: The Self Narratives and the Body of our Times, International Conference on The Fragmented Self: An Interdisciplinary Exploration into the Notions of Self and Identity in Contemporary Life, Indraprastha College, University of Delhi, Delhi, October 30, 2017.

Consciousness, Well-being and the Humanising Space, International Conference on Required Architectural Design Wisdom at Habitable Spaces, Brindavan College of Architecture, Bengaluru, October 3, 2017.

Body and the Self: A Discussion on Consciousness and Healing, Cognitive Neuroscience (CNS) Forum - NIMHANS Lecture series, National Institute of Mental Health and Neurosciences, Bengaluru, August 5, 2017.

Yoga, Self-reflection and Consciousness, Yoga Day Celebration of Indian Institute of Science, Bengaluru, June 21, 2017. <http://mhrd.gov.in/IDY/docs/iisc.pdf>

Academic Courses

As part of the Consciousness Studies Programme, coordinated An Introductory Course on "Mind, its Functions and Purpose" Credits: 1; Contact hours: 1.5 hours per week; Every Friday from 11.30 am to 1.00 pm, starting August 11, 2017; Tutors: Sangeetha Menon, Nithin Nagaraj, Binoy VV, LM Patnaik, Sisir Roy and Anindya Sinha.

Distinguishing Concepts – Body, Mind and Consciousness – CSP Module for First Semester 2017 Foundation Course, NIAS PhD Programme, August 11, 2017.

Training Course

Coordinator for the Sixth NIAS-DST Programme on Policy for Science and Science for Policies, January 1 to 5, 2018.

Memberships

Member, Institutional Human Ethics Committee of Indian Institute of Science, Bengaluru.

Member, Institutional Stem Cell Research Committee of Indian Institute of Science, Bengaluru.

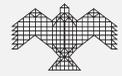
Senior Expert in the Doctoral Committee of "Institute of Behavioral Science", nominated by Director General of Gujarat Forensic Sciences University, Gandhinagar, Gujarat.

Taskforce Member, Cognitive Science Initiative of Dept of Science and Technology, Government of India.

Member, Scientific Advisory Committee, Institute for Communicative and Cognitive Neurosciences (ICCONS), Palakkad.

Fellow, International Association for Science and Religion, Cambridge.

Board Member, International Association for Transpersonal Psychology, USA.



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Joined NIAS on: August 6, 1992

Major Research Contribution for the Academic Year

A book with the title Empiricism and Introspection has been written in collaboration with Sisir Roy and submitted for publication.

Lecture

Seven Decades of Cosmic Ray Research, Valedictory Address, Winter School on Astrophysics, Cosmic Ray Laboratory of TIFR, Ooty, October 18, 2017.



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Joined NIAS on: October 15, 2015

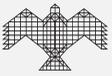
Major Research Contribution for the Academic Year

Nithin Nagaraj and his PhD Student Aditi Kathpalia have proposed Compression-Complexity-Causality (CCC) – a novel measure for causality testing which outperforms existing popular measures such as Granger Causality and Transfer Entropy, especially for noisy and asynchronous measurements. CCC would be useful for developing causality based scientific measures of Consciousness in Neuroscience, as well as causality testing in Econometrics, Climatology, Ecology and other disciplines.

Lectures

Altruistic Strategies in Mathematical Games, International Seminar on Altruism, Wellbeing and Purpose: Vantage Views on Planetary Life and Its Meaning from Biology, Indian Philosophy and The Arts, organized by METI-international and NIAS Consciousness Studies Programme at NIAS, February 1, 2018.

Introduction to Wavelet Theory and Its Applications, Workshop on Real Time Signal Processing and Its Applications, Department of Medical Electronics, Ramaiah Institute of Technology, Bengaluru, January 22, 2018.



Mathematical Methods in Neuroscience with Emphasis on EEG Analysis: PCA, ICA and Causality Testing, One-day Symposium on Current Approaches to EEG Analysis, CNSI-NIMHANS Lecture Series, NIMHANS, Bengaluru, January 19, 2018.

Brain-Mind-Machine: Perspectives from Information Theory and Complexity Science, One-day Workshop on Minds and Machines, Consciousness Studies Programme, NIAS, December 27, 2017.

From Teaching to Research and Back, Department of Physics, Amrita University, Amritapuri Campus, Kollam, September 26, 2017.

From Teaching to Research and Back and Shannon-Style of Research, Workshop on Technologies and Tools for Scientific Research, Department of Computer Science, University of Kerala, Kariavattom Campus, September 25, 2017.

Complexity Theories of Consciousness, Seminar and Student-Scientist Interaction on Modeling and Research in Neuroscience, PES University Campus, Bengaluru, August 18 and 19, 2017.

Teaching to Research and Back; My Experiences of Writing Successful and Unsuccessful Project Proposals, Faculty Development Programme at BMSIT&M, Bengaluru, July 27, 2017.

Academic Courses

Causality Testing and Its Applications (January to May 2018) at NIAS.

Causality testing, the act of determining cause and effect from measurements, is widely used in physics, climatology, neuroscience, econometrics and other disciplines. As a result, a large number of causality testing methods have been developed such as Granger Causality, Transfer Entropy, Convergent Cross Mapping, Information Flow, Compression-Complexity Causality and others. In this reading course, we will discuss several causality testing methods, their underlying principles and applications.

Topics in Information, Coding Theory and Chaos with Applications to Consciousness Studies (August to December 2017) at NIAS.

Claude Shannon ushered us into the Information Age in 1948 when he developed a mathematical theory of communication and gave a probabilistic definition to the notion of 'information'. Around the same time, Richard Hamming pioneered the field of Coding theory by the invention of error correction codes. Chaos theory – the study of nonlinear deterministic systems with complex behaviour arising out of seemingly simple iterations or differential equations, gained momentum in the later part of 20th century with theoretical developments, novel experiments and real-world applications. In this course, we will explore key concepts and ideas in Information and Coding theory, Chaos theory, and their fascinating interplay. Applications of these ideas to Causality testing and Consciousness research will be emphasized throughout the course.

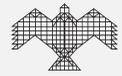
Training Course

Co-coordinator for the Sixth NIAS-DST Programme on Policy for Science and Science for Policies, January 1 to 5, 2018.

Memberships

Invited Member, Advisory Council of METI: Messaging Extra Terrestrial Intelligence International, San Francisco, CA, USA, in the capacity as an expert in complexity, information science and signal processing (May 2018 – current).

Invited Member, Executive Committee of the IEEE Computer Society Bangalore Chapter (July 2017 – current).



HERITAGE, SCIENCE AND SOCIETY PROGRAMME

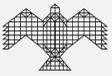
Introduction

The Heritage, Science and Society Programme aims to explore the linkages of science and technology with culture, society and civilization, by engaging with issues of the documentation and preservation of heritage and material culture. The study of archaeological artefacts, art objects, archaeological monuments and sites is undertaken, not only from traditional historical approaches but also from innovative perspectives that aim to explore the technological dimensions, encompassing heritage sciences. The programme is one of the few in India within the disciplinary areas of history, art history and archaeology that maintains a special focus on scientific applications in these domains. Such areas include archaeological sciences, archaeometallurgy and archaeomaterials, materials characterisation and materials heritage, crafts ethnoarchaeology, landscape archaeology, geospatial applications and digital approaches in the study of heritage.

Research Activities

S Settar co-organised a major international conference on 'Ramayana Retellings in South India and Southeast Asia' (September 22 to 24, 2017), supported by DN Achuta Rao Foundation with delegates from Vietnam, Cambodia, Thailand, Malaysia, US and France and with lectures by Settar and Sharada Srinivasan uploaded on DSA History Channel. MB Rajani presented a paper on geospatial insights on Buddhist sites such as Nalanda for an important conference on Indian roots of Global Buddhism in University of California Los Angeles. Sharada Srinivasan, as Principia Investigator of the TCS Metal Crafts Initiative, was invited to present a paper at the ATINER Conference in Athens, Greece (June 2017) on Indian and Greek archaeoastronomy and archaeometallurgy and she also highlighted the sustainability issues of marginalized artisans as invited Keynote Speaker at the international RILEM Conference (France) on Advanced Construction Materials organized at IIT-Madras (September 2017). S Ranganathan was invited keynote speaker at the Beginning of Use of Metals and Alloys Conference in October 2017 in Busan in South Korea and led the Indian delegation as international advisory board member. Smriti Haricharan began a project funded by Sundaram Finance for disseminating archaeology to school children, and also the broader public in collaboration with INTACH-Bengaluru. Settar was honoured with the Kavichakravarti Ponna Award 2018 by Government of Karnataka for his contributions to Kannada and classics. MB Rajani was nominated to INYAS, Indian National Young Academy of Sciences for five years and also

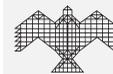




began a DST-SERB project for creating digital terrain models of the archaeological mounds of the Buddhist World Heritage Site of Nalanda. Srikumar Menon, Achuta Rao Fellow, was invited speaker at the Achuta Rao Memorial Conference in December 2017 on Ancient History and started a project supported by INTACH on oral histories of megaliths.

Outreach

A workshop on Understanding the Past: Intervention through Dissemination was held to introduce archaeology to students (November 8 and 9, 2017) at NIAS for schools including the Kendriya Vidyalaya in Indian Institute of Science, Bengaluru, co-ordinated by Smriti Haricharan. As part of a 10-week course introducing archaeology to a general audience 'Learning Archaeology or Learning from Archaeology?' co-organised by Smriti Haricharan and Meera Iyer of INTACH, a session on Experimental Archaeology of Flint Knapping by Dr Jinu Koshi was held. MB Rajani was interviewed on research with Dilip R Ahuja on the title of Taj Mahal for a Discovery Channel programme. Srikumar Menon coordinated a Consultative Meeting for Initiatives in Archaeoastronomy at NIAS with Baldev Raj in May 2017. MB Rajani participated in a conference on Karez across Cultural Borders in Bidar organized by the Indian Heritage Cities Network and UNESCO in October 2017. In the Baldev Raj Memorial Lecture in February 2018, S Ranganathan spoke of his eminent contributions to technology and society. Sharada Srinivasan was organizing committee member of the conference on Dialogues at the Science and Society Interface during February 8 to 10, 2018, organised in memory of Prof CV Seshadri, supported by Anna University, and PPST Foundation with Prof MS Swaminathan, former NIAS Council Member as Inaugural Speaker, which explored ways to promote sustainable developmental thinking and practices. Doctoral students Krupa Rajangam and Sumitra Sundar made presentations at major conferences in UK organized by Iron Bridge Institute and School of Oriental and African Studies respectively.



Members of the Heritage Science and Society Programme



Sharada Srinivasan, *Head*
S Ranganathan
S Settar
Smriti Haricharan
MB Rajani
Principal Research Officer: Srikumar Menon
Post-doctoral Associate: Uday Kumar
Doctoral Students: Hema Thakur, Sumitra Sundar, Krupa Rajangam, K Venkatesh

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Joined NIAS on: June 10, 2001

Major Research Contribution for the Academic Year

A prestigious monograph by Sharada Srinivasan on Chola and Vijayanagara Bronzes: Archaeometallurgical Mapping of Shifting Iconographies, was published by Benaras Hindu University under the Second Chokolingo Memorial Lecture Series. Sharada Srinivasan is co-recipient of an Insight Development Award from Social Sciences and Humanities Research Council, Canada for the project on Metallurgy, Materiality and Society in South India. She recorded three online modules of expert lectures on Chola and Indian bronzes and metals in antiquity for UGC's e-PG Pathshala. Two articles by her on Wootz Steel and High-Tin Bronzes are published in a special two international volumes on Ancient Metallurgy in the reputed Journal of Materials and Manufacturing Processes, USA. She participated in a popular programme aired on Epic Channel on 'Made in India: Wootz Steel'. The short film Image Casting in Swamimalai featuring her commentaries as a Bharatanatyam dancer and archaeometallurgist made by Medieval Centre, Denmark has been selected by the Asian Art Museum, San Francisco for viewership in their bronze gallery.

Lectures

Finely Wrought High-tin Bronzes from Iron Age/Megalithic Tamil Nadu, National Conference on Early Iron Age in South Asia, in Department of Sanskrit and Indian Culture, Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya, Kanchipuram, March 15, 2018.

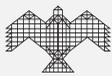
Indian Primacy in Crucible Steel Making, Steel Panorama: Yesterday, Today and Tomorrow, Public Lecture, organised by SAIL (Steel Authority of India) with Indian Museum, Kolkata, at Indian Museum, Kolkatta, March 12, 2018.

Peripherals of Performance: The Marginalized Cymbal Makers of Kerala, NIAS-Exeter Workshop on Performing the Periphery at NIAS, organized by NIAS, Exeter University, and MOD, Berlin, February 20, 2018.

Artisanal Metal Technologies: Historical Trajectory and Survival, Session on Traditional Knowledge Systems, Conference on Dialogues at the Science-Society Interface in memory of Prof CV Seshadri, organized by Anna University and PPST Foundation at IIT-M Research Park, Chennai, February 9, 2018.

Prof Seshadri's Contributions to Traditional Knowledge Systems, Inaugural Session, Conference on Dialogues at Science-Society Interface, IIT-M Research Park, Chennai, February 9, 2018.

Art, Science and Dance Perspectives on Chola Bronzes, Two-day Seminar at



Government Museum, Chennai, Iyal Isai Museum Edutainment Series, held to celebrate UNESCO's recognition of Chennai as a Creative City in Music, February 1, 2018.

Chola Bronzes and Metal Technology, Indian Council of Historical Research, Bengaluru, January 24, 2018.

The Intangible and the Contested in Notions of Heritage, Keynote Address, Interlude Conference on Contesting Heritage of Shristi Institute of Art, Design and Technology, Division of Biological Science Auditorium of Indian Institute of Science, Bengaluru, December 16, 2017.

The Nataraja Icon: Contemporary Musings on Design and Cognition, Plenary Special Lecture, Conference on Culture, Cognition, Design organized by Indira Gandhi National Centre for Arts-Southern Regional Centre along with National Institute of Design, Bengaluru, November 4, 2017.

Paper on Ramayana Bronzes of the Chola and Vijayanagara Era, International Conference on Connecting Cultures: Ramayana Retellings in South India and Southeast Asia, Reva University, Bengaluru, September 15, 2017.

Key Metals and Alloys from Indian and South Indian Antiquity: An Archaeometallurgical Review, Keynote Address, International Conference RILEM, Advances in Construction Materials and Systems, IIT-Madras, September 7, 2017.

Nataraja Framed by Betelguese and Syrius: Explorations in early medieval Tamil stone and Bronze Iconography, Paper presented for 15th Annual International Conference on History and Archaeology: From Ancient to Modern, Athens, Greece, June 29, 2017.

Art of Making Kerala Mirror, History of Science Project Investigators Meet, New Delhi, April 12, 2017.

Awards, Memberships

Member, Advisory Board, South Asia Centre, University of Exeter.

Featured by Condi Naste Magazine amongst the top ten women scientists in their Make in India (2017) issue.

Editorial Board Member, Ethnoarchaeology Journal.

Board Member, Institute of Archaeometallurgical Studies (IAMS), London.

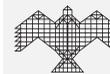
Standing Committee Member, International Conference of the Beginning of the Use of Metals and Alloys and was nominated in 2017 to the Committee for Science and Heritage Research Initiative of DST and for Digital Heritage.

Honorary Fellow, Exeter University.

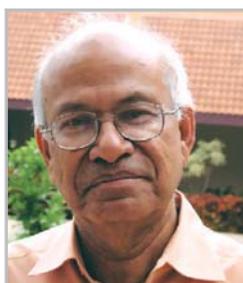
Co-recipient of a Research Network Award 2018 from the Arts and Humanities Research Council, UK for the project on Politics of Performance in the Urban Peripheries of Southern India.

Other Information

Report on NIAS-Exeter Institutional Collaboration: NIAS and the University of Exeter re-affirmed and expanded their Memorandum of Understanding in 2017 which was ongoing since 2011 with past support from UKIERI for the NIAS-Exeter Split Site PhD Programme in Intangible Histories led by Sharada Srinivasan and Anindya Sinha. This programme supported PhDs awarded by University of Exeter in Archaeology and Drama with joint supervision, and nearly a dozen students from around the world having been registered in the programme with about a dozen having already graduated. Participating NIAS supervisors were from all schools of humanities, social sciences and natural sciences including Narendar Pani, Carol Upadhyay, Shivali Tukdeo, Smriti Haricharan and Sangeetha Menon in addition to Sharada Srinivasan and Anindya Sinha. In 2017 a NIAS-Exeter Partnership Board was constituted including Sharada Srinivasan, Anindya Sinha, Smriti Haricharan and Carol Upadhyay



as members to discuss way ahead to enhance the engagement between NIAS and Exeter University. Ways to work with the recently constituted South Asia Centre at Exeter University are also explored of which Sharada Srinivasan is an Advisory Member. The NIAS-Exeter partnership has also received fresh momentum a prestigious competitive collaborative grant from Arts and Humanities Research Council, UK (2018) for which Sharada Srinivasan and Anindya Sinha are co-awardees and co-investigators with Prof Cathy Turner and Prof Jerri Daboo for the project on Performance in the Urban Peripheries. As an outcome, the workshop on Performing the Periphery, held at NIAS in collaboration with University of Exeter, UK and MOD Institute Berlin on February 20, 2018, aimed to generate a research network drawing together inter-disciplinary perspectives at the interface of performance studies and urban studies to explore the place of performance in relation to human and non-human stakeholders at the urban peripheries in southern India, as well as the role that performance can play in highlighting or attempting to mitigate some of the issues and concerns at the urban margins. Presentations were made by several NIAS faculty and students including NIAS-Exeter students. The workshop also featured a multi-media exhibition including photographs and sketches taken during the Urur Olcott Kuppam Vizha Festival, held in a fishing neighbourhood of suburban Chennai, highlighting ways in which this innovative festival aims to democratize performance spaces, while giving a platform for local communities to voice their environmental and social concerns. Talks were also made by four commissioned artists Abhishek Hazra, Maraa, LaraiBem-Bem and Smitha Cariappa on their performative explorations on various themes such as the place of language in the urban imagination, reflections on gender and sexual violence on the margins of campuses, issues of migration and alienation and of history at the margins as exemplified by forgotten or displaced inscription stones.



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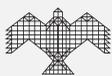
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Joined NIAS on: July 2, 2004

Major Research Contributions for the Academic Year

Crossing Borders: Metals and Materials Heritage and Materials Science Education – An extraordinary opportunity to broaden the horizons of materials education has opened up in recent years. Besides the conventional classification into metallics, ceramics, polymeric and composites we can add now ancient material objects. This addition, in the immortal words of Steve Jobs, allows us to marry liberal arts and technology and makes our heart sing. This is not just an indulgence any more but a necessity as all technical education communities realize that mere training in technology makes the graduates monochromatic and does not prepare them to be citizens for tomorrow's society. In the context of the BUMA Conference Series we will use illustrative examples from the past civilizations of India, China, Korea and Japan. These did not exist in isolation but were strongly linked by trade across the Silk Road and as recent work has shown linked with the Hellenic civilization. The advent of digital technology has given a new dimension. It is possible to create virtual reality vision of heritage sites under threat. Our final message will be to highlight that materials and civilization are synonymous in a more profound way than understood till now.

Further progress was made in High Entropy Alloys by looking at alloying behaviour in several ways. Current goal is to bring in Machine Learning and Artificial Intelligence. Collaboration with scientists at JNCASR and IIT Madras.



Membership

Elected as a Member of the International Advisory Committee for BUMA 10 to be held in Bangkok, Thailand in 2020.

Outreach

Participation in BUMA 9, Busan, South Korea. As a Member of the International Advisory Committee and as Founding Chair of the Engineering Heritage of INAE and Leader of four member Indian delegation. Presented an invited paper on Crossing Borders: Metals and Materials Heritage and Materials Science Education. Also an eulogy of Prof Tsun Ko, the Founder of the BUMA conference series along with Robert Maddin and Cyril Stanley Smith.



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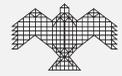
Major Research Contribution for the Academic Year

Served in the three Member High Level Committee, headed by Justice Nag Mohan Das, constituted by the Government of Karnataka, to go into the historical precedents of the Baba Budangiri Darga (Chikkamagalur District) and to suggest the ways and means to solve this much disputed issue. After seven sittings and a couple of public hearings, the committee submitted a report to the government, which, in turn, the State cabinet accepted, and forwarded to the Supreme Court of India. The Supreme Court has recently pronounced its approval of the Committee's recommendations, in toto.

Two books, titled 'Inviting Death: Historical Experiments on Sepulchral Hill' and 'Perusing Death: Philosophy and Practice of Voluntary Termination of Life', republished by Primus Books, New Delhi, were released at the India International Centre, New Delhi on July 14, 2017, before a packed audience and veteran scholars such as Dr Kapila Vatsyayan and others. Releasing the volumes, the well-known Supreme Court Senior Advocate, and an expert in Jurisprudence, Dr Singvi, recalled how these volumes had helped him argue successfully before the Rajasthan High Court. the Jaina case that the ritual death traditionally practised by the members of this religion, was not the same as suicide. Following this, the Supreme Court has now approved a selective euthanasia under medical guidance. This was followed by an interesting discussion on death and dying in Indian religious systems. It was pointed out that how scarce is the research made on this theme and how unique are these volumes in international publication.

Lecture

Revisiting Ancient Karnataka in the Company of Pioneering Researchers of the 19th and 20th Centuries, Inaugural Lecture, Newly Established Bangalore Central University, Central College Premises, Bengaluru, March 18, 2018.



Outreach

In collaboration with Prof Parul Pandya Dhar of Department of History, Delhi University, organized an International Conference on the theme: Connecting Cultures: Ramayana Re-thinkings in South East Asia on September 13 and 14, 2017. The conference has held on the Reva University Campus, Bengaluru and was inaugurated by Prof Baldev Raj, Director, NIAS. It was sponsored and funded by the Indian Council of Historical Research, New Delhi, DSA Centenary Foundation, Bengaluru, and the Reva University, Bengaluru, while several events were hosted by distinguished institutes and personalities. 25 outstanding scholars across the world, in particular from USA, Canada, UK, France, Vietnam, Cambodia, Thailand, Malaysia, Singapore and India, presented their papers on the literary, performance, and visual cultures, promoted by Valmiki Ramayana. The papers are now edited jointly by S Settar and Dr Dhar and the Manipal University has made a commitment to publish the volume during this year.

Awards

The Doordarshan-Chandana Award for Literature for the year 2017 under Doordarshan Broadcast in Bengaluru on November 13, 2017.

The Government of Karnataka on February 27, 2018, conferred one of the highest awards instituted by it in the name of a 10th Century Kannada Poet, Kavicharkaravarti-Ranna at the birth place of the poet, avowedly recognising S Settar's share of contribution to the Kannada Classical Studies, in particular to the ancient Kannada language, script and literature. The presentation was made by the Chief Minister of Karnataka in the presence of some of his cabinet colleagues, other distinguished citizens, academics and intellectuals. Settar was the second recipient of this award since its inception a decade ago.



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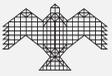
Joined NIAS on: January 2, 2017

Major Research Contribution for the Academic Year

Initiated a funded project which explores the various ways in which archaeology can be disseminated to various sections or the public. The project began with a three-day workshop, dedicated to look at various ways of making archaeological methods accessible for school children, as well as a meeting with teachers to understand the space for archaeology in classrooms. The current initiative focusses on schools from around NIAS and Kannada medium schools.

Academic Course

Along with Dr Krishnapriya Thamma of Centre for Ecological Sciences, Indian Institute of Science, Bengaluru, teaching three credit course on Reading Landscape through Archaeology and Ecology from January to May 2018. The course is designed to look at landscapes from the perspective of both archaeologists and ecologists. It uses themes to help explore the varied ways in which each of these disciplines use landscape in their studies. In both disciplines the landscape is not only the 'field' where information is gathered but is also a space which is analyzed. The course explores the ways in which the landscape is 'seen' in each of these disciplines and



how that shapes the research. The learning objectives of the course is how the independent trajectories of the two disciplines relationship with landscape shapes contemporary research questions; understanding not only the differences but also the similarities between the various approaches; explore the potential of landscape in research.

Lectures

Social Science Education in Class Rooms. Bharath Gyan Vigyan Samhiti Meeting, Raichur, Karnataka, January 22, 2018.

Early Historic or Megalithic Burials around Chennai, SCSVMV University, Kancheepuram, August 13, 2017.

Outreach

In collaboration with Mythic Society organised a talk by Prof Ravi Korisettar at NIAS, January 16, 2018.

One day meeting/workshop with school teachers in collaboration with BGVS on November 10, 2017 under the project "Understanding the Past: Intervention through Dissemination" funded by Sundaram Finance.

Completed a workshop for 6th and 7th class children on November 8 and 9, 2017 under the project "Understanding the Past: Intervention through Dissemination" funded by Sundaram Finance.



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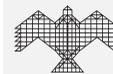
Joined NIAS on: January 1, 2015

Major Research Contribution for the Academic Year

Rajani's research interests are in the multidisciplinary field of geo-spatial analysis for cultural heritage. Her ongoing research include: identifying archaeological mounds in large Buddhist sites in Ganga valley like Nalanda, Bodhgaya and Vikramasila using stereoscopic satellite images and photogrammetric techniques (funded by SERB, Department of Science and Technology): Three years from January 2016), preliminary findings are reported in Rajani and Das 2018; has collaborated on book projects authored by Prof Fredrick Asher and Prof Catherine Asher of University of Minnesota where she has analysed Landscapes of Sarnath and Mehrauli; contributed to review articles that examine destruction and potential damage caused to cultural heritage sites by developmental activities and further has assessed potential of geospatial technologies in mitigating such detriment in future; worked on studying orientation of sacred structures of few Buddhist sites and their astronomical association; analysed underground water supply system used in Bengaluru in 20th century; is working on examining cross cultural musical influences in colonial India.

Lectures

Cross-Cultural Musical Exchanges in the 18th and 19th centuries Colonial India, The South Asia Regional Conference 2017, International Society for Music Education, NIAS, November 28, 2017.



Was There a Network of Karez at Bangalore?, International Conference on Karez on Cultural Borders, Bidar, October 30, 2017 (along with Kuili Suganya).

Archaeological Sciences for Understanding Past Settlements: Buddhist Structures at Nalanda, Inter University Accelerator Centre, New Delhi, October 16, 2017.

Remote Sensing Perspectives of Buddhist Sites in India, Courtauld Institute of Art, London, July 6, 2017.

The Legacy of the Nottusvara-s–Diksitar and Beyond, International Conference on Music and Dance ‘Harmonic and Melodic World Music’, organised by Indiranagar Sangeetha Sabha, Bengaluru June 28, 2017 (along with Naresh Keerthi).

Using Remote Sensing to Understand and Preserve our Cultural Heritage, Dhvani Series, JNCASR, Bengaluru, May 24, 2017.

Buddhist Sites in India: Geospatial Insights into Their Past and Future, Workshop on Indian Roots of Global Buddhism, UCLA, April 29, 2017.

What Can Satellites Reveal About Our Past, as part of a UG course on History and Future of Science and Technology in India, APU, Bengaluru, April 18, 2017.

Academic Courses

January to May 2017: Four credit course on Archaeological Exploration: Methods and Practices; co-instructors: Srikumar Menon and Prof Ravi Korisettar. This course involved theory (by Srikumar Menon and Korisettar), lab component (supervised by Rajani) and field work (guided by Prof Korisettar). In this course the students were exposed to conducting field survey, integrating data from reports, maps and field and dealing with data transfer issues. The theory dealt with prehistoric sites, and field works was conducted on Sanganakallu.

August to December 2017: Two course of one credit each as part of Foundation Course. Ancient Astronomy and Indian Architecture, gave three lectures in each of these courses. Srikumar Menon was main instructor.

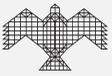
January to May 2018: Three credit course on GIS for Spatial Data Visualization and Analysis. This course has 6 takers from varied field. The course was designed to empower takers with GIS tools and converting data to geospatial visualization.

Membership

Elected Member of Indian National Young Academy of Science for a period of five years from 2018 to 2022.

Other Information

Exploring India’s Medieval Coastline using Geospatial Analysis and Historical Records a four-year project has just been sanctioned by Ministry of Earth Sciences.



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Joined NIAS on: March 1, 2016

Major Research Contribution for the Academic Year

Carried out fieldwork for a research project titled 'Of Dwarves and Dolmens: Tracking the 'Little People' Legends of Megalithic South India', which was funded by INTACH, New Delhi. This project, in collaboration with Samira Agnihotri of NIAS, entailed documenting oral histories about megalithic monuments among indigenous people at various locations in South India and analyzing similarities and variations in these stories over large geographical regions. We were able to visit 26 megalithic sites in Karnataka, Kerala and Tamil Nadu to record oral histories and document the type of monument involved. These traditions about megaliths are fast dying out with the older generation at most sites and the documentation of these is of utmost importance.

Lectures

Megaliths and Later Monuments, Prof DS Achuta Rao Centenary National Conference, Manipal University, December 27, 2017.

Replicating the Mountain: The Case of Temple Shikharas, Symposium on Sacred Geometry and Design in Nature: An Interplay of Art, Science and Philosophy, Central University of Tibetan Studies, Sarnath, October 25, 2017.

The Temple as Mountain, or the Mountain as Temple?, Hands on Heritage Workshop on Architectural Conservation by Mason's Ink Architecture, Bengaluru, July 25, 2017.

Astronomy in the Lithic Record in India, 5th Bharatiya Vigyan Sammelan 2017, Fergusson College, Pune, May 14, 2017.

Academic Courses

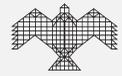
Offered a course for NIAS Doctoral Coursework with MB Rajani on Ancient Astronomy in the Indian Subcontinent (August to November 2017).

Offered a course for NIAS Doctoral Coursework with MB Rajani on Indian Temple Architecture – Origins and Evolution (August to November 2017).

Teaching/Guiding Assignments

Co-guide to Tanoy Sengupta, student of MA Archaeology at Deccan College, Pune, on MA Dissertation Archaeoastronomical Aspects of the Megalithic Site at Nagbhid, Vidarbha.

Guided summer intern, Kadambari Komandur, student of architecture at RVCE on project Documentation of Open Mantapas at North Fort, Badami (Summer 2016) and continuing the same currently to the next level of Virtual Reconstruction of the Unfinished Open Mantapas at Badami.



Guiding intern – Meghana Kuppa, student of BA History at St Joseph’s College, Bengaluru, on project Rashtrakuta Architecture: The Importance of Sirival.



S Udayakumar
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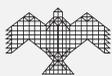
Joined NIAS on: January 1, 2018

Lectures

Traditional Techniques of Gold Jewellery: A Case Study of Devakottai, Tamil Nadu, Paper presentation in the 6th International Congress Society of South Asian Archaeology, Indian Museum, Kolkata, March 18, 2018 (along with Sharada Srinivasan).

Archaeology, Mary Ann Matriculation Higher Secondary School, Madurai, Tamil Nadu, February 14, 2018.

Lost Wax Technology, Mary Ann Matriculation Higher Secondary School, Madurai, Tamil Nadu, February 15, 2018.



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Joined NIAS on: August 29, 2016

Major Research Contribution for the Academic Year

As a follow-up to the earlier much-discussed book, Gopal Guru and Sundar Sarukkai finished the manuscript titled "Experience, Caste and the Everyday Social", which is under review by the publisher. This book gives a new philosophical and theoretical framework for understanding the nature of the social in the Indian context.

Lectures

What is Philosophy?, Plenary Lecture at the International Deleuze Conference, Anna University, Chennai, February 17, 2018.

Beyond Numbers: Creating Minorities, First Mohammed Koya Memorial Lecture, University of Hyderabad, February 7, 2017.

Four talks at IIT, Kharagpur as part of MHRD GIAN Programme, December 10 and 11, 2017.

Intellectual Cosmopolitanism, Keynote Address at the Winter School on Minor Cosmopolitanisms, Potsdam University and Delhi University, December 9, 2017.

Implications of Jaina Rationality, Workshop on Jaina Rationality, NIAS, November 9, 2017.

Panel Discussion on Opening up Philosophy in Western Universities, Department of Philosophy, Dalhousie University, November 3, 2017.

Decolonizing Knowledge, Public Talk for the CSP Students Union, University of King's College, Canada, November 1, 2017.

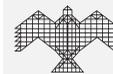
Challenges of Teaching Classical Philosophies and Religion in India, Department of Classics, Dalhousie University, October 30, 2017.

Science and Indian Logic, University of King's College, Canada, October 30, 2017.

Non-existence or Merely Absent? Reality of Mathematical Entities, Department of Philosophy, Dalhousie University, Canada, October 27, 2017.

Science and the Rationality of the Social, Inaugural McLennan Lecture on History of Science, University of King's College, Canada, October 25, 2017.

Language and Method, Department of HSS, IIT Madras, September 7, 2017.



Two lectures on Methods in the Social Sciences, School of Social Sciences, MG University, Kottayam, August 18 and 19, 2017.

Performativity of Technology, Conference on Technology and the Re-imagination and Transformation of the Social, Egalitarianism Project, London, July 3, 2017.

Academic Courses

Module in Research Methodology Course, NIAS, August 2017.

One-credit Module on Philosophy for Academic Survival, NIAS, August to September 2017.

Ten-hour module on Introduction to Philosophy, Vedica Programme on Leadership for Women, Vedica Institute, Delhi, September 11 to 15, 2017.

Workshops

Alochana Yatre, Series of Public Workshops on Introduction to Philosophy along with Ninasam at Heggodu, Sagar, Shimoga, Tiptur and Tumkur, January 1 to 6, 2018 (Supported by the Rohini Nilekani Philanthropies.)

Academic Writing Workshop for PhD Students at the Department of Sociology, University of Hyderabad, February 5 to 9, 2018.

Memberships

Jury Member, First Roundglass Samsara Environmental Film Festival, October 2017.

Member of the Expert Committee for School of Social Sciences, Bangalore Central University.

Series Editor, Science and Technology Studies.

Editorial Board Member, Leonardo Book Series, MIT.

Chief Editor, Handbook of Logical Thought in India.

Editorial Board Member, Paragrana: The International Review of Historical Anthropology, Akademie Verlag.

Editorial Board, Indian Journal of Medical.

Consulting Editor, Journal of Public Affairs and Change.

Member, Committee on School of Social Sciences, Bangalore Central University.

Other Information

Was Chair of the committee to develop philosophy syllabus and curriculum for BA and MA for Bangalore Central University.

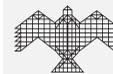
Partner in two major international projects:

1. EU funded 'Egalitarianism Project' with Bruce Kapferer.
2. Co-applicant, Cosmopolitan and the Local in Science and Nature, Dalhousie University, McGill University, York University, University of Alberta, University of British Columbia, JNU, NUS and Harvard, funded by SSHRC, Canada.

SCHOOL OF NATURAL SCIENCES AND ENGINEERING

Programmes

- Animal Behaviour and Cognition
- Complex Systems
- Energy and Environment Research



HIGHLIGHTS

Animal Behaviour and Cognition Programme

Work carried out under the aegis of the Programme is synergistic in nature, with collaborators from other disciplines both within the institute and outside, and transdisciplinary, in its seamless incorporation of methodologies and theoretical frameworks from fields of research such as cognitive psychology, sociology, education, environmental philosophy, animal geography and science communication. For example, Sindhu Radhakrishna, VV Binoy and colleagues showed how interactions between humans and primates can be driven by primates just as much as it can be precipitated by people and that cultural factors critically impact people's decisions with respect to wildlife conflict mitigation. The transdisciplinary nature of the research conducted by Anindya Sinha encompasses his current work on human-urban wildlife interactions, which involves quantitative observations, interview surveys and archival analyses, and draws heavily from perspectives and methods of the natural and social sciences. Sinha also uses perspectives from behavioural ecology, urban geography and sociology to explore the political ecology of human-animal interactions in urban India and the urbanisation of macaque and elephant populations across their natural distribution range.

Complex Systems Programme

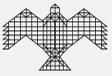
An important research highlight is construction of a predictive mathematical model which makes reliable predictions about the interactions between climate change, land-use change, insect population dynamics and forest responses. This work by Janaki Balakrishnan and Sudharsana V Iyengar and Juergen Kurths of the Potsdam Institute of Climate Impact Research, Germany, modelled the effect of human intervention and land use change on insect outbreak cycles for the first time in the literature. The model was validated with 310 years of data recorded of larch budmoth insect pest outbreak cycles in a region where a lot of human intervention had taken place — frequent changes in the forest cover, expansion of grassland for supporting livestock, etc.

Energy and Environment Research Programme

In May 2017, the task force constituted by the Ministry of Coal to develop an Integrated Approach to Mining and Environment for Opencast Coal Mines has accepted the consensus report drafted by R Srikanth. Subsequently, he was also appointed to the Working Group constituted by NITI Aayog to develop the Vision for India @75 – Mineral Sector and has submitted his recommendations to reinvigorate the Mineral Sector which is a big employment generator in India.

Srikanth has also submitted a report on India's electricity sector to Chief Economic Advisor along with key recommendations, including the creation of a suitable mechanism (akin to the GST Council) by Government of India to resolve the seemingly intractable problems of the Electricity sector in a collaborative manner between the Central and State Governments. Some of his recommendations have been subsequently propounded by the CEA publicly. Srikanth has also submitted key policy recommendations to the Steel Secretary on the key actions to be implemented by Government of India in collaboration with the coking coal and iron-ore bearing States of Jharkhand and Odisha to achieve the objectives of the National Steel Policy.

Hippu SK Nathan was conferred the NASI Scopus Young Scientist Award – 2017 in Social Sciences by Elsevier and National Academy of Science India (NASI) on October 31, 2017 at New Delhi. The award is given on the basis of overall quality and number of publications, nature and uniqueness of research, outcomes of research, impact on society, and vision of the researcher.



ANIMAL BEHAVIOUR AND COGNITION PROGRAMME

Introduction

The Ecology, Behaviour and Conservation Programme is interested in the ecology, behaviour, cognition, genetics and conservation status of several wildlife species across the country, chiefly primates, elephants and fishes. The primary goals of the Programme are to understand the evolution of social behaviour and communication, the cognitive foundations of behaviour and to study intraspecific variation in ecology and behaviour of animals. These core areas of research are complemented by other research interests of faculty members in the areas of environmental decision-making, animal personality, human-wildlife conflict, human-animal studies, environmental education and natural resource conservation. Apart from the core three faculty members, the Programme currently comprises two post-doctoral associates, six research scholars, and a number of collaborators from the Schools of Social Sciences and of Humanities in NIAS and from more than fifteen institutions across India, Japan, UK, USA and Australia. It is the only research group in the country working in the area of social cognition, communication and culture in any animal species, the only group that has been monitoring a primate population and tracking the life-history strategies of more than 1,500 individually identified animals continuously over fifteen years, one of the few groups in the world working on the behavioral ecology of nocturnal primates in the wild, and the only group in India that has been credited with the discovery of a new primate species.

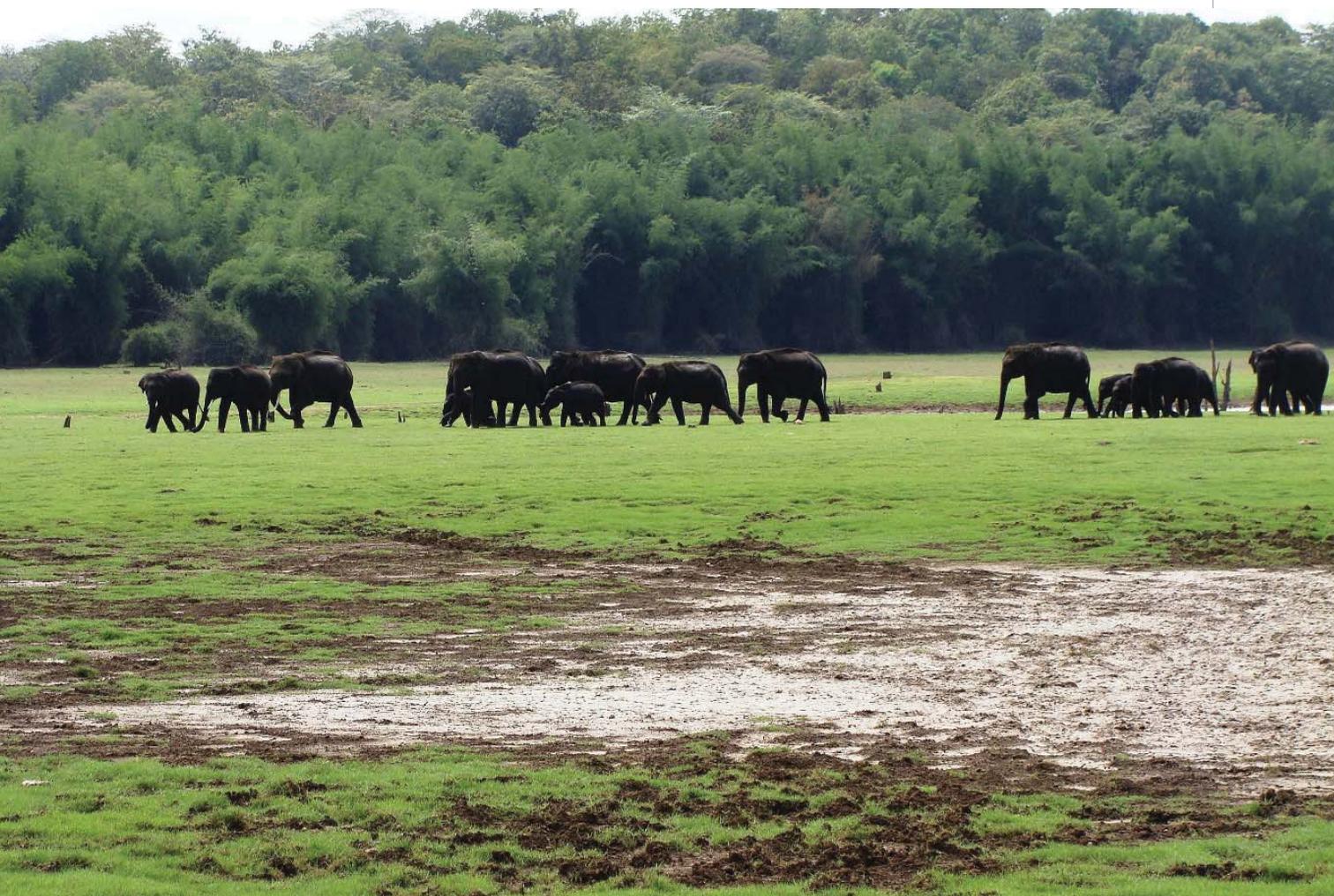
Research Activities

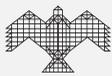
The principal projects conducted by the Programme over the last year were in the areas of primate behavioural ecology, human-wildlife interactions, piscine diversity and conservation and human social cognition and decision-making. Sindhu Radhakrishna was primarily involved with two DST-SERB projects; she completed a study on the unusual intraspecific behavioural variation in the nocturnal prosimian, the slender loris and continued her study on drivers of human primate conflict in India. VV Binoy was involved with four major research projects; while two projects are in the broad of areas of the public perception regarding the advantages and risks posed by new technologies, the third deals with human-primate conflict and the fourth with traditional psychiatric practices. In addition to the ongoing projects on the demography, behavioural ecology and management of synurbized primates and elephants in southern India, Anindya Sinha and his colleagues, investigated the nature of human-urban animal interactions, largely involving macaques, street dogs and cows, in Delhi and Chennai, two important urban centres of our country. Sinha also initiated a collaborative research network that has begun to explore traditional performances, both theatrical and musical, as representative of the increasing marginalisation of human communities at the urban periphery in Bengaluru. Programme members also received several accolades for their work. In collaboration with the Consciousness Studies Programme, VV Binoy published an edited volume *Self, Culture and Consciousness* (Springer India). Sindhu Radhakrishna collaborated with M B Rajani, Heritage Science and Society Programme, to obtain a research grant from ISRO to investigate the impact of land use changes on human-primate conflict. Anindya Sinha and his collaborators received three international, interdisciplinary grants in the past year; these concern human-street dog cohabitation and rabies prevention in Chennai (with Edinburgh University, UK), a trans-species approach to understanding urban animals in relation to human livelihoods and health in Delhi (with Oxford University, UK) and the development of a research network that would investigate the politics of performance on the urban periphery in southern India (with School of Humanities, NIAS and Exeter University, UK).

Outreach

Anindya Sinha delivered the Foundation Day Lecture on the conception of self in wild bonnet macaques at the Centre for Behavioural and Cognitive Sciences of Allahabad University and coordinated a session on urbanisation of wildlife and conservation of India's natural heritage at the First NIAS-Christ University Conference on Contemporary Challenges to Indian State and Society in Bengaluru. He also delivered twelve lectures on primate ecology, behaviour, cognition, evolution, conservation and management at various institutions across the country over the last year. VV Binoy conducted two science communication workshops with Swissnex (*ScienceComm-2017*) and Vigyan Prasar, (*Science Films*), that reached out to a wide range of participants from all corners of India. As part of the project *Connected Learning Initiative (CLIX)* Binoy and his team also conducted

11 training programmes for the high school biology teachers of Chhattisgarh, Telangana, Rajasthan and Mizoram. More than 500 teachers were trained in the modern practices of ecology education. Sindhu Radhakrishna delivered a lecture on the topic of nonhuman primates and human wellbeing at a conference in Jyothi Nivas College, Bengaluru. Paul Pebsworth, a Postdoctoral Associate in the Programme delivered a talk on Soil Eating in Humans and Nonhuman Primates at the Ashoka Trust for Ecology and Environment in Bengaluru. She and her colleagues also collaborated with the Himachal Pradesh Forest Department to conduct several workshops and training sessions in Himachal Pradesh on primate conflict mitigation measures and best practices to coexist with rhesus macaques.





Members of the Animal Behaviour and Cognition Programme



Sindhu Radhakrishna, Head

Anindya Sinha

VV Binoy

Post-doctoral Associates: Samira Agnihotri, Paula A Pebsworth

Doctoral Students: Nishant M Srinivasaiah, Shaurabh Anand, Sridhar Vijayakrishnan, S Vignesh, Ashni K Dhawale and Nitesh S Anchan (NIAS-Exeter University Collaborative Programme)

Sindhu Radhakrishna

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Joined NIAS on: September 1, 2001

Major Research Contribution for the Academic Year

Apart from her long-standing work on the behavioural ecology of the slender loris, Sindhu Radhakrishna also contributed significantly to the area of ethnoprimateology through her study on human-primate relations as viewed through the lens of literature. She investigated Tamil language poetical works from southern India to analyze people's attitudes toward primates to show that sacredness was not a defining characteristic of human-primate relations in ancient times. The deification of monkeys occurred later and was largely driven by the growing popularity of Ramayana, the Hindu epic. These findings suggest that while the sacred designation serves to protect monkeys in their interactions with humans, the simultaneous existence of the monkey as 'less than human' classification challenges the power of the sacredization and that the latter can be particularly tested when monkeys cause economic/physical harm to humans. Insights from her work therefore have direct relevance for primate conservation and the management and mitigation of human-primate conflict.

Lecture

Non-Human Primates and Human Wellbeing: Beyond the Comparative Psychology Approach, National Conference on Mind Body Matters: An Interdisciplinary Insight, Jyothi Nivas College for Women, Bengaluru, February 1, 2018.

Academic Courses

Module on Life Sciences, Research Methodology Course, NIAS Doctoral Programme, April 2017.

Human-Animal Studies Course, NIAS Doctoral Programme, August to December 2017.

Awards, Memberships

DST-Indo-Japan Cooperative Science Research Grant, November 2017.

ISRO-Respond Research Grant, March 2018.

Executive Committee Member, Governing Board, Yakshi (2016 onwards).

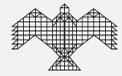
Editorial Board Member, *Animal Cells and Systems* (2015 onwards).

Commission Member, IUCN SSC Primate Specialist Group – S. Asia (2013 onwards).

Member, Research Advisory Board, Nature Conservation Foundation, Mysore (2013 onwards).

Member, Ethics Committee, Nature Conservation Foundation, Mysore (2013 to 2017).

Editorial Board Member, Resonance.



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Joined NIAS on: November 15, 1996

Major Research Contributions for the Academic Year

In addition to the ongoing projects on the demography, behavioural ecology and management of synurbized primates and elephants in southern India, Anindya Sinha and his colleagues, investigated the nature of human-urban animal interactions, largely involving macaques, street dogs and cows, in Delhi and Chennai, two important urban centres of our country. Sinha also initiated a collaborative research network that has begun to explore traditional performances, both theatrical and musical, as representative of the increasing marginalisation of human communities at the urban periphery in Bengaluru. More specifically, Sinha and his collaborators received three international, interdisciplinary grants in the past year; these concern human-street dog cohabitation and rabies prevention in Chennai (with Krithika Srinivasan, Edinburgh University, UK), a trans-species approach to understanding urban animals in relation to human livelihoods and health in Delhi (with Maan Barua, Oxford University, UK) and the development of a research network that would investigate the politics of performance on the urban periphery in southern India (with Sharada Srinivasan, School of Humanities, NIAS and with Cathy Turner and Jerri Daboo, Exeter University, UK).

Lectures

Reaching Out: Intentional and Referential Multimodal Communication between Macaques and Humans, Seminar on Collaborative Beings and the Dynamics of Communication, Department of Language and Linguistics, Jadavpur University, Kolkata, February 17, 2018.

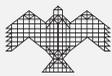
The Monkey in the Mirror: Social and Cultural Evolution in Wild Bonnet Macaques Seminar on Frontiers in Modern Biology, Indian Institute of Science Education and Research, Kolkata, January 19, 2018.

Governing Life in Indian Cities, or Why Conversations between Ecology and Geography are an Imperative, First NIAS–Christ University International Conference on Contemporary Challenges to Indian State and Society, Christ University, Bengaluru, November 16, 2017.

Of Monkeys and Men: Human–Macaque Conflict in Northern India, Workshop on Human–Wildlife Conflict, University of Agricultural Sciences, Bengaluru, October 7, 2017.

The Weed Macaques: Uniquely Adaptable but Ultimately Threatened?, School of Geography and the Environment, Oxford University, Oxford, UK, August 7, 2017.

Primate Worlds: From Complex Communities to Simple Minds, Jagadis Bose National Science Talent Search, Kolkata, May 6, 2017.



Radio/Television Programmes

Fantastic Hybrid Beasts and Where to Find Them, The Intersection, Audiomatic <http://www.audiomatic.in/show/fantastic-hybridbeasts-find/>

Academic Courses

A three-credit course on Animal Behavioural Ecology for Master's degree students of the Postgraduate Programme in Wildlife Biology and Conservation, National Centre for Biological Sciences, Bengaluru; February–May 2017.

A two-credit course on Philosophy and Practice of Science for doctoral degree students of Nature Conservation Foundation, Mysore, August 2017.

A three-credit course on Evolutionary Ecology and Behaviour for doctoral degree students of Nature Conservation Foundation, Mysore, August–October 2017.

A one-credit course on Primate Behavioural Ecology, as a component course of the four-credit course on Foundations; September–November 2017.

A six-lecture module on Methodological Considerations in Human-Environmental Interaction Studies as part of a four-credit course on Research Methodology; October–November 2017.

Two four-credit courses on Doctoral Thesis Proposal Preparation for two doctoral degree students, Ashni K Dhawale and Nitesh S Anchan (with Sundar Sarukkai) respectively, September–December 2017.

Two lectures on Urban Wildlife, as part of a two-credit course on Animal Ethics and Social Justice, for Master's and doctoral degree students of Tata Institute of Social Sciences, Mumbai, January 2018.

A two-credit reading course on Animal Minds; February–April 2018.

Awards, Memberships

International Advisor, Twenty-Eighth International Biology Olympiad, Coventry, UK; 18–30 July 2017.

Resource Person, Indian National Biology Olympiad, 2016–2017 and 2017–2018.

Foundation Day Lecture, Centre for Behavioural and Cognitive Sciences, University of Allahabad, Allahabad, October 28, 2017.

Homi Bhabha Fellowship, Homi Bhabha Fellowships Council, Mumbai, January 2018–December 2020.

Adjunct Teaching Faculty, National Centre for Biological Sciences, Bengaluru, August 2010 onwards.

Adjunct Faculty, Centre for Neuroscience, Indian Institute of Science, Bengaluru, June 2011 onwards.

Scientific Advisor and Research Coordinator, Dhole's Den Research Foundation, Bandipur National Park, October 2012 onwards.

Honorary Research Fellow, School of Humanities, University of Exeter, Exeter, United Kingdom, August 2015 onwards.

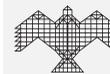
Adjunct Professor, Cotton University, Guwahati, April 2017 onwards.

Adjunct Faculty, Nature Conservation Foundation, Mysore, July 2017 onwards.

Associate Editor, International Journal of Mind, Brain and Cognition, June 2014 onwards.

Member, Research Advisory Board, Centre for Wildlife Studies, Bengaluru; August 2004 onwards.

Member, IUCN/SSC Primate Specialist Group – South Asia Section, Species Survival Commission of the International Union for the Conservation of Nature, Gland, Switzerland, March 2013 onwards, till March 2020.



Member, Steering Committee, Postgraduate Programme in Wildlife Biology and Conservation, National Centre for Biological Sciences, Bengaluru, renewed from August 2014 onwards.

Member, Academic and Student Affairs Committee, Nature Conservation Foundation, Mysore, January 2015 to December 2017.

Member, Research Ethics Committee, Nature Conservation Foundation, Mysore, January 2015 to December 2017,

Vice President, Indian Association for Teachers in the Biological Sciences, Mumbai, May 2015 onwards.

Member, Graduate Research Committee, TransDisciplinary University, Bengaluru; January 2016 to January 2018.

Member, Academic and Research Committee, TransDisciplinary University, Bengaluru, August 2016 to August 2019.

Member, Partnership Committee, TransDisciplinary University, Bengaluru, August 2016 to August 2018.

Member, Institutional Ethics Committee, Institute of Public Health, Bengaluru, April 2017 onwards.

Joint Coordinator, Doctoral Coursework, Nature Conservation Foundation, Mysore, July–November 2017.

Member, Review Panel for Research in Life Sciences, TransDisciplinary University, Bengaluru, August 2017 to August 2019.

Other Contributions

Forum for Interdisciplinary Research and Studies (FIRST) in NIAS (along with Sisir Roy)

The rationale for interdisciplinary studies lies in our observation that, in the world of matter and life, there is no artificial separation of physics, chemistry and biology. As an example, there is now universal recognition that all the sciences need to be employed in understanding man and his relationship with the environment. In the 21st century, therefore, interdisciplinarity is increasingly becoming an important and challenging approach in our understanding of the natural and social worlds. Here, we define interdisciplinary research as the use and integration of both appropriate methods and analytical frameworks drawn from more than one discipline in order to examine specific issues and problems, both fundamental and applied.

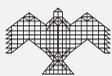
In this context, NIAS established, in July 2016, an inter-institution Forum for Interdisciplinary Research and Studies (FIRST), with two principal aims:

1. Invite eminent scholars from various institutes and universities in and around Bengaluru to discuss recent work (their own or of others) in various disciplines that have adopted interdisciplinary approaches. These meetings are usually held in the afternoon of the last Friday of each month, at NIAS.
2. Build up a virtual library or an electronic archive of interdisciplinary research manuscripts and publications, where it would be possible to upload relevant papers as well as download them, of course, only for academic purposes. This archive is housed on the NIAS website.

The two FIRST lectures that were organised over the past year are:

Natural/Social?
Sundar Sarukkai
NIAS
April 28, 2017

Indic S&T and the Computational Thinking Metaphor
K Gopinath
Department of Computer Science and Automation, Indian Institute of Science, Bengaluru
August 30, 2017



VV Binoy

Assistant Professor
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Joined NIAS on: September 2, 2010

Major Research Contribution for the Academic Year

VV Binoy completed two major projects, *Sahyadri's Underground Fishes: Developing Conservation Action Plans for the Subterranean Fishes of Western Ghats* and *Ecosystem Module – Connected Learning Initiative (CLIX)*. He is the co-principal investigator of 4 major research projects granted to NIAS during the last academic year. These projects focus on public perception of the risk from emerging technologies and its mitigation, human-wildlife conflict and traditional psychiatric practices. He published an edited volume titled *Self, Culture and Consciousness* (publisher Springer) with two other members of the Consciousness Studies Programme.

As part of the project Connected Learning Initiative (CLIX), Binoy and his team developed an ICT integrated module on ecology, in association with the Massachusetts Institute of Technology, USA and Tata Institute of Social Sciences, Mumbai. This module will be implemented in the schools of Chhattisgarh, Telangana, Rajasthan and Mizoram in the forthcoming academic year. His team trained more than 500 high school biology teachers from these four states to use modern tools of ecology education in the classroom. Binoy organized ScienceComm-2017, in association with Swissnex and Science et Cité, which was attended by the science communicators from both India and Switzerland.

Binoy was selected as Inter-Continental Academia Fellow by the University-Based Institutes for Advanced Study, Birmingham University UK and Nanyang Technological University, Singapore. He was elected as the Joint Secretary of the Ethological Society of India, last year. For further details see: <http://social-cognition.weebly.com/>

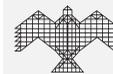
Lectures

Kin vs Familiar: Can Acquired Familiarity Influence Social Decision Making in Fish?, *International Seminar on Altruism, Wellbeing and Purpose Vantage Views on Planetary Life and Its Meaning from Biology, Indian Philosophy and Arts, METI International USA and NIAS, February 1, 2018.*

From Mazes to Robofish: Some 'Fishy' Facts About the Intelligence and Experience, *Workshop on Minds and Machines: Debates on the Nature of Intelligence and Experience, NIAS, December 27, 2017.*

Bridging Communication Gap in Science and Technology: Lessons from India, *Science Communication Dialogue for New India, Observer Research Foundation and Centre for Policy Studies, Indian Institute of Technology (IIT) Bombay, December 12, 2017.*

Animal cognition and Human-Induced Environmental Changes, *41st Annual Conference of the Ethological Society of India and National Conference on Behavioural*



Ecology: Responses to Changing Climate. Gujarat Institute of Desert Ecology (GUIDE), Bhuj, Gujarat, November 25, 2017.

Behaviour and Cognition-Inevitability in Conservation, National Seminar on Riverine Fisheries Conservation, Karnataka Fisheries Department, Madikeri, Kodagu, November 7, 2017.

Bridging Communication Gap in Science and Technology: Lessons from India, Springer-Nature and Council for Scientific and Industrial Research (CSIR), New Delhi, October 9, 2017.

Fish Behaviour and the Conservation of Endangered Species, Workshop on Freshwater Fish Conservation: Concepts, Techniques and Strategies. Student Conference on Conservation Sciences- 2016, Indian Institute of Science, Bengaluru, September 24, 2017.

Necessity of Science Communication, Siddhaganga College of Arts, Science and Commerce, Tumkur, August 22, 2017.

Joining Silk Threads to Catch the Lion – The Pain and Pleasures of Doing Science Communication in India, ScienceComm-2017, NIAS, June 30, 2017.

Behaviour and Cognition: Ignored but Indispensable Tool for Mahseer Conservation, Mahseer-2017, International Workshop on Mahseer Conservation. Kochi, April 6, 2017.

Outreach

Organised a workshop on Freshwater Fish Conservation: Concepts, Techniques and Strategies (With R Raghavan, KUFOS Kochi; N Dhanukar IISER Pune; U Katwate, BNHS Mumbai; S Philip, Nirmalagiri College, Kannur), Student Conference on Conservation Sciences-2016 at Indian Institute of Science, Bengaluru, September 21 to 24, 2017. This workshop was part of the Student Conference on Conservation Science 2017.

Organised ScienceComm-2017 with Swissnex India and Science et Cité Switzerland at NIAS, June 30, 2017.

Training Programmes for Biology Teachers

Government Model School, Karimnagar, Telangana, November 23 to 25 2017.

District Institute of Education and Training (DIET), Rangareddy, Telangana, October 20 to 22, 2017.

Jawahar Navodaya Vidhyalaya Raipur, Chhattisgarh, November 16, 2017.

Government Model School, Karimnagar, Telangana, November 6 to 8, 2017.

Government Model School, Karimnagar, Telangana, October 30 to November 1, 2017.

Government College of Education Hanamkonda, Warangal, Telangana, October 9 to 11, 2017.

District Institute of Education and Training (DIET), Warangal, Telangana, October 5 to 7, 2017.

National Institute of Technology, Aizawl, Mizoram, August 11, 2017.

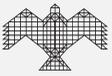
SP Group of Institutions, Sirohi Rajasthan, July 21, 2017.

Global Institute of Technology, Jaipur Rajasthan, July 20, 2017.

District Institute of Education and Training (DIET), Raipur, Chhattisgarh, July 16, 2017.

Awards, Memberships

Fellow, Intercontinental Academia (ICA), University-Based Institutes for Advanced Study, Birmingham University UK and Nanyang Technological University, Singapore.



Joint Secretary, Ethological Society of India.

Research Affiliate, Centre for the Study of Neuro-Economics, George Mason University, USA.

External Affiliate, Kranow Institute of Advanced Study, George Mason University, USA.

Member, IUCN Freshwater Specialist Group, South Asia.

Member, Freshwater Fish Conservation Network, South Asia.

Member, Ethological Society of India.



Samira Agnihotri

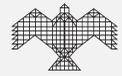
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Joined NIAS on: March 21, 2016

Major Research Contribution for the Academic Year

The phenomenon of avian vocal mimicry is well known since the 19th century but functions remain unknown for most species. The Greater-racket tailed drongo (*Dicrurus Paradiseus*) is a renowned mimic found across south Asian forests and is an ideal species to study avian vocal communication. My research is the first study ever on vocal mimicry by a bird species in the wild in India, and the only project so far to conduct controlled playback experiments to study bird communication in the wild in the country. Our project is also the first to document the unique nesting ecology of this species, and the first attempt to apply the principles of linguistics to bird communication in India. The interdisciplinary approaches that are outlined in this project for the study of vocal communication, by combining perspectives from linguistics and behavioural ecology have never been applied to the study of vocal mimicry in birds.



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Joined NIAS on: November 3, 2017

Major Research Contribution for the Academic Year

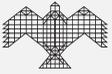
Facilitation and coordination of study on Drivers of Human-Primate Conflict. Specifically assisted gave a lecture at ATREE on December 18, 2017 in the preparation and execution of surveys that assessed people's perceptions of monkeys. Research fellows conducted eight hundred interviews and we are currently analyzing these data to better understand human-primate conflict in urban and rural areas in Kerala and Rajasthan. In January, our team was invited by the Himachal Pradesh Forestry Department to conduct research near the town of Una. Assisted the research proposal and presentation to the Forestry Department, which included field-based and captive experiments that reduce crop raiding using bioacoustics, repellents, deterrents, and conditioned taste aversion. Additionally, helped create and give presentations to educate adults and children about monkey behaviour. The goal is to decrease contact between humans and monkeys thereby, decreasing the risk of injury, disease transmission and conflict.

Lecture

Why on Earth? Soil Eating in Non-Human Primates, ATREE, Bengaluru, December 18, 2017.

Membership

Board Member, Baboon Matters, A non-profit conservation organization designed to protect and conserve chacma baboons.



COMPLEX SYSTEMS PROGRAMME

Introduction

The enormous variety of phenomena we see around us in nature and in daily life arises because of different kinds of nonlinearities occurring in the interactions between elements constituting various systems, producing complex behaviour. The Complex Systems Programme makes use of appropriate physical concepts and mathematical techniques to make useful predictions in diverse systems and to determine how one could achieve some control over their behaviour.

Complex system studies cover a wide range of subjects and are by nature, interdisciplinary, multidisciplinary, cross-disciplinary and trans-disciplinary. Examples range from geodynamics, ecological systems, social systems, econodynamics, study of structural stability of buildings, to other areas such as fluid dynamics, neuroscience, sensory systems, cellular processes, morphogenesis, electronic systems, climate dynamics, etc.

Since its inception in July 2012, the Programme has made leading and pioneering contributions to subjects as varied as climate impact on ecological systems and prediction of insect pest outbreak cycles, dynamics and acoustic cavitation of charged microbubbles, novel nonlinear oscillations in coupled Josephson junction models, coupled neuron dynamics, novel bursting mechanisms in neurons, secure encryption and transmission of messages using q -deformations, aspects of hearing research, studies on the role of fluctuations in ecological dynamics, etc.

Research Activities

The Programme receives research grants from Department of Science and Technology (DST), Government of India for two projects:

Nonlinear Oscillatory Phenomena in Sensory Systems (under the EMR scheme).

Modelling Nonlinear Complex Phenomena: From Climate Change, Environmental Effects to Interacting Species, which forms one component (Part-C) of the NIAS interdisciplinary project: Interdisciplinary Forays into Human-Environment Interactions: An Integrative Research Initiative in Energy, Ecology and Nonlinear Modelling (under the IRHPA scheme).

Work in the Complex Systems Programme has been ongoing on a variety of distinct problems, some of which are associated with these two DST-funded projects.

A significant achievement during the past year was the work (under DST(IRHPA) project) with Juergen Kurths, Potsdam Institute of Climate Impact Research, on insect infestation outbreaks and human intervention.

Man's economic activities cause changes in land use and forest cover. Livestock grazing affects the size of grasslands. Our mathematical model captures irregularities and variations in pest infestation outbreak cycles in forests because of such activities. The model also incorporates climatic and environmental changes and is the first of its kind in the literature. No other dynamical model captures all the features of insect pest outbreaks. Our predictions agree with observations.

In another significant contribution charge and pressure threshold calculations for an oscillating charged gas bubble in a liquid, driven by ultrasound, were reported. Gas bubbles in water carry a negative charge, motivating our assumption of a constant electric charge on the bubble for our calculations. These results are of practical value, with the regime of frequencies and forcing pressures spanning the range of values used in diagnostic medical devices and the conditions under which machinery operate in undersea environments. Pressure ranges of 1–7 atmospheres were considered – much higher and wider than what we had studied in our earlier work.

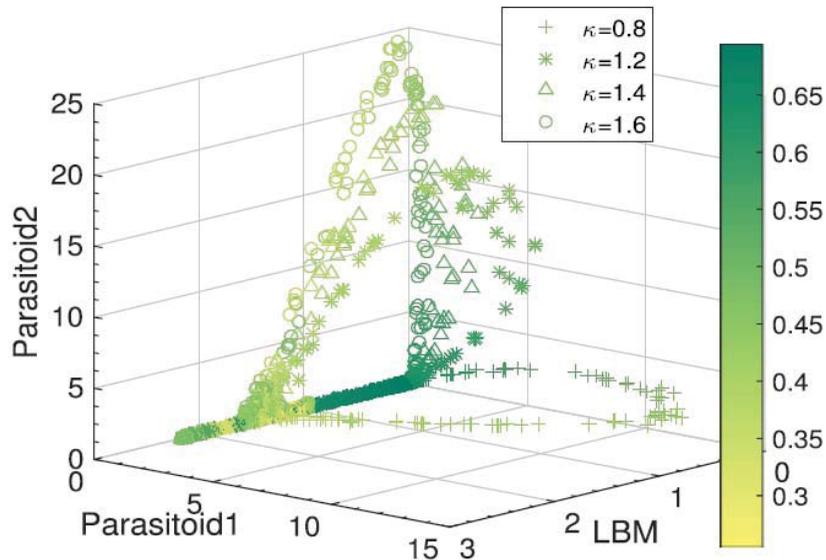
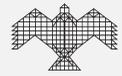


Figure 1. Four-dimensional phase space of the four interacting species generated for 4 different values of κ . The fourth variable z (the PQI) is shown in colour. Parameter values: $q_y = 1.13$, $q_z = 1.34$, $\alpha = 0.5$, $m = 13$, $\lambda = 8$, $s = 0.5$, $h = 0.5$, $c = 12$, $x_0 = 0.5$, $v_0 = 1.7$, $z_0 = 1$, $v_0 = 0.2$.

Other work done during the year includes work on single and coupled neuronal firing patterns (DST (EMR) project), explaining population explosion of jellyfish blooms around the world (NIAS-DST (IRHPA) project) and use of q -deformations in secure encryption and transmission of messages.

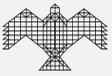
Outreach

Outreach activities of the Programme include collaborations in our work with colleagues outside IAS, including some abroad, lectures to university students and mentoring of students in summer research internships.

Janaki Balakrishnan delivered an invited lecture in the Physics Department, University of Nagpur to motivate students to work in frontier areas in physics.

An important activity of our Programme is carried out in Janaki Balakrishnan's capacity as a Guest Faculty of the Indian Institute of Science since 2015, for teaching the course "Introduction to dynamical systems theory" (MA 278) which has been conceived and designed by her, in the Maths Dept, IISc. Students from various Departments of IISc attend the course which is open to interested IAS students also.

Annually, the Programme mentors students from all over India for their summer research projects. The Programme has a considerable impact, attracting students from premier institutions to IAS to get trained in the techniques of Complex Systems research. Students this past year were from IISc, IISER Kolkata and SSN College of Engineering, Anna University, Chennai.



Members of the Complex Systems Programme



Janaki Balakrishnan, *Head*
Post-doctoral Associate: Sudharsana V Iyengar
Junior Research Fellow: Abhijeet Anand
Project Associate: Sriram Chandramouli (*upto January 26, 2018*)
Project Assistant: Sampada Kolhatkar

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Joined IAS on: July 10, 2012

Major Research Contribution for the Academic Year

Human interventions cause changes in land-use and forest cover. A major research contribution during the past year was our work explaining variations seen in occurrences of pest outbreak cycles due to such anthropogenic factors, while incorporating climate change effects. Our model, the first in the literature to include land-use change and other human interventions in a dynamical model, works wonderfully, agreeing with 310 years of observations. It is predictive in nature, allowing for advance planning for the occurrence of future pest outbreaks.

Lecture

Modelling Natural Systems, Department of Physics, University of Nagpur (Rashtrasant Tukadoji Maharaj Nagpur University), Nagpur, September 27, 2017.

Membership

Member, Selection Committee for faculty recruitment (Physics) at IIIT-Dharwad, May 10, 2017.

Other Contributions

Refereed manuscripts for the following journals:

CHAOS (Published by the American Institute of Physics).

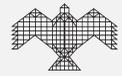
Physics of Fluids (Published by the American Institute of Physics).

Physical Review E (Published by the American Physical Society) – 2 papers.

Forest Ecology and Management (Published by Elsevier).

International Journal of Bifurcation and Chaos (Published by World Scientific, Singapore).

Iranian Journal of Science and Technology: Trans. of Mech. Engineering (Springer).



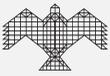
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Major Research Contribution for the Academic Year

Working in two projects since joining IAS. In the DST project titled Nonlinear Oscillatory Phenomena in Sensory Systems, she was involved in studies of coupled neurons. These were modelled mathematically through discrete neuron models, and an analysis of the parameter space was performed, investigating their firing patterns and frequencies. As part of the DST project titled Modelling Nonlinear Complex Phenomena: From Climate Change, Environmental Effects to Interacting Species, she was involved in modelling the effect of anthropogenic activities on ecological systems. This resulted in a publication (Janaki Balakrishnan, Sudharsana V Iyengar and Juergen Kurths, Missing Cycles: Effect of Climate Change on Population Dynamics, Indian Academy of Sciences Conference Series 1, 93-99, 2017, Pramana: Journal of Physics). Investigating the problem of persistent jellyfish blooms observed all over the world. Through construction of models, we are studying the effects of various factors on jellyfish population increase. Also, been involved in another work on studies on q-deformations and their application in secure information encryption and transfer.



ENERGY AND ENVIRONMENT RESEARCH PROGRAMME

Introduction

India's Power Sector is undergoing a multi-faceted transition in terms of more stringent environmental standards while faced with a growing demand due to the aspirations of Indians for a better standard of living and accelerating industrial growth in the country. India's current position is unique in this respect since the power sector must meet all these challenges while lowering the tariffs to enhance affordability without unduly increasing the subsidy burden of the utilities. Therefore, in accordance with JRD Tata's vision for NIAS to carry out in-depth, policy-relevant research from a multi-disciplinary perspective, the Energy and Environment Programme (EERP) at NIAS seeks to bring in the much-needed integration to Energy, Environment, Natural Resources, and Climate Change Studies at a time when India's Power Sector is undergoing a multi-faceted transition.

Significant Achievements

In line with the Founder's Mission the Energy and Environment Research Programme (EERP) has reoriented its focus on core issues related to Energy, Natural Resources and Environment, primarily through funded projects. The funded projects undertaken by EERP in FY 18 include Government of India funded projects related to: Sustainability and Governance of coal mining funded by the Science and Engineering Research Board, Department of Science and Technology (DST); Nuclear Risk Perception funded by Board of Research in Nuclear Sciences; Science Communication and Annual School on Grassroots Innovations funded by National Council for Science and Technology Communication, DST; Facilitating the target of 100 GW Solar by 2022 by Ministry of New and Renewable Energy. In addition, EERP has also commenced work on a project related to the Development of a Monitoring Framework for Sustainable Tourism Development, funded by Government of Karnataka. In addition to these six projects, on March 22, 2018, Ministry of Earth Sciences (MOES) granted in-principle approval for the award of a 5-year project to EERP "To Understand the Interaction between Components of Earth and Human Systems at Various Spatial and Temporal Scales."

R Srikanth and Hippu SK Nathan have submitted two more multi-year research proposals, one each to DST and TCS. EERP's project proposal submitted to DST to develop an optimal energy mix for each State in the Southern Region has already been recommended by DST's Expert Committee and sanction formalities are under process. The proposal submitted by them to TCS in relation to Karnataka Mineral Policy is under TCS's consideration.





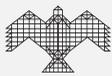
Major Events

NIAS together with Ministry of New and Renewable Energy, The Energy Research Institute, and the Indian National Academy of Engineering organized a one-day Workshop on, “Enabling 100 GW Solar Power Capacity by 2022,” on November 9, 2017 at the India International Centre Annexe, New Delhi. This workshop aimed at bringing representatives of key stakeholders – government, project developers, financial experts, academicians and researchers across the table for focused brainstorming sessions on selected topics critical to scale up the ongoing Solar Mission so as to achieve the target of 100 GW by 2022. This is the second workshop under the project commissioned by MNRE. This workshop was organized by Hippy SK Nathan.

Hippy SK Nathan also organised a nine-day Annual School on Grassroots Innovations, a first of its kind in the country, at NIAS from January 10 to 18, 2018. NIAS collaborated with three other institutes: National Innovation Foundation – India, Trans Disciplinary University, and Mahatma Gandhi Institute of Rural Energy and Development, Bengaluru to undertake this programme which brought together scientists, students, innovators, and industry representatives to deliberate on innovative solutions to local problems. The theme of the first edition of this Annual School was Energy and Water. There were 42 participants from diverse backgrounds. The components of the workshop were: lectures and demonstrations, participants’ work on real life problems, and field visits to National Aeronautics Laboratories, Mahatma Gandhi Institute of Rural Energy and Development energy labs and park, the University of Agricultural Science biogas plant, and the Trans Disciplinary University campus.

Doctoral Programme

R Srikanth and Hippy SK Nathan are guiding one PhD student each as a part of the DST Science and Engineering Research Board Project. Both students have cleared the NIAS qualifying exams and have submitted their PhD research proposals to the Manipal Academy of Higher Education in record time. Their research is related to pressing policy issues facing India in Energy and Environment. Srikanth and Hippy SK Nathan also developed and taught courses on Energy and Environment policy and Measuring Development, respectively, for the first time at NIAS which have been taken by PhD students of Indian Institute of Science as well as NIAS.



Members of the Energy and Environment Research Programme



R Srikanth, *Head*
M Sai Baba
Sheela K Ramasesha
TS Gopi Rethinaraj
Shoibal Chakravarty (*upto June 30, 2017*)
Hippu Salk Kristle Nathan
Doctoral Students: Sashi Kiran C, Vijay CS, Jahnavi Sharma, Sarvajeet Kumar Sinha

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Joined NIAS on: August 22, 2016

Major Research Contributions for the Academic Year

Srikanth has summarized his major research contribution in: four peer-reviewed journals articles published in Current Science as well as in the journal of the Academy of Social Sciences in UK, as well as in the policy-oriented recommendations that he has provided to the Government of India in diverse areas of, Electricity Policy, Mineral Policy, Steel Policy, and Electric Mobility.

Lectures

Energy Policy, Electric Mobility, and Electricity Policy, Deendayal Petroleum University, Gandhinagar, March 23, 2018.

Energy Policy, Electric Mobility, and Electricity Policy, India Energy Forum, Delhi, March 16, 2018.

Energy Policy, Electric Mobility, and Electricity Policy, SIES College, Mumbai, February 23, 2018.

Environmental Governance in Mining Industry, Training Programme for Pollution Control Board Officials, National Law School, Bengaluru, February 7, 2018.

Different Aspects of Energy and Environment, Indian Institute of Science, Bengaluru, January 10, 2018.

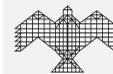
Different Aspects of Energy and Environment, Indian Institute of Science, Bengaluru, November 17, 2017.

Training Course

Coordinated (along with D Suba Chandran) the 32nd NIAS Annual Programme for Senior Executives on From Excellence to Eminence: Facilitating Thought Leadership – Be an Impact Leader, February 5 to 10, 2018. The 32nd edition of NIAS's flagship Programme attracted a record number of 31 Senior Executives who have universally expressed their satisfaction with the Programme.

Honour

Nominated as a Member of Technical Advisory Committee for "A2K+ Studies" Programme of Department of Scientific and Industrial Research, Government of India for a 3-year term (2018 to 2020).



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Joined NIAS on: October 6, 2017

Major Research Contribution for the Academic Year

The focus of the research has been related to Science Communication. Pursuing the project titled Managing Public Perceptions and Public Acceptances of Public Risks Associated with New and Emerging Technologies Through Science and Technology Communications, funded by DST. "Artificial Intelligence" and "Effect of Radiation Exposure with Specific Emphasis on Low Level Radiation" have been identified as the topics to be taken up for the study. The methodology being adopted is to invite experts in the field to discuss the status of the technology and public perception where it stands and what are the effective methods to be adopted for bringing awareness to the public. The meetings would be held in the month of April and May 2018 and would provide a platform to discuss the status of the application of AI, the progress it is likely to make in the immediate future and the implications it is likely to have on various strata of the society.

Lectures

Characterization of Scientific Inquiry: Axioms, Hypotheses, Theory, Predictions, Repeatability, Observability and Verifiability, Lead Talk in the Technical Session: Exploring Consciousness: Methodological Framework, National Workshop on Mind, Consciousness and Beyond: Building on Vedantic Metaphysics, NISTADS, New Delhi, March 6, 2018.

Team Building for Innovation with implication for Science, Policy and General Management, NIAS-DST Training Programme on Science Policy and General Management, February 26, 2018.

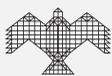
Towards a Comprehensive Indian STI Ecosystem, CSIR-NISCAIR-DST National Workshop on Science, Technology and Innovation Policy: Optimizing Communication and Information Research, NASC Complex, Pusa, New Delhi, January 25, 2018.

Science Administration and Management, NIAS-DST Training Programme on Policy for Science and Science for Policies, January 3, 2018.

Art of Science Communication, NIAS-DST Training Programme on Multi-Disciplinary Perspective on Science, Technology and Society, December 18, 2017.

Emerging Worldview on India's Scientific Wisdom, Panel Discussion, 17th Indian Science Communication Congress (ISCC 2017), Communicating India's Scientific Wisdom: Changing Paradigms organised by NISCAIR, IIMC, ISWA, VIBHA, SIS and ISCOS at Indian Institute of Mass Communication Society, New Delhi, December 22, 2017.

Academic and Research Libraries-Indian Vision 2022, Panel Discussion, International Conference on Knowledge Organisation, Library and Information Management, Indian Institute of Technology Madras, Chennai, October 25, 2017.



Science Writing Workshop for PhD Scholars, Round Table Meet on Mass Communication, 3rd India International Science Festival 2017, NIOT, Chennai, October 14, 2017.

Awards, Memberships

Member of the Editorial Committee of the International Journal of Nuclear Knowledge Management, Inderscience Publication.

Member, Board of Studies of School in Physical and Nuclear Chemistry and Chemical Oceanography, Andhra University.

Served as Chairman of the Expert Committee constituted by Secretary, DST to review the project entitled Gamma Radiation Plant for Medical Device reprocessing in Hospitals.



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Joined NIAS on: September 28, 2017

Major Research Contribution for the Academic Year

Working on formulating new projects in Renewable Energy Technologies for the group. Developed collaborations with other organizations in the country.

Lectures

Nano Structured Solar Cells, Conference on Advances in the Semiconductor Materials and Device Technologies (NCASMDT), Jain University, Bengaluru, February 13, 2018.

Harvesting Renewable Energies, Workshop on Science of Molecular Materials and Energy Systems, jointly organized by IASc, INSA and NASc at St Xavier's College, Ranchi, February 1, 2018.

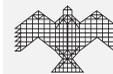
Solar: A Solution to India's Power Deficit?, Birla Institute of Technology, Mesra Campus, January 31, 2018.

Harvesting Solar Energy, Workshop on Science of Molecular Materials and Energy Systems, jointly organised by IASc, INSA and NASc at St Xaviers College, Ranchi, January 30, 2018.

Science for Progress in India: Focus on Sustainability, NIAS-DST Training Programme for Women Scientists on Science for Progress in India: Focus on Sustainability, January 22, 2018.

Training Course

Coordinated the fifteenth Annual NIAS-DST Training Programme on Multidisciplinary Perspectives on Science, Technology and Society, December 11 to 22, 2017.



TS Gopi Rethinaraj

Associate Professor
School of Natural
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Joined NIAS on: June 2, 2014

Major Research Contribution for the Academic Year

Contributed to the development of the Nuclear Fuel Cycle Simulation System (NFCSS) for the International Atomic Energy Agency (IAEA). NFCSS is a scenario-based computer simulation tool implemented in a web-based platform for various nuclear fuel cycle options and choice of reactors, which enables users to carry out calculations using a given set of data. NFCSS can be used for illustrative scenario planning in support of policy and for educational and research purposes. NFCSS is very efficient and accurate in answering questions such as: the nuclear mineral resources and technical infrastructure needed at each stage of the front-end of the nuclear fuel cycle; the amounts of used fuel, actinide nuclides and high-level waste generated for a given reactor fleet size and the impact of introducing recycling of used fuel on mineral resource savings and waste minimization. On a specific request from Department of Science and Technology, Government of India, Gopi Rethinaraj and R Srikanth prepared policy briefings and inputs for DST during the COP23 Climate Change Conference in Bonn, Germany.

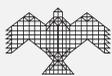
Lectures

Radiation Protection Standards and Public Health: Risk Assessment and Regulation under Scientific Uncertainty, Azim Premji University, Bengaluru, January 11, 2018.

Nuclear Energy and Societal Responses, NIAS-DST Programme on Multidisciplinary Perspectives in Science, Technology and Society, December 15, 2017.

Membership

Member of the National Steering Committee for the Renewable Sector under the project 'Technology Need Assessment' sponsored by the Ministry of Environment, Forests, and Climate Change toward the Third National Communication to UNFCCC.



Hippy Salk Kristle Nathan

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Joined NIAS on: February 24, 2012

Major Research Contribution for the Academic Year

Completed Postdoc Fellowship in Quality and Economics at London School of Economics and Political Science (LSE), during which Hippy Salk Kristle Nathan researched on the topic of energy poverty and presented the research outcome at India Observatory, LSE and at Center of Development Studies, University of Cambridge. Also, during the Fellowship tenure, he presented his research on new method of measuring human development index (HDI) at University of Bath, insights on research on rural lighting through Solar PV at University of Exeter, and mortality-morbidity gap in Indian states at University of Northampton.

Other major contribution of Hippy Salk Kristle Nathan this year is the publication of two co-authored research papers – A MANUSH or HUMANS Characterization of the Human Development Index, in *Journal of Human Development and Capabilities* – this paper is expected to bring in a change in the measure of HDI; and “Towards sustainable development: planning surface coal mine closures in India” in *Contemporary Social Science*, Academy of Social Sciences.

Lectures

A Measure of Children’s Health Using Distance Method: Application to Different Regional and Socio Economic Groups in Odisha, Centre for the Study of Contemporary Societies, National Conference on Transforming Odisha: Policies, Institutions and Innovations held at KIIT Convention Center, Bhubaneswar, March 4, 2018.

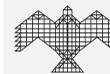
Sustainability Assessment, Capacity Building Workshop of PCB Officials on Environmental Legislations: Interpretation and Enforcement, National Law School of India University, Bengaluru, February 9, 2018.

Energy Access and Energy Poverty, NIAS-DST Training Programme on Multi-Disciplinary Perspective on Science Technology and Society, December 12, 2017.

Simple Yet Powerful Ideas for India’s Power Sector, Department of Electrical and Electronics Engineering, PSCMR College of Engineering Technology, Vijayawada, December 8, 2017.

Measuring Energy Poverty and Promoting Solar PV Electricity in India, Department of Electrical and Electronics Engineering, PVP Siddhartha Institute of Technology, Vijayawada, December 8, 2017.

Innovative Ideas on Energy, to the students at Jammu University during the National Conference on Climate Change and Sustainable Development: Perspectives and Transformational Challenges organized jointly by Department of Law, University



of Jammu and CEERA, National Law School of India University, Bengaluru, November 8, 2017.

Substitutes and Complements – The Curious Case of Poverty Measure, Association of Indian Economic and Financial Studies, 22nd Biennial Conference 2017, Nabakrushna Choudhury Centre for Development Studies, Bhubaneswar, August 1, 2017.

A New PR System of Election: Proposal for Political Justice in India, Quest for Equity: Reclaiming Social Justice; Revisiting Ambedkar, Dr BR Ambedkar International Conference, University of Agricultural Sciences, Bengaluru, July 22, 2017.

Sustainable Resource Use and Human Development: Measuring and Achieving the Goals, NIAS Training Programme for Fijian Officials, July 19, 2017.

Rural Lighting Through Solar PV – A Supply-side Analysis of Home Lighting Systems in Karnataka, India, Environment and Sustainability Institute, University of Exeter, Exeter, UK, May 19, 2017. <http://www.exeter.ac.uk/esi/events/ourseminars/hippusalkkristlenathan/>

On Human Development Index (HDI) – The Old, The New, and The Elegant, Department of Economics and Department of Social and Policy Science, University of Bath, Bath, UK, May 17, 2017.

Dying in Silence: A Study on Mortality-Morbidity Gap in India, (a paper with Dr Tulika Tripathi), Faculty of Education and Humanities, University of Northampton, Northampton, UK, May 15, 2017.

Energy Poverty: Concepts, Measurement and Impacts on Quality of Life, India Observatory, May 10, 2017. http://sticerd.lse.ac.uk/_new/events/IO_Events.asp

Energy Access and Energy Poverty: Some Concepts and Insights on Measurement, Center of Development Studies, University of Cambridge, UK, May 2, 2017.

Correcting for ‘Missing Women’ in Gender Development Indicators: Responsible Application of Simple Mathematics in Development Studies, LSME International Conference on Responsible Research and Transformation in Education 2017, Grange City Hotel, London, April 5, 2017.

Training Course

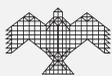
Co-coordinated the fifteenth Annual NIAS-DST Training Programme on Multidisciplinary Perspectives on Science, Technology and Society, December 11 to 22, 2017.

Academic Courses

Offered a course on Measuring Development. This course deals with both the conceptual and practical issues in measuring development. It examines different measures of development: indicators of progress, poverty, inequality, inclusion, quality of life, human development, among others. It discusses axiomatic treatment of different indices, their policy implications, and further research towards measures to achieve development with a human face in an environmentally benign manner. This course was taken by 11 PhD students (eight NIAS and three Indian Institute of Science of which nine credited the course and two audited the same).

Along with R Srikanth, Hippu SK Nathan offered a course on Energy, Environment, and Natural Resources – Policies and Practices in the Indian Context. This course focusses on key statutes, policies, and guidelines, policies in the Energy and Minerals sectors in India. With respect to these specific statutes/policies/guidelines, this course appraises the role of different stakeholders in their formulation, approval, and implementation. It draws comparisons to policies and best practices elsewhere. This course was taken by three PhD students (two NIAS and one Indian Institute of Science).

Hippu SK Nathan took a part course (i.e. four lectures on the sub-topics ‘Frameworks for Measuring Sustainability’ and ‘Indicators of sustainability’) entitled – Managing Technology for Sustainability at Department of Management Studies, Indian Institute of Science in February-March 2018. This is the seventh year Hippu SK



Nathan took this part course. He started taking these four lectures since 2012. The course is anchored by Dr P Balachandra, Department of Management Studies, Indian Institute of Science. This course was taken by seven students (three PhD students from Department of Management Studies, Indian Institute of Science and one from NIAS; two masters students from Department of Management Studies, Indian Institute of Science, and one from Electrical Engineering, Indian Institute of Science).

Further, Hippu SK Nathan took a part course 'Energy Systems and Sustainability' at Center for Sustainable Technologies, Department of Management Studies, Indian Institute of Science in August-December 2017. The course is anchored by Prof S Dasappa and Dr P Balachandra. The topics covered by Nathan in the course are – Energy Access and Energy Poverty: Some Concepts and Insights on Measurement; Missing Links in Solar Microgrid Systems; and NIAS Rooftop System as a Case Study. The course this year was taken by 60 students of which 10 students are of PhD level, three are Masters students and rest 47 are students are of under graduate level.

Awards, Memberships

Received the *NASI Scopus Young Scientist Award – 2017* in Social Sciences by Elsevier and National Academy of Science India (NASI) conferred on October 31, 2017 at New Delhi). The award is given on the basis of overall quality and number of publications, nature and uniqueness of research, outcomes of research, impact on society, and vision of the researcher. web: <http://southasia.elsevier.com/ElsevierDNN/ScopusAward2017/tabid/3051/Default.aspx>

Coordinator for South Asia region group of Human Development and Capability Association.

Other Contributions

Organizer and main convener of two multi-institute workshops.

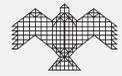
Annual School on Grassroots Innovations (ASGI -2018): Collaborated with National Innovation Foundation – India, Gandhinagar, Trans Disciplinary University, Bengaluru, and Mahatma Gandhi Institute of Rural Energy and Development, Bengaluru. This NIAS-NIF-TDU-MGIREED school was first of its kind in India and was held with support of Department of Science and Technology, Government of India, at NIAS, during January 10 to 18, 2018. This brought together scientists, students, innovators, and industry representatives to deliberate on innovative solutions to local problems. The theme of the first edition of this Annual School was Energy and Water. There were 42 participants from diverse backgrounds: researchers, undergraduate and graduate students, social enterprisers, start-up enthusiasts, NGOs personnel, etc. working in different parts of India and keen on gaining skills related to Grassroots Innovations.

Enabling 100 GW Solar Power Capacity by 2022: NIAS together with Ministry of New and Renewable Energy, The Energy Research Institute, and the Indian National Academy of Engineering, organized this one-day workshop on November 9, 2017 at the India International Center Annexe, New Delhi. This workshop aimed at bringing representatives of key stakeholders—government, project developers, financial experts, academicians and researchers across the table for focused brainstorming sessions on selected topics critical to scale up the ongoing Solar Mission to achieve the target of 100 GW by 2022. This workshop is the second workshop under the Project entitled "Facilitating Target of 100 GW Solar by 2022: An inclusive analysis towards achievement", which was awarded to NIAS by MNRE on September 26, 2016.

Was on the board of the Diagnostic Panel of Startup Oasis, that evaluated two start-ups: School Connect and Best of the Bump, at Startup Oasis Head Office, March 22, 2018.

Was a panel speaker at the '3rd Idea Conclave for Better Bengaluru' on Challenges, Gaps, and Role of Active Citizen n Sustainable Transformation of Bengaluru held at Satish Dhawan Auditorium, Indian Institute of Science on October 14, 2017.

Was a roundtable discussant at Vision 2025: Invitation for Sector Consultation Workshop on (i) Urban Development, Transport and Renewable Energy Sector on September 27, 2017 (ii) Urban Infrastructure and Energy Sector on September 22, 2017 at JW Marriott Hotel, UB City, Bengaluru.



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Joined NIAS on: September 15, 2017

Major Research Contributions for the Academic Year

Passionate yet scientific interests at NIAS are to intrigue the intellectual realms of advanced manufacturing practices from inclusive facets, with special focus on compassion and responsible utilization of resources to get sustainable dividends implicitly, ingenious derivatives for subsistence and contribute real incentives to the world.

Outreach

Got qualified as Master Trainer for ZED Scheme, Manufacturing MSMEs by Quality Council of India, Ministry of MSME, Government of India, December 2017.

Memberships

Fellow, International Society of Change Leaders, UK.

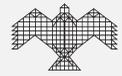
Member, International Association of Advanced Materials, Sweden.

Editorial Board Member, Journal of Engineering Design and Technology, Emerald Publishing, UK.

SCHOOL OF SOCIAL SCIENCES

Programmes

- Education
- NIAS-UNDP Policy Research Initiative on Inequality and Human Development
- RBI Programme on Inter-Disciplinary Approaches to Economic Issues
- Urban and Mobility Studies



HIGHLIGHTS

Education Programme

This year has been exciting and eventful with the National Gifted Education Programme being recognized at the national and international levels. There has been interesting collaboration with the World Council for the Gifted and Talented USA. Two presentations of the research work on Gifted and Talented have been made in two different international conferences and one national conference. They are, the 22 Biennial World Conference on Gifted and talented Children organized in Sydney in July 2017 and III. International Scientific Conference on Talent Education at Ljubljana, Slovenia, October 26 to 28, 2017. The Programme has forged collaboration with the University of Groningen on Vocational and Higher Education in India. In a collaborative workshop on October 20, 2017 at the University of Groningen, presented the current research work and shared the research agenda on vocational and higher education in India.

NIAS-UNDP Policy Research Initiative on Inequality and Human Development

The main highlight of the Programme during the year was a demonstration of the value of linking the representative results of a large survey with the insights gained from specific village studies to the development of a meaningful understanding of inequality. This resulted in four working papers: 'Normative and Descriptive Inequality' by Narendar Pani, 'Land, Caste and Power' by Jiaul Haque, 'Stepping into Another Woman's Shoes: Substitute Women in Families of Female Emigrant Workers' by Anamika Ajay, and 'Durkheimian Insights into Farmers' Suicides in India' by Debosree Banerjee and Viswesh Rammohan.

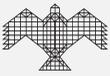
RBI Programme on Inter-Disciplinary Approaches to Economic Issues

The project on Financial Inclusion has provided insights into the working of both formal and informal financial mechanisms. The most significant finding has been the simultaneous existence of the formal and informal credit markets, that is the rural credit market exhibits duality and not segmentations. The presence of arbitrage between the formal and informal credit systems has been another highlight of the study.

Urban and Mobility Studies Programme

The Programme initiated a popular outreach series called 'City at Its Limits' this year. Lectures and film screenings attracted large audiences and prompted spirited debate and discussion.

Carol Upadhyia published research from the ongoing Amravati research project in peer-reviewed books and journals.



EDUCATION PROGRAMME

Introduction

The Education Programme focused on “Reaching the Unreached” is built on three verticals- Platform for Policy, Curriculum Initiatives, and Research in Critical Areas. The Programme is active in the areas of education research, teaching, advocacy and outreach. Though independent research was undertaken by a number of faculties since 1998, the Programme was formalised at NIAS in 2004. Over the years, the work has found audience in diverse forums including academic journals, national and international conferences, teach-ins, government committee experts, governing boards of educational institutions among others. In addition to the scholars from around the world, the programme has actively collaborated with students, teachers, administrators, government officials, policy makers, and civil society organisations.

Research Activities

Anitha Kurup was part of the National core team constituted by Tata Trust to prepare the four- year integrated pre-service teacher education curriculum to be submitted to the National Council of Teacher Education, India. The highlight was that gifted and talented education was integrated into the curriculum as part of inclusive education. Separate courses for the gifted and talented was included in the special education track of the pre-service teacher education programme.

In collaboration with the Education Department, Government of Karnataka, the research team of NIAS Gifted Education Programme trained 913 teachers to identify the gifted children in the district of Mysore and Chamarajanagar which also has a significant proportion of tribal population. A total of 845 nominations were received. Through a rigorous screening process, 210 students were shortlisted, and the team visited these children in their respective communities to complete the detailed profiling of each one of them.

Collaboration with Parikrma

To expand the programme of gifted and talented education among the urban poor, we have initiated collaboration with Parikrma which works with the urban poor in Bengaluru city. A total of 200 teachers were trained in the first phase of the collaboration.

To provide continuous mentoring support, NIAS Gifted Education Programme, launched 3 Advanced Learning Centres (ALCs) – ALC, Bengaluru South; ALC, Bengaluru North; and ALC, Hyderabad. It is for the first time, that the ALCs are launched in India. These centres hold weekend classes for advanced learning for a duration of 4 to 5 hours. Till date 14 sessions have been organised and of five hours duration.

The 2nd NIAS-MAIYA PRODIGY Award function was organised on January 4, 2018. This year 15 students were awarded a fellowship of Rs.50,000/- each and life-long mentorship. This year the event was inaugurated by Prof Ananth Agarwal, CEO of Edx.

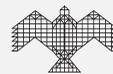
Shivali Tukdeo continued to build on her research plans over the years that focus on social exclusion and education. There have



Meeting with District Education Officials in Chamarajanagar District to initiate Teacher Training Workshops in the District.



Case Profiling as part of the Identification Process in NIAS Gifted Education Programme at Chamarajanagar.



been a number of additions to this agenda during last year. She completed a manuscript on cultural politics of education policy making in India; initiated a small research on teacher's assessment and completed the report and initiated a collaborative research on education and the urban. Along with the doctoral students of the education programme, the team put together a panel for the annual Comparative and International Education Society (CIES) conference and presented their work in Mexico City, March 25 to 29, 2018.

Anitha Kurup and Leya Mathew and her team conducted a national study of women in the STEM discipline focussing on factors that impact leadership among women in the STEM disciplines. A total of 120 women from different S&T organisations from across the country were interviewed as part of the study. The data is being analyzed.

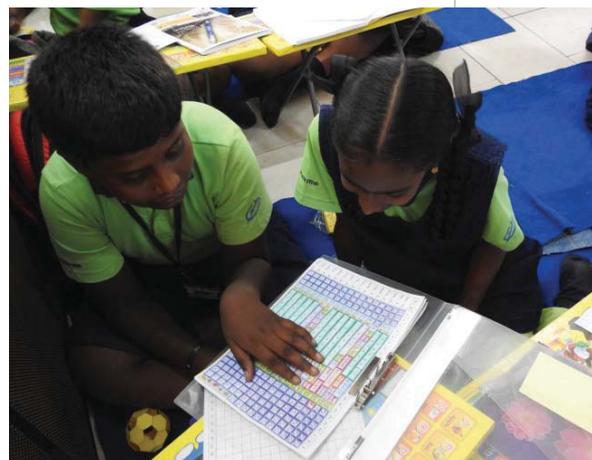
For the first time in the country, NIAS in collaboration with the labour department, government of Karnataka, has conducted a status study of vocational and higher education in Karnataka focusing on the skill gaps and aspirations of the ITI and diploma holders in the manufacturing sector. The data is being analyzed. The study is led by Anitha Kurup along with Jeebanlatha Salam. We have an MOU signed between University of Groningen, Netherlands and NIAS to undertake comparative research study between the two countries.

Outreach Activities

NIAS Gifted Education Programme organized its 5th Summer workshop on Exploring Excellence with Nature, Science and Art, in collaboration with Agastya International Foundation from May 9 to 11, 2017.



NIAS-MAIYA PRODIGY Award Function, January 4, 2018.



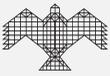
Workshop as part of the Identification Process of Gifted Children from Parikrma.



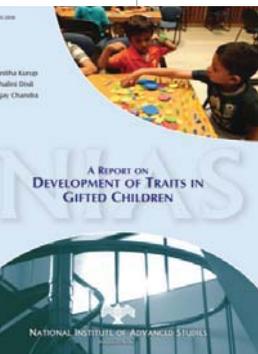
Teacher Training Workshop for Parikrma.



Summer Workshop for students of ALCs at NIAS, January 2018.



Talent Search Workshop, May 19 and 20, 2017.



Ashram School Palghar

Teacher Training Workshop: On September 14, 2017, NIAS conducted a workshop with the aim of facilitating the teachers for the three Advanced Learning Centres; two teachers attended from Silver Oaks, Bengaluru, two from Vidyashilp Academy, Bengaluru and one from Silver Oaks, Hyderabad.

Workshop for ALC Children: On January 26, 2018, NIAS conducted a one-day workshop for the students of Advance Learning Centres.

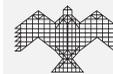
Interactive session with parents of Advance Learning Centers: On January 26, 2018, along with the workshop for students there was an interaction held with the parents of ALC centres, to know their feedback and evaluate the effectiveness of ALC centres.

A two-day mentoring workshop held on May 19 and 20, 2017 at NIAS for children selected on the NIAS Maiya Prodigy Fellowship.

Shivali Tukdeo is part of the team of mentors associated with in-service teacher education programme at Tata Institute of Social Sciences (TISS), organised through R.V. Educational Consortia.

NIAS Gifted education team held a panel discussion on Education of Gifted Children in India, in the 8th Annual Conference of Comparative Education Society of India (CESI), held during November 16 to 18, 2017 in Jammu. Anitha Kurup, Shalini Dixit and Surbhi Arora were speakers.

Shivali Tukdeo worked on four research projects at different stages. A number of meetings and consultative workshops were part of the projects. In April 2017, NIAS co-organised a consultative meeting on Ashram School *Sanhita* (book of guidelines) in Maharashtra in collaboration with the RTE Forum in Aurangabad. In May 2017, the Education Programme organised a workshop on teachers' work and assessment norms. In August 2018 the NIAS team organised a consultative workshop with teachers of Ashram schools that was held at Gokhale Institute of Politics and Economics (GIPE), Pune. Critical scholar and educator Prof Antonia Darder, Lyola Marymount University, California, United States visited NIAS in the month of December 2017 and she delivered a public lecture entitled *Schooling the Flesh: The Body, Pedagogy and Inequality* on December 5, 2017.



Members of the Education Programme



Anitha Kurup, *Head*
Shivali Tukdeo
Shalini Dixit
Jeebanlata Salam
Malavika Kapur
Post-doctoral Associate: Leya Mathew
Research Associates: Ajay Chandra, Ashwini K, Manjula A, Tanya Singh,
Shivangi Singh, Mrinmayee Mandal, Surbhi Arora, Samhita K
Doctoral Students: Chetan B Singai, Anupama Mahajan, Savitha Suresh Babu,
Subroto Dey

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Joined NIAS on: January 2, 1995

Major Research Contribution for the Academic Year

The National Programme on Education of the Gifted and Talented has for the first time developed multiple protocols for identification of children between three and eighteen years, for mainstream urban children; children from marginalized communities and children in rural areas. The research work over the past few years has been recognised nationally, and for the first time Education for gifted and talented has been included as part of the proposed four year integrated pre-service training curriculum in the special education stream. This was possible since I was part of the National core team to prepare this four-year integrated pre-service training curriculum.

The research study on the skill gaps and potential for career growth in vocational education in the manufacturing sector in Karnataka was an important study undertaken in collaboration with the Karnataka government and a sample of the public and private industry in Karnataka.

Awards, Memberships

Member, Academic Council, Christ University, 2014 onwards.

Member, Academic Council, Bhagat Phool Singh Mahila Vishwavidyalaya, Sonpet, Haryana, 2014 onwards.

Invited as an expert to write a chapter on Higher Education for the Karnataka State Human Development Report by the Department of Planning, Government of Karnataka and UNDP.

Member, Ethics Committee, Centre for Brain Research, Indian Institute of Science, Bengaluru.

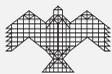
Lectures

Women, Science and Workspace, Seminar on Pressing for Progress: A Discussion Meeting on the Gender Gap in Physics, ICTS, Bengaluru, March 22, 2018.

Potential for Collaboration with the NIAS Gifted Education Programme. Reaching out to the Urban Poor in Bengaluru, Parikrma, Sahakar Nagar, Bengaluru, March 17, 2018.

Higher Education: Beyond Borders, International Festival of Books and Authors, Bolgatti Palace, Kochi, Kerala, March 8, 2018.

Keynote Address in the Seminar on Nurturing Talents of Highly Able, Jyana Probhodhini, Pune, February 17, 2018.



PhDs in India: Quantity Vs Quality Debate, International Seminar Quality and Excellence in Higher Education at India Habitat Centre, organised by NIEPA, New Delhi and the British Council of India, January 23, 2017.

Mapping Identification Protocols for Gifted and Talented in Multi-Cultural Settings: Lessons from India, CESI Conference, Jammu University, November 14, 2017.

Mapping Identification Protocols in a Multi-Cultural Settings: Lessons from India, International Scientific Conference on Talent Education, Ljubljana, Slovenia, October 27, 2017.

Vocational and Higher Education: Research Agenda, University of Groningen, Netherlands, October 20, 2017.

Preliminary findings of the Survey of Summer Research Fellowship Programme (1997-2016), Indian Academy of Science, Bengaluru, June 29, 2017.

Multiple Model for Identifying and Mentoring Gifted Children in India, 22nd Biennial World Conference on Gifted and Talented Children, UNSW, Sydney, July 23, 2017.

Proposal for Teacher Training Programme for Gifted Children in Classroom, to Secretary, MHRD, Government of India, June 26, 2017.



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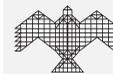
Major Research Contribution for the Academic Year

Worked on four distinct research areas namely Social Exclusion and Education; In-Service Teachers' Assessment; Youth, Mobility and Education; Preschool Educational Economy. While some of the areas have been a continuation of our previous work, others, especially the work on teacher education and preschool have opened up new avenues for research that Shivali Tukdeo hopes to take forward in the years to come. As part of the work on social exclusion and education, the team was able to complete the field component and are now engaged in analysis and writing. Presentation of research at the annual Comparative and International Education Society (CIES) conference has also been a highlight for the faculty and students of Education Programme at NIAS.

Lectures

The Politics of Education Policy in India. Keynote Talk, South Asia SIG meeting, Comparative and International Education Society (CIES) Annual Conference. Mexico City, March 28, 2018.

How Education for All Became Indian: Situating Global Policy Knowledge, Mediation and Circulation, Panel Presentation at Comparative and International Education Society (CIES) Annual Conference, Mexico City, March 27, 2018.



Revisiting Ashram School Sanhita, organized by RTE Forum, Pune. December 6, 2017.

Training Course

Coordinated NIAS-DST Training Programme for Women Scientists on Science for Progress in India: Focus on Sustainability, January 22 to 27, 2018.



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Joined NIAS on: December 21, 2015

Major Research Contribution for the Academic Year

To foster the giftedness and talent in diverse context the gifted education team at NIAS has initiated selecting and mentoring gifted and talented children from rural and tribal areas of Karnataka. The team has engaged in cultural appropriation of the tools for and identification protocols after engaging in a national level consultation, which was overseen and coordinated by me. The team worked in the two districts namely, Mysore and Chamrajanagar. Two taluks each from each of these districts have been chosen for intervention. After training 913 teachers in Mysore and Chamrajanagar district, got 845 nominations of the gifted students. Amongst the nominated students the NIAS Gifted Education team analyzed to find traces of giftedness. Thus, from the 845 nominations, shortlisted 172 children for further detailed case study and profiling. The team is working on proving academic enrichment support to these students through workshops and mentorship. Using this model, the team generated interesting set of data and analyzing it.

Lectures

Self-development of Students, as part of Capacity Building of Teachers in Guidance Working in SC Concentrated Areas of Karnataka, DIET, Bengaluru Urban, November 21, 2017.

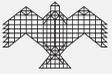
Reception of Multiple Narrations and Identity: Teaching of History in India, paper presented in Annual conference of Comparative Education Society in India (CESI), Jammu University, November 17, 2017.

The Cultural Rootedness of Giftedness, paper presented in Annual Conference of Comparative Education Society in India, held at Jammu University, November 16, 2017.

Academic Courses

Offered an elective optional course on Social Psychology as part of foundation course. The broad purpose of the course was to give an introduction to the ideas raised and questions asked in social psychology. The course was offered to first semester PhD students during August and November 2017.

Taught six modules in the Research Methodology Course.



Training Course

Co-coordinated NIAS-DST Training Programme for Women Scientists on Science for Progress in India: Focus on Sustainability, January 22 to 27, 2018.

Membership

Member, National Academy of Psychology.

Member, Comparative Education Society of India.

Other Contribution

Conducted an informal discussion on Workings of the Working Memory at NIAS, December 12, 2017.



Jeebanlata Salam

Assistant Professor
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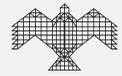
Joined NIAS on: February 22, 2106

Lecture

Peace Building Processes in North-East India: The Role of Youth and Women, International Conference on Youth, Education and Work in (post-) Conflict Situations, Groningen University, the Netherlands, July 18, 2017.

Outreach

As Visiting Faculty at National Institute of Design, Bengaluru, developed and taught a course on Approaches to Indian Society. The core objectives of the course are to equip post-graduate students of design with social science concepts and skills; introduce them the idea of a science of society; and engage them in developing a critical enquiry of prejudices and stereotypes of existing societal values and practices, and sensitize design students to the complex social-cultural issues of Indian society.



Malavika Kapur
Visiting Professor
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Joined NIAS on: May 1, 2003

Major Research Contribution for the Academic Year

Bridge Programme for Children Admitted Under the RTE. In 2017, May and June, a total number of 52 children admitted under the RTE were given Child Centred Play Way Programmes.

IQ, Self Esteem, Reading and Maths Skills and smooth transition of private schools. Between June 2017 and March 2018, 170 children in Government Primary Schools between classes 1 to 7 were covered by Child Centred Play Way Programme. They showed improvement on attention, intelligence and self-esteem, reading and maths skills.

Lectures

Child Development, Child Mental Health and Education, Keynote Address, Northeast Institute of Education, Shillong, Meghalaya, February 8, 2018.

Book Release of Kannada Translation of Another Way to Live and delivered a talk on Yoga and Holistic Eastern Approach, Bangalore Social Science Forum, National College, Bengaluru, December 18, 2017.

Chief Guest at the Book Launch of Hari Mohan Pururu at Sapna Book House, Bengaluru, December 15, 2017.

Understanding the Construct of Triguna an Innate Bio-Psycho-Social Predisposition from Childhood and Its Relevance to Healing, One-day Symposium on Yoga and Indian Psychology, NIMHANS, Bengaluru, June 25, 2017.

Childcare in the Indian Indigenous Health Systems, Bangalore International Centre (BIC), Bengaluru, May 5, 2017.

Membership

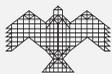
Panel Member to select faculty in psychology for Tata Institute of Social Sciences, Mumbai at its Guwahati Campus, November 14, 2017.

Member of the Review Panel for the Journal Psychology and Developing Society, November 14, 2017.

Advisory Committee Member for Yoga and Indian Psychology, NIMHANS, Bengaluru, June 25, 2017.

Other Contributions

Serving as Member of the NIAS Ethics Committee, Member of NIAS Exeter Exchange Programme, Students Advisory Council Member for two doctoral students. Took two



Foundation Course classes for doctoral students.

Resource Person, Aspects in Teaching and Learning, NCERT, Delhi, November 29 and 30, 2017.

Organised a Workshop for AMMT at Anand for Teacher Training Programme in New Delhi on June 12 and 13, 2017.

Ongoing Quality Education Programme was conducted in H.D. Kote Taluk. Working in 10 Tribal Schools and Morarji Desai and Ekalavya High Schools using child centred method. Over 600 children were covered by the programme.

50 tenth standard children at Morarji Desai and Ekalavya High Schools were supplied individual science kits along with two-day workshop for the use of the kits.

Providing assessment and counselling to 173 children between 2017 and 2018. Ongoing activities of the Free Child Guidance Centre conducted at the Prasanna Counselling Centre in Basavanagudi, Bengaluru.



Leya Mathew
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Joined NIAS on: August 8, 2016

Major Research Contribution for the Academic Year

Research about the unprecedented expansion of non-elite educational aspirations in neoliberal India, and its delegitimization or “aspiration shaming” by well intentioned, “critical” educators was published in *Anthropology and Education Quarterly* in 2018. Work on the shifting hierarchies in Teaching of English to Speakers of Other Languages (TESOL) in contemporary India from literacy/literary to orality, and the severe implications of this shift for teachers and students in non-elite classrooms was published in *TESOL Quarterly* in 2018.

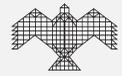
Lectures

Unsettling middle-class India: An ethnography of aspiration in a new consumer society, Ahmedabad University, March 13, 2018.

Going Beyond the School Choice Narrative: Gender, Aspiration, and Materiality in liberalizing India, Azim Premji University, Bengaluru, November 29, 2017.

Academic Courses

Contemporary India: Ethnographic Perspectives (3 credits): This seminar course was designed to enable participants to identify the relationality of social processes and further, to use these insights to analyze ethnographic data. We read recent ethnographies to identify similar processes across different research sites; for instance, middle-class strategies of distinction and exclusion in housing, media, employment and educational spaces show similarities even though they have their own distinct

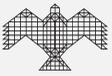


formations. Similarly, non-elite aspirations, assertions and ambivalences too traverse discrete sites of research engagement. The course encouraged students to look at both presence and absence (across sites) as generative analytical tools. In addition, the course also expected participants to situate their inquiry within a broader set of anthropological debates about transition in contemporary India.

Ethnographies of Labor/Work (2 credits): This seminar course explores some of the key preoccupations of ethnographies of labor: worker subjectivity, sociality, and forms of governance, control, and resistance/ambivalence. After an introductory reading of Marx, Arendt, and Weeks, we read ethnographies of labor, focusing on both factory labor and post-Fordist formations of affective, aesthetic, cultural, entrepreneurial, and cognitive labor. Rather than approach the work place as merely relations of exploitation between capital and labor, these ethnographies draw attention to the situated social, affective, and symbolic relations entailed in producing commodities, infrastructures, households, glamor, stock-market wealth, and so on. We explored how these relations and processes produce particular kinds of bodies even as they assemble specific kinds of logics about their respective fields of production.

Ethnographic Dissertation Writing (2 credits): This seminar course supported advanced PhD candidates who have engaged in ethnographic fieldwork and have completed preliminary data analysis. The course focused on two related aspects of dissertation writing 1) analytical rigor and 2) organization.

Feminism and Techno-science (1 credit): This is an overview course that introduces participants to key thematics in Science, Technology, and Society Studies; Gender and Technology Studies; and anthropological and historical work about science and technology.



NIAS-UNDP POLICY RESEARCH INITIATIVE ON INEQUALITY AND HUMAN DEVELOPMENT

Introduction

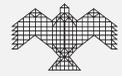
The NIAS-UNDP Policy Research Initiative on Inequality and Human Development seeks to enhance knowledge on different forms of inequalities and their interactions in India. It does so by using a multidisciplinary approach to identify appropriate policy initiatives and to stimulate public discourse on new approaches to address inequality and human development. Its current focus is on two major projects supported by Tata Consultancy Services, one on 'Inequalities and the Demand for Non-Farm Occupations' and the second on 'Inequalities and Farmers' Suicides'.

Research Activities

As the work has progressed on the two projects it has become increasingly clear that there is a need to go beyond the rather fragmented understanding of inequality in India. An effort was thus made to develop a theoretical construct that would be relevant across economic, social and other inequalities. A Working Paper by Narendar Pani titled Normative and Descriptive Inequalities was published. This theoretical construct is being used to understand the nature of agrarian transition happening in different parts of the country and to look at the inequalities that are being generated as a result of the transition. As part of the project, two separate large national data surveys were conducted; one on the nature of inequalities emerging from the transition and the second on understanding the process of circular migration. These datasets are being analysed to get better insights on the inequalities getting generated in the process of transition.

The Initiative has also worked on the consequences of this transition leading to two Working Papers. The first paper by Jiyaul Haque titled Land, Caste and Power in Circular Migration, explored the effects of circular migration on land and caste relations in the village. This paper is based on qualitative study of a village in Banka district of Bihar which has almost 100 per cent marginal workers who seek work outside the village and since they cannot afford the costs of living permanently in cities they typically work for a few months in a year in the city and return to their villages. The second paper by Anamika Ajay titled Stepping into Another Woman's Shoes- Substitute Women in Families of Female Emigrant Workers, looks at whether gender relations at home





change when the female migrates for work and builds on the concepts of conditional autonomy, compliance and substitution to understand the nature of autonomy women achieve through female emigration.

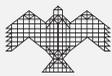
The process of transforming an agrarian society to a non-agrarian one also has non-economic consequences. Inequalities arising from agrarian transition could have effects that are social and psychological. An econometric model to understand the macro picture of the causes of farmers' suicides forms the basis of Working Paper by Debosree Banerjee and Viswesh Rammohan titled Durkheimian Insights into Farmers' Suicide in India. The causes of suicide are being explored further through in-depth village studies of villages in Palakkad district of Kerala, Vidharbha district of Maharashtra and Shivamoga district of Karnataka.

Outreach

NIAS-UNDP Policy Research Initiative on Inequality and Human Development has been researching multiple dimensions of inequality. As a part of this exercise, to tap existing knowledge through discussions with eminent personalities who have addressed this issue a new lecture series has been started at NIAS. The first Dadabhai Naoroji Lecture on Inequality was delivered by Prof Ramesh Chand, Member, NITI Aayog on June 6, 2017. Prof Chand spoke on Agricultural and Rural Sectors in Indian Economy: Issues Related to Growth and Inequality.

Members of the group have also presented their work at international institutions. Anamika Ajay presented her paper on The Limits of Individualized Empowerment: The Impact of Female Emigration on Gender Relations in Rural Kerala at a conference titled Interrogating the Rural in South Asia: Ruptures and Continuities, organized by SOAS, University of London on June 12 and 13, 2017.





Members of the NIAS-UNDP Policy Research Initiative on Inequality and Human Development



Narendar Pani, Head
Sumedha Bajar
Abha Rao

Post-doctoral Associates: Sindhuja CV, Pratheebha Vimlanath (*upto January 5, 2018*)

Research Associates: Viswesh Rammohan, Priya MN, Shihabudin, Ankit Saswade, Vara Lakshmi

Doctoral Students: Chandana Rajasekharan Bindu, Ajit Kumar Babu, Shilajit Sengupta

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Joined NIAS on: April 9, 2007

Major Research Contribution for the Academic Year

Regional identities have periodically asserted themselves in Indian politics, both before and after Independence. The intensity of this regionalism has, however, tended to vary quite substantially from state to state and over time, ranging from a somewhat benign influence on state politics to demands for secession. These differences are typically explained in terms of specific local political conditions. In research published during the year Narendar Pani argued that a larger theoretical explanation is also possible: Once we recognize that regionalism operates in multiple spaces, it becomes evident that the way these spaces are experienced has its influence on the practice of local politics. The article went on to match its theoretical expectations with the politics of regionalism in the neighboring south Indian states of Karnataka and Tamil Nadu.

Lectures

Righteous Deception and the Corruption of Knowledge in India, University of Hyderabad, March 6, 2018.

Gandhian Approach to Spontaneous Volunteerism, University of Jena, Germany, September 21, 2017.

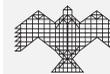
Academic Courses

Inequality (4 credits): The course provided a unified conception of inequality, cutting across disciplines and methods. In the process it presented existing concepts where useful while also developing new ones where they were needed. It helped the students understand the sources, extent and consequences of inequality while providing insights into the responses to this phenomenon.

Ontology of Indian Development (3 credits): The course captured what it is to be a part of India's development process. It will explore the processes that have led to Indian development being what it is. It will piece this picture together using inputs from philosophy, economics, sociology, politics and post-Independence Indian history. The main objective of the course was to enable students to understand India's development process as it is, rather than what one ideology or the other insists it should be.

Reading the economy (1 credit): The course was designed to help a non-economist understand what the Indian economy was telling her. It provided the grammar of the economy while reducing the noise of opinion. It introduced indicators to the health of an economy. It demonstrated how those indicators operated in the Indian context. In the process it pointed to signals the Indian economy sends out to the world and vice versa.

Lectures in Research Methodology course.



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Joined NIAS on: January 1, 2016

Major Research Contribution for the Academic Year

Research interests include understanding the nature of rural transition in India, its impact on inequality and its influence on demand for jobs, demand for skills and demand for infrastructure. I have been engaged in secondary data analysis based on which regions were identified and primary data collected in a large national survey and data analysis is being done.

Academic Courses

Statistics for Social Sciences – The course aimed to provide students with a conceptual understanding of the domain of statistics and the role it plays in the process of social science research. Along with an explanation of statistical methods, the course provided hands-on experience in handling datasets and statistical softwares.



Abha S Rao
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Joined NIAS on: October 17, 2016

Major Research Contribution for the Academic Year

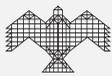
One of the consequences of the transition from an agrarian economy to a non-agrarian one is the rise of a marginal worker class. I am currently engaged in work related to the health of one such population, women temporary migrant construction workers, using intersectional and social determinants of health frameworks.

Lectures

Health in Household Settings, Ashoka University, Sonapat, February 26, 2018.

Implementation of a Public Health Intervention: Perceptions of Lay Health Workers, Ashoka University, Sonapat, February 25, 2018.

Intersecting Labour, Economic, and Health Inequalities in the Lives of Women



Circular Migrant Construction Workers, National Conference on Health Inequities in India, Trivandrum, January 9, 2018.

Healthcare and Society, Fifteenth Annual NIAS DST Training Programme on Multidisciplinary Perspectives on Science, Technology and Society, December 14, 2017.

Migration and Health, Workshop on Socially Inclusive Cities, Institute of Public Health and Centre for Law & Policy Research, Bengaluru, December 13, 2017.

Health Systems in Karnataka, Azim Premji University, Bengaluru, September 20, 2017.

Academic Courses

Migration and Development – Foundation Course: Covered a broad overview of and applied a critical lens to major perspectives surrounding migration and development, including general migration theories, processes of migration, theories from other disciplines that inform our understanding of migration, and the impact of migration policies on development.

Research Methods, contributed to module on Qualitative Research Methods.



Sindhuja CV

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Joined NIAS on: November 2, 2017

Major Research Contribution for the Academic Year

Working under NIAS–UNDP Policy Research Initiative on Inequality and Human Development study focuses on importance of skill and learning towards changing occupational structure in rural economy of India specific to manufacture sector. This work included a joint qualitative and quantitative field study of a village in Shivamoga district of Karnataka.

Memberships

Ad Hoc Reviewer for Current Science Journal in collaboration with the Indian Academy of Sciences (ISSN: 0011-3891).

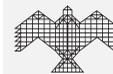
Associate Member, Aerospace Medicine International (AMI).

Student Member, Indian Aviation Fire Safety Specialist Group (IAFSSG).

Associate Member, European Association for Aviation Psychology (EAAP).

Outreach Activities

Coordinated to teach Human Resource Management (MG 211) Course for 18 hours at the Department of Management Studies, Indian Institute of Science, Bengaluru during March 2018.



RBI PROGRAMME ON INTER-DISCIPLINARY APPROACHES TO ECONOMIC ISSUES

Introduction

The aim of the RBI Programme on Interdisciplinary Approaches to Economic Issues has been to analyze economic issues using the insights from multiple disciplines. Till date, the Programme has researched a variety of areas, including the effects of global markets on Indian production processes, interventions in the rural economy, such as the Mahatma Gandhi National Rural Employment Guarantee Schemes, and urban interventions, including the Jawaharlal Nehru National Urban Renewal Mission. This research has produced books, several reports, PhD theses and journal articles.

Research Activities

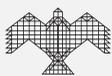
During the course of last year, the RBI Programme has focused on two main projects. The first one pertains to the 'Demand-side of Financial Inclusion in Rural Karnataka', funded by Vijaya Bank. This in itself comprised two sub-projects – one, the Nature of Financial Instruments in Rural Karnataka and two, Boundaries of Formal and Informal Finance in Rural Karnataka. The empirical data for these projects was based on in-depth quantitative and qualitative surveys of about 73 villages and 4000 households in rural Karnataka. This study stands out with respect to other studies in two specific aspects: first, we review financial inclusion from the 'demand-side' using a bottom-up approach unlike other studies that take a 'top-down' supply-side view of the process. The other important aspect of the study is that unlike other studies on financial inclusion that are focused on just credit mechanisms alone; we review all motivations of finance – savings, credit, insurance and funds transfers.

The other major project during the year was the assessment of fiscal space for implementation of the recommendations of the Karnataka Sixth Pay Commission. This involved an assessment of Karnataka's budgets over the past ten years and forecasting future trends in revenue and expenditure. This analysis helped us identify the specific areas of creating fiscal space for implementing the Sixth Pay Commission recommendations. The work done by us has been incorporated as a separate chapter in the Sixth Pay Commission report (which is available on the website of Karnataka Finance Department).

Outreach

The Programme organized a talk by Mr TCA Srinivasa Raghavan titled 'Dialogue of the Deaf: The Government and the RBI' on July 6, 2017.





Members of the RBI Programme on Inter-Disciplinary Approaches to Economic Issues

Narendar Pani, *Head*

Kshitija A Joshi

Research Associates: BL Varalakshmi, Jiaul Haque

Doctoral Students: Soundarya Iyer, Shatarupa Bhattacharya, NS Nalini, Ankita Rathi, Meera Sudhakar



Kshitija A Joshi

Assistant Professor
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Joined NIAS on: January 1, 2016

Major Research Contribution for the Academic Year

Was the Co-Principal Investigator for the two projects related to the 'Demand-side of Financial Inclusion in Rural Karnataka' which comprised two sub-projects – one, the Nature of Financial Instruments in Rural Karnataka and two, Boundaries of Formal and Informal Finance in Rural Karnataka. She was the Principal Investigator for the project pertaining to the assessment of fiscal space for implementation of the recommendations of the Karnataka Sixth Pay Commission.

During the year she published a paper in the Asian Journal of Innovation and Policy and another in the Springer edited volume on Transnational Entrepreneurs. Two co-authored papers were presented at the conference of the Academy of International Business in Dubai, UAE in July 2017 and in the DRUID academic conference in Copenhagen, Denmark in February 2018. Another paper was presented at 'Mumbai Talks' a conference organized by Mumbai University's Department of Civics and Politics in March 2018.

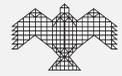
Lectures

Specialization and Syndication as Risk Management Strategies for Venture Capital Firms in India, Research Seminar, IIM Bangalore, June 21, 2017.

Start-up Funding in India – The Role of Venture Capital, Workshop organized by the Indian Council of Social Science Research and Japan Society for Promotion of Science at Indian Institute of Science, Bengaluru, May 1, 2017.

Academic Courses

Taught the Basic Statistics course (with Sumedha Bajar) and the Statistics module of the Research Methodology Course (with Narendar Pani) to NIAS doctoral students. Also taught the Managerial Economics course at the Department of Management Studies, Indian Institute of Science, Bengaluru to Master of Management and PhD students.



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Joined NIAS on: December 10, 2004

Lectures

Concepts and Principles of Governance and Social Accountability, National Foundation of India, New Delhi, March 13, 2018.

Disruptive Solutions to Land Issues, India Land and Development Conference, New Delhi, February 20, 2018.

Evolution of PMO as an Institution of Governance, Tata Institute of Social Sciences, Mumbai, January 9, 2018.

Ethics and Governance in Higher Education, UGC-HRD Programme at Bangalore University, November 9, 2017.

Local Governance in India, International workshop at Kerala Institute of Local administration, Thrissur, September 25, 2017.

RK Hegde Memorial Lecture at Institute for Social and Economic Change, Bengaluru, September 5, 2017.

Role of Teachers in Rural Development Sector, Gandhigram Rural University, Dindigul, August 31, 2017.

Future of Panchayats: A Vision, Strategy and a Roadmap, Kerala Economic Association, Thiruvananthapuram, August 13, 2017.

Convergence in Governance for Sustainable Development Goals, Planning Commission, Chhattisgarh at Raipur, August 3, 2017.

Improving Governance in Gram Panchayats for Inclusive and Integrated Development at Grassroots Levels, YASHDA and Government of Maharashtra, Mumbai, April 11, 2017.

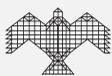
Awards, Memberships

Received Paul H Appleby Award for 2017 for distinguished services to Public Administration conferred by Shri M Venkaiah Naidu, Vice President of India and President, Indian Institute of Public Administration (IIPA) in the Annual Meeting of the General Body of IIPA held on October 11, 2017.

Continue to be on the Board of Management of the following institutions:

Centre for Sustainable Development, Bengaluru.

India Wash Forum, New Delhi.



Institute of Social Sciences, New Delhi.
IIPA, Karnataka Regional Branch, Bengaluru.
Institute for Societal Advancement, Thiruvananthapuram.
National Design and Research Forum, Bengaluru.
MYRADA and the Institutions promoted by MYRADA
DHAN Panchayat Development Foundation, Madurai.

Other Positions

Visiting Professor and Adviser, Gandhigram Rural University, Dindigul, Tamil Nadu.

Member, Academic Council, Karnataka State Rural Development and Panchayatiraj University, Gadag.

Member, Technical Advisory group for the SDC funded research project on Ethnic Power Relations and Conflict in Fragile States at TISS, Mumbai.

Member, Advisory group for the ICSSR funded research project on Empowerment through MGNREGS undertaken by the Institute of Rural Management at Anand (IRMA) and Gandhigram Rural University.

Member, Executive Committee for RGPISA, Ministry of Panchayatiraj (MoPR), Government of India.

Member, Advisory Group for Prime Minister's Rural Development Fellows Programme, Ministry of Rural Development, Government of India.

Member, Social Audit Monitoring Committee of the Government of Chhattisgarh, Raipur.

Member, Guidance Committee to the School of Local Governance at NIRD and PR, Hyderabad.

Member, Committee to prepare Rural Area Development Plan Formulation and Implementation Guidelines constituted by MoPR.

Member, Technical Advisory Committee for the Research Study on Service Delivery, Assessment of Human Resource and Workload and costing of Services in Gram Panchayats at NIRD and PR, Hyderabad.

Chairperson, MYRADA, Bengaluru.

Chairperson, Academic Council for the Green Skills Academy, Bengaluru.

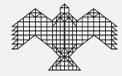
Chairperson, Programme Coordinating Mechanism of the Global Sanitation Fund for India, New Delhi.

Chairperson, Committee constituted by the Government of India to develop a roadmap for Panchayati Raj Institutions in Union Territories.

Chairperson, Working Group of the NITI Aayog on Employment opportunities through Panchayatiraj Institutions.

Other Information

The report of the Expert committee (for which SS Meenakshisundaram was the Chairman) to prepare a roadmap for Panchayatiraj Institutions in the Union Territories of India was submitted to the Ministry of Panchayatiraj in December 2017.



URBAN AND MOBILITY STUDIES PROGRAMME

Introduction

The Urban and Mobility Studies Programme uses interdisciplinary lenses to analyse the social and economic consequences of policy and urban governance frameworks and consequent processes of social transformation in India's cities, towns and rural areas. This year the Programme grew in strength through the addition of new programme members, including two Research Associates, one PhD Scholar, and a Post-doctoral Associate. The Programme now brings together expertise in the areas of sociology and social anthropology, gender studies, geography, urban studies, and migration and transnational studies.

Three funded projects are currently being implemented by the Programme: a transnational research project on changing land, livelihoods, and finance in metropolitan India and Jakarta; a study of migration, skilling, and labour in Bangalore's service economy, and a project on the new capital city in Andhra Pradesh, Amaravati. Building on our strengths in ethnography and qualitative methods, these projects examine the linkages between rural-to-urban migration and changing urban economies and livelihoods, as well as the social impacts of urban development led by real estate interests on local communities and political ecologies.

Research Activities

The research project entitled *Speculative Urbanism: Land, Livelihoods, and Finance Capital*, funded by the National Science Foundation (USA), is a collaboration with the University of Minnesota and UCLA (USA). This project is a comparative study of changes in land use, property relations, livelihoods and urban ecologies in the context of rapid urban growth and the circulation of finance capital into the real estate sector. Substantial progress on fieldwork and other research activities was made during the year with the addition of a Post-doctoral Associate and through the work of several interns.

The second project, *India's Changing Cityscapes: Work, Migration and Livelihoods*, funded by the ICSSR, is being carried out in collaboration with the Institute for Social and Economic Change, Bengaluru. The study examines the linkages between migration, skilling, livelihoods and social mobility among construction and low-end service sector workers in two cities of Karnataka. Fieldwork at skill training centres and worksites was initiated during the year and has progressed well.

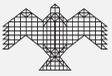
The third project, ongoing since July 2016, is entitled 'World-City' Planning in Andhra Pradesh: A New Model for Urbanisation? This three-year research project, supported by the Azim Premji Foundation, tracks the socio-economic transformations in the new capital region of Andhra Pradesh. The project produced two publications during the year by Carol Upadhyaya.

Outreach

Keya Bardalai presented a paper on *Short Skirts and Long Shifts: Northeast Women between Modernity and Marginality*, to the International Conference on Locating Northeast India: Human Mobility, Resource Flows and Spatial Linkages, Tezpur University, January 9 to 12, 2018. Snehashish Mitra presented a paper on *Urbanisation by the Border: Refreshing the Frontier in the Northeast*, at the Sixth Critical Studies Conference: Refugees, Migrants, Violence and the Transformation of Cities, organised by Calcutta Research Group, Kolkata, August 23 to 25, 2017. Also presented a paper on *Knowing the Frontier City: New Urbanization in the Northeast*, at the Workshop on Towns and Migrants: Explorations of an Urban Future, organised by Calcutta Research Group in collaboration with Ford Foundation, Kolkata, December 26 and 27, 2017. Kaveri Medappa was part of a group which developed a critique of the Draft Revised Master Plan for Bengaluru (October and November 2017). The report was submitted to the



A Research Site of the Speculative Urbanism Project. Credit: Pierre Hauser.



Mr Prem Chandavarkar inaugurating City at Its Limits events series, November 3, 2017.



Lively Discussion at the City at Its Limits – Screening of Beerappa's Angst on a Proposed Science City on March 7, 2018.

BDA as an objection to the new master plan. She addressed a group of ASHA, Anganwadi workers and adolescent children human trafficking, in Srinivasapura, Kolar on June 4, 2017.

Events Organised at NIAS

The UMS Programme initiated a new series of events entitled 'City at Its Limits'. The following programmes were arranged:

Screening and discussion of the film, Beerappa's Angst (conceptualised by Leo F Saldanha and Bhargavi Rao), March 7, 2018.

Lecture by Dr Malini Ranganathan (Assistant Professor, American University), Situated Ethics of the City: Narrating Corruption and Land in Contemporary Urban India, February 2, 2018.

Lecture by Mr Prem Chandavarkar (Managing Partner, CnT Architects), The Smart City and the Indian Urban Condition, November 3, 2017.

Mr Prem Chandavarkar inaugurating City at Its Limits events series, November 3, 2017.

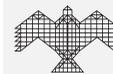
The Core City Site of the Speculative Urbanism Project. Credit: Pierre Hauser.

Lively Discussion at the City at Its Limits – Screening of Beerappa's Angst on a Proposed Science City on March 7, 2018.

A Research Site of the Speculative Urbanism Project. Credit: Pierre Hauser.



The Core City Site of the Speculative Urbanism Project. Credit: Pierre Hauser.



Members of the Urban and Mobility Studies Programme



Carol Upadhyia, *Head*

Post-doctoral Associate: Hemangini Gupta

Senior Research Associate: Kaveri Medappa

Research Associate: Harpreet Kaur, Prajwal Nagesh

Doctoral Students: Rashmi M, Keya Bardalai, Snehashish Mitra

Carol Upadhyia

Professor

School of Social
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upadhyia@gmail.com

Joined NIAS on: September 1, 2003

Major Research Contribution for the Academic Year

Carol Upadhyia heads the Urban and Mobility Studies Programme, which is carrying out original and relevant research on urbanisation and urban settlements. The current research projects focus on tracing new patterns of rural-urban migration, skill acquisition and employment in the urban service economy, the reconstitution of rural economies due to the spatial expansion of cities, and the effects of the circulation of finance capital on land, livelihoods, and finance in metropolitan and new cities of India and Indonesia. Upadhyia's work on the building of Amaravati, the new capital city in Andhra Pradesh, resulted in two publications this year. A workshop held last year as part of the project on 'Bangalore's Great Transformation' resulted in an issue of the journal *Seminar* in June 2017 by the same title, co-edited by her. In addition, Upadhyia co-edited a special issue of the *Journal of South Asian Development* entitled *Remapping the Region in South Asia*, which was an outcome of the Provincial Globalisation Programme co-directed by her between 2010 and 2015.

Lecture

Globalizing the Provincial: Translocal Circulations and Urban Change in Regional Towns, Plenary Session on India's Urban Transformation, All India Sociological Conference, University of Lucknow, November 10, 2017.

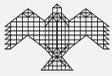
Academic Courses

Module of Foundation Course: Capital and Labour in the New Millennium (1st term 2017-18, along with Hemangini Gupta): Survey of theoretically and regionally diverse approaches to the study of labour and capital in the contemporary period.

Guided Reading Course on Urban Theory in the Global South (1st term 2017-18, along with Hemangini Gupta): The course covered key readings in the theorisation of urban governance and planning, informality and patterns of urbanisation from the perspective of the Global South.

Seminar on Urban Political Ecology, Informality, and Migration (1st term 2017-18, along with Hemangini Gupta): The seminar examined intersections between different forms of mobility, changing urban political economies, informality of labour and settlement, transitions in peri-urban areas, and the urban environmental crisis. It critically examined diverse theoretical approaches to understanding these issues, particularly in the Indian context and from the perspectives of gender, caste and class, and explored new research methodologies and techniques.

Coordinated a Reading Group for PhD students on *Revisiting Identity and Community in Contemporary South Asia*.



Award, Membership

Associate Editor, Journal of South Asian Development.

Member, Project Advisory Group for the ESRC-funded project on Gender, Skilled Migration and IT: A Comparative Study of India and the UK, Open University, UK.



Hemangini Gupta

Post-doctoral
Associate
School of Social
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Joined NIAS on: July 3, 2017

Major Research Contribution for the Academic Year

Completed research on three academic papers. One theorizes how a first-generation of professional women become incorporated into the transnational start-up economy in Bengaluru. The second proposes an understanding of how residents of an urban neighbourhood in Bengaluru feel displaced from their land and livelihood and how they come to terms with these changes. The third offers a new understanding of urban governance by proposing a concept of “civic citizenship” through which members of gated communities participate in the politics of urban environmentalism.

Lectures

Precarity in Experimental India: Travel Consultants, Cooking Robots, and Gendered Care Work, Department of Women’s, Gender, and Sexuality Studies, Dartmouth College, February 1, 2018.

Postcolonial Precarious: Labor as an Uncertain Future in Contemporary India, Department of Gender, Sexuality, and Women’s Studies, Bowdoin College, January 30, 2018.

Academic Courses

Seminar on Urban Political Ecology, Informality, and Migration (Spring 2018) along with Carol Upadhy: To examine intersections between different forms of mobility; changing urban political economies; the growth of informal labour, settlements and housing; land use changes and rural-to-urban transitions in peri-urban areas; and the urban environmental crisis. To examine critically diverse theoretical approaches to understanding these issues, particularly in the Indian context and from the perspectives of gender, caste and class, and explore new research methodologies and techniques.

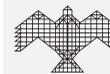
Labour and Capital in the New Millennium (Fall 2017) along with Carol Upadhy: Theoretically and regionally diverse approaches to the study of work and labour and instantiations of capitalism in the contemporary period.

Urban Theory in the Global South (Fall 2017) along with Carol Upadhy: Theorizing urban governance, planning, and social practice from the perspective of the Global South.

Writing after the Field workshop (October 2017): This is a workshop that helped advanced PhD students to begin to make sense of their fieldwork and fieldnotes and facilitated them in working together to experiment with ethnographic writing.

Other Information

Peer Reviewer, eSocial Sciences and Humanities Journal.



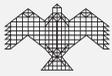
COLLABORATIVE PROJECTS ON HEALTHCARE

NIAS in this academic year initiated a few collaborative research projects that focus on the health challenges, societal needs and academic responses. These collaborative projects are the following:

1. **Secure Ultrasound Scanning System and Diagnostic Technology Project:** Funded by EPSRC/GCRF Call, UK in collaboration with Cranfield University, UK, Indian Institute of Science and St John's Hospital, Bengaluru, Prof V Bhujanga Rao is the Principal Investigator and Mr PM Soundar Rajan is the Co-Principal Investigator from NIAS. The availability of skilled technicians and doctors who can conduct ultrasound scanning for pregnant mothers in remote areas is a major challenge in India. Usage of ultrasound diagnostics in India has also been controversial because of its extensive misuse for sex selective abortions. The project therefore proposes a secure ultrasound scanning with guided 3D image capture and a remote diagnostic service that can work in rural areas in India for improving the pre-natal care for baby and mother. Cloud based 3D ultrasound image construction, intelligent augmented reality (AR) based scanning, advanced sensors will help maintaining the anonymity of the mother and sex of the child. The research will lead to development of a low cost, rapid, point of care imaging and diagnostic technology as envisaged in EPSRC/GCRF Call.
2. **NIAS and the Open Source Pharma Foundation Project:** One of the great health problems in the world today, per the UN, is access to essential medicines. Billions lack affordable medicine. One new drug can cost \$2+B to develop. Many "low revenue diseases" afflicting the poor have no treatments at all. NIAS, in collaboration with the Open Source Pharma Foundation (OSPF), seeks to address these problems at a scientific and ultimately policy level, using artificial intelligence, crowdsourcing, and open intellectual property. Dr Madhusoodan Hosur, Adjunct Professor, NIAS is the Principal Investigator of the project. OSPF seeks to reimagine the process of drug discovery, using open source principles derived from the software industry, where Linux and Android are affordable and market-dominant. In four words, OSPF is affordable medicine for all. In three words, Linux for drugs. The initial focus is tuberculosis. OSPF has been featured in the BBC, The Lancet, and The Hindu. OSPF is an offshoot of CSIR's OSDD, outside of government, with a more international tenor. Results to date include: Prospectively registering a phase 2b clinical trial of metformin, a generic diabetes drug with open IP, as an adjunct therapy against tuberculosis, in partnership with the National Institute for Research in Tuberculosis, expected up to 10 years ahead of a standard timeline, at <10% the cost. Commencing work on artificial intelligence-powered "Knowledge Graphs" for TB, Nipah Virus, and Repurposing of Generic Drugs. Spreading an open source paradigm for pharmaceutical innovation, via social media, lectures and programmes.
3. A study titled "Together for Health, Research and Innovation for Vibrant Employment- The THRIVE Initiative for People with Priority Mental Disorders in India" was completed. Dr Sudipto Chatterjee, Adjunct Professor, NIAS was the Principal Investigator of this study.
4. A new project was funded for the NIAS Consciousness Studies Programme by The Tata Education Trust which will focus on the Indigenous Health and Wellness Traditions and Practices of Kerala and document the psychological and psychiatric implications in a cultural context. Prof Sangeetha Menon is the Principal Investigator of this project.
5. Another project has been sanctioned by Government of India with Dr Madhusoodan Hosur as the Principal Investigator to initiate a multidisciplinary approach on advanced epilepsy research. This is a multi-institutional project with collaborators such as AIIMS, C-DAC, IIT-Delhi, NBRC and NIAS.



Participants at the World TB Day event organized by OSPF students at NIAS on March 24, 2018, which gathered 45 participants to present and raise awareness about tuberculosis.



INVITED VISITING CHAIR PROFESSORS

SCHOOL OF CONFLICT AND SECURITY STUDIES



V Bhujanga Rao
ISRO Chair Professor

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Joined NIAS on: April 20, 2016

Major Research Contribution for the Academic Year

Studies have been carried out on development of bionic eye or visual prosthesis for restoring partial vision for patients suffering from retinal degenerative eye diseases such as Age-related Macular Degeneration (AMD) and Retinitis Pigmentosa (RP). Paper titled Design of a Prototype Vision Prosthesis will be published in the International Journal of Biomedical and Clinical Engineering, Volume 7 (2), July–December 2018. Research is undertaken to understand the impact of Space Programmes on Industrialization and Scope for Private Industry to participate in a big way in major technological programmes.

As Chairperson of Inclusive Manufacturing Forum (IMF), was responsible to initiate several brainstorming sessions and group discussions to understand how important is Inclusive Design and Manufacturing in a country like India where diversity, inequality, disabilities etc play a role to make a broader beneficial impact on society.

Lectures

Challenges in Tackling Unauthorized Drones in India's Maritime Domain, Drone Technology Conference, NIAS, November 23, 2017.

Bionic Ear and Bionic Eye: Progress against Hearing Disabilities and Visual Impairment, Public Lecture at NIAS, September 7, 2017.

Underwater Acoustics Research in India with Special Reference to Naval Applications, Applied Physics Laboratory, University of Washington, Seattle, USA, August 10, 2017.

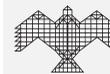
Training Programme

Coordinator for the NIAS-DST Training Programme on Science Policy and General Management, February 26 to March 9, 2018.

Other Contributions

Coordinated INAE–NIRD & PR, organised a Frugal Innovation Programme at Hyderabad, July 7 and 8, 2017.

Coordinated Inclusive Manufacturing Forum – 2017 at NIAS, April 6 to 8, 2017.



Awards, Memberships

Member, R&D Board, MOES.

Chairman, Mechanical Engineering/Professional Engineers Promotion Board, Institute of Engineers, Kolkata.

Member, BOM, Veltech University.

Member, Governing Council, INAE, Delhi.

National Management Committee Member, PMA, Delhi.

Member, Project Review Board, NIOT, Chennai.

Member, SBMT/DRDO Peer Review Member.

Other Information

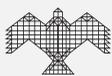
Evaluation of the impact made by the Indian Space programmes on Industrialisation in our country. Study under progress.

Evaluation of the status of medical tourism in the country undertaken jointly with NISTADS, DG-CSIR. Study under progress.

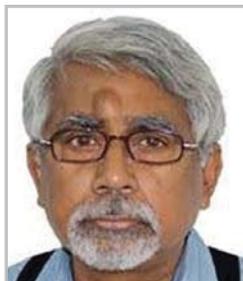
Development of Manned Submersible: Joint Study with NIOT, MOES.

Co-guide for Dr GV Krishna Kumar who was awarded PhD by Indian Institute of Science during 2017.

Co-PI for EPSRC Project sanctioned by the Government of UK titled Secure Ultrasound System for Scanning Prenatal Women Without Sex Determination.



SCHOOL OF HUMANITIES



Sisir Roy
TV Raman Pai Chair
Visiting Professor

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Joined NIAS on: November 5, 2014

Major Research Contribution for the Academic Year

Contributed in three main directions namely, How the noise is important in understating the various states of meditation; The importance of category theory is highlighted in modeling cognitive science; and Quantum theory is relevant in understanding bacterial communication. This may shed new light in neuronal communication in human brain.

Lectures

Quantum Entanglement and Philosophy of Relations a la Dharmakirti, Inaugural Address, International Seminar on Quantum Physics and Emptiness in Buddhism, Namgyal Institute, Gangtok, Sikkim, March 27, 2018.

Consciousness and The Physical Reality in Modern Science: The Three Worlds of Popper, National Workshop on Mind, Consciousness and Beyond: Building on Vedantic Metaphysics, CSIR-NISTADS, New Delhi, March 6, 2018.

Human Perception and Reality, Keynote Address at the National Symposium on Perception, 12th Nalanda Dialogue, Nalanda Mahavihar, Nalanda, Bihar, February 22, 2018.

Quantum Cosmology - Space-Time Ontology and Akasa in Vedanta, Institute of World Culture, Bengaluru, November 18, 2017.

Ontology of Geometry and Physical World, Keynote Address, National Symposium on Sacred Geometry and Design in Nature: An Interplay of Art, Science and Philosophy at Central University of Higher Tibetan Studies, October 25, 2017

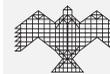
Quantum Ontology and Ultimate Reality, Institute of World Culture, Bengaluru, April 16, 2017.

Outreach

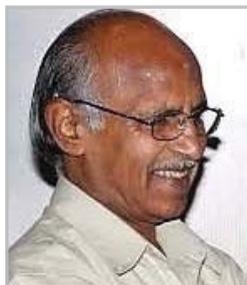
Convener for the International Seminar on Quantum Physics and Emptiness in Buddhism, Namgyal Institute, Gangtok, Sikkim, March 27 and 28, 2018.

Moderator for two talks in the International Symposium on Mind from Various Indian Philosophical Perspectives, on Golden Jubilee Celebration of Central University of Tibetan Studies, Saranath, December 29 and 30, 2017.

Organized National Symposium on Sacred Geometry and Design in Nature: An Interplay of Art, Science and Philosophy at Central University of Higher Tibetan Studies, Saranath, October 25 and 26, 2017.



SCHOOL OF NATURAL SCIENCES AND ENGINEERING



PS Goel
Raja Ramanna Chair
Visiting Professor

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Joined NIAS on: May 2, 2016

Major Research Contribution for the Academic Year

Completed study on ISRO culture funded by TATA Steel and inputs from this study are being implemented by the company in its HR policies. Advised Energy and Environment Programme, NIAS on fine tuning MoES project and organizing Workshop on Realizing 100 GW Renewable Energy under MNRE project and also charting out the Programme in the coming years. Along with Prof Baldev Raj and Dr VK Saraswat, NITI Aayog, mentored conduct of Workshop on Sustaining Excellence in an organization and finalised recommendations as NIAS report. Generated concept note on medical tourism leading to NIAS/NISTADS workshop, inputs to Defence Leadership Programme with DRDO.

Other Contributions

MoES – Chairing Technology Research Board.

Chairing Research Advisory Committee NIOT and Member, Governing Council of NIOT.

Particularly pursued development of Solar Assisted Low Temperature Thermal Desalination by IIT, Madras under TRB at Cape Kumarin.

DRDO – chaired Apex committee for Kautilya and PDR committees for ANVESHYA related to launch on Demand capability.

INAE - coordination with respect to development of indigenous 70-80 seater transport aircraft and conduct of Engineers Conclave EC-2017 with themes (a) Regional Civil Transport Aircraft and (b) Digital Economy, also inputs to committee on Education Policy.

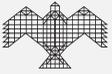
Societal – chaired committee on human trial of indigenous cochlea, EM drive propulsion system proposal, mentored young start up on development of microwave thruster and internet constellation of satellites.

ISRO – Reviewed all PSLV and GSLV projects as member of MRR and provided critical feedback on ISRO Policy.

Lectures

Sustaining Excellence in an Organization, Joint Workshop organised by NIAS and NITI Aayog at NIAS, October 29, 2017.

Impact of Our Present on the Future: The World We Leave Behind, NIAS Foundation Day Celebrations, Celebrating JRD Tata, July 29, 2017.



TRAINING PROGRAMME

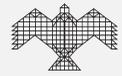


Senior Executives Programme

The 32nd Senior Executives Programme was held from February 5 to 10, 2018, and attracted a record number of 31 participants. The event was titled, From Excellence to Eminence: Facilitating Thought Leadership, that aimed to enhance impact leadership in today's global economic and political order.

Faculty and participants for the Senior Executives Programmes represented the State Government, Civil Society, Government Institutions, Corporates, Media, Judiciary, Fine Arts etc. They agreed that in today's complex world, it was necessary to learn to listen first and make effective use of existing knowledge and experience. Courage is the first human quality that guarantees the other qualities. Also, there is a need to be accountable for one's actions and responsible for one's behaviour.

The key speakers included, Prof VS Ramamurthy, Ex-Director of NIAS who also served as Secretary to the Government of India; Prof SS Meenakshisundaram, Former Secretary to the Government of India; Lt Gen Retd Prakash Menon, Director, Strategic Studies Department, Takshashila Institution and Adjunct Faculty, NIAS; Amb Shivshankar Menon, the National Security Advisor during 2011-14; Dr K Ullas Karanth, the noted conservationist and founder of the Centre for Wildlife Studies in 1984 to actively engage with; Dr RD Ravindran who started his Ophthalmology Practice under Dr G Venkataswamy, the Founder of Aravind Eye Care System in 1987; Prof Vijayalakshmi Ravindranath of IISc and Founder-Director at National Brain Research Centre; Mr Dinesh Gundu Rao, the Working President of Karnataka Pradesh Congress Committee and 4-time MLA; Dr



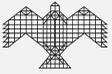
Shailesh Nayak, Former Secretary of Ministry of Earth Sciences; Dr Malini Parthasarathy, the Editor of The Hindu during 2013-16; Mr B Muthuraman who retired from the Tata Group as Vice Chairman of Tata Steel and Director in Tata Industries; Mr Ricky Kej, an internationally renowned Indian Music Composer, Producer and Conservationist, and 2014 Grammy Award Winner; Justice Prabha Sridevan, Judge of the Madras High Court from March 2, 2000 to August 8, 2010 and Chairman, Intellectual Property Appellate Board, from May 2011 to August 2013; and Mr MJ Akbar, the Minister of State for External Affairs.

The participants of the Programme came from diverse background representing army, navy, private sector and government sectors. The key speakers and participants also came from different generations, brought together eminence, experience and exuberance. Legends in their respective fields, some of these leaders had built institutions from the scratch, while some are still creating new paths, where there existed none before.

The NIAS 32nd Senior Executives Programme was very successful as speakers were able to integrate scholarship in the natural and social sciences with technology and the arts. The participants were able to build on the dialogue and establish strong ties across with their fellow-participants, which will serve them well in their professional and private lives. The 32nd Executives Programme also witnessed the institutionalization of the NIAS-SEP.

The Programme was coordinated by Prof R Srikanth and Prof D Suba Chandran.

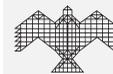
Ms V Girija assisted in the coordination of the Programme.



Programme on Space in India's Foreign Policy Technology - Policy - Security Considerations

Based on an approach made by the International Strategic and Security Studies Programme to Ministry of External Affairs (MEA) and Indian Space Research Organization (ISRO) a task team convened by ISSSP with members drawn from MEA, ISRO and NIAS prepared a report on Space in India's Foreign Policy. The suggestions and recommendations of the task team were presented to a larger audience in a round table, the outcome of which was highly supportive of the recommendations and suggested follow up action be taken up. One of the recommendations included offering a course on Space in India's Foreign Policy and this was successfully conducted during March 19 to 23, 2018. Twenty-one officers drawn from ISRO, DRDO, MEA, IDS, Indian Navy, Indian Air Force, Indian Army, Cabinet Secretariat, participated. This is the second paid Programme offered in NIAS.

The Programme was coordinated by Prof Rajaram Nagappa.

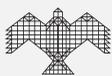


NIAS-DST Training Programme on Science Policy and General Management

Two week-long training programme on Science Policy and General Management was held from February 26 to March 9, 2018. As part of the initiative by the Department of Science and Technology, NIAS organised the training programme to provide the orientation and planning skills required for scientists/technocrats of the country, and in particular, to offer views of the broader scientific, economic, social and cultural milieu in which the Indian scientific enterprise could develop in this century. The large pool of scientific and technical manpower in many Indian institutions has not had the benefit of either induction training or a system of regular in-service training that are available to other cadre-based services. In order to bridge this gap, this Programme for scientist-administrators and technologists at the Senior Level position from various scientific organizations in the country, focused on the theme Science Policy and General Management. Consistent with the mission of NIAS, its courses emphasized the development of leadership qualities through the integration of multidisciplinary knowledge. Prof P Balaram, currently Professor Emeritus, Molecular Biophysics Unit, Indian Institute of Science and DST Year of Science Chair Professor, National Centre for Biological Sciences, Bengaluru delivered the inaugural address for the Programme. Dr YS Rajan, Honorary Distinguished Professor ISRO/Department of Space and Chairman, BOG, NIT, Manipur delivered the valedictory address. The topics included Team Building for Innovation, Energy Foresights, Security and Sustainability, Mind to Market Place; A Multiathlon of S&T Innovation and Entrepreneurship, Science and Technology: Maritime Domain, Science and Technology Initiatives for Society : Musings from Two Tales, Advocacy special interest, or Action Groups in influencing Science Policies, Traditional Processing and Innovation in Foods, Science Technology and Security, Innovations: Policy for Agriculture, Evolution of Indian Nuclear Programme, Science Policy in Global Context, India's Water Resources and Management Strategies, R&D on Sustainability Technologies, Bringing back the Eureka in Science Shock Waves – A Case Study, Science and Ethics, Science Technology and Diplomacy, S&T Policy to meet the demands of 21st Century, Role of effective Science Communication for Good Governance and Policy Making, Science and Gender, Digital Economy – Technology Evolution, Apollo Programme Moon Mission, Mars Programme, Transforming Indian into a Global Technology Leader, National Space Policy with Advances In Science; National/International Nuclear Policies, ASTROSAT and Its Impact on the Indian Astronomy, Evaluation of Science, Cyber Security, India's First Scientific Expedition to South Pole, Foresight Needs for India's S,T,E and Healthcare. Eminent speakers, who are experts in their field of work, were invited to deliver the lectures. In addition, the Programme featured an evening public lecture on Innovation and Convergence of Sciences by Dr A Sivathanu Pillai, Honorary Distinguished Professor, ISRO; and a public evening cultural programme Kalaarpanam – An Offering of Indian Classical Art, by Punya Dance Company, Bengaluru; and a visit was arranged to Master Control Facility (MCF), Hassan, Shravanabelagola, Belur and Halebidu.

The Programme was coordinated by Prof V Bhujanga Rao and Dr Prakash Panneerselvam.

Ms S Lalitha assisted in the coordination of the Programme.



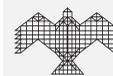
NIAS-DST Training Programme for Women Scientists on Science for Progress in India: Focus on Sustainability

As part of its outreach programme, NIAS conducts residential courses every year for administrators, scientists and executive officers working with the government and industry. In this series the institute conducted NIAS–DST Training Programme for Women Scientists (under DISHA Scheme) on Science and Progress in India: A Focus on Sustainability. Meant for mid-career women scientists and technologists working in India, the week-long training programme included a combination of invited and in-house lectures delivered by scientists, administrators, scholars, teachers, social scientists, scholars of humanities and artists. The Programme was held from January 22 to 26, 2018.

The Programme involved lecture demonstrations, audio-visual contents, group discussions and sessions focusing on professional development. In addition, there was a public lecture and a cultural evening organized for the participants. Prof Shiv Visvanathan, Jindal Global Law School, O.P. Jindal Global University, Haryana, delivered the inaugural address and Dr Hina A Gokhale, Director General-(HR), DRDO Headquarters gave the valedictory address. Participants showed enthusiasm and active participation for the sessions and much appreciated the cultural programme. Our understanding and determination is enhanced manifold by the responses from the speakers and participants of the courses.

The Programme was coordinated by Dr Shivali Tukdeo and Dr Shalini Dixit.

Ms JN Sandhya assisted in the coordination of the Programme.

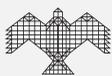


Sixth NIAS-DST Training Programme on Policy for Science and Science for Policies

The week-long training programme on Policy for Science and Science for Policies was held from January 1 to 5, 2018. As part of the initiative by the Department of Science and Technology, NIAS organised the training programme for scientists and technologists from various institutions of the country, and in particular, to offer views of the broader scientific, economic, social and cultural milieu in which the Indian scientific enterprise could develop in this century. The large pool of scientific and technical manpower in many Indian institutions has not had the benefit of either induction training or a system of regular in-service training that are available to other cadre-based services. In order to bridge this gap, the main objective of this Programme, which was sixth in the series for scientist-administrators and technologists at the Director/Divisional Head position from various scientific organizations in the country, focused on the theme 'Policy for Science and Science for Policies'. Consistent with the mission of NIAS, its courses emphasize the development of leadership qualities through the integration of multidisciplinary knowledge. Prof P Rama Rao, Chairman, Governing Council of IISc, JNCASR and ARCI, Hyderabad delivered the inaugural address for the Programme. Prof GG Gangadharan, Director, MS Ramaiah Indic Centre for Ayurveda and Integrative Medicine delivered the valedictory address. The topics included Policy for Science and Science for Policies, Enabling Evidence based Policy Making using Modeling, Simulation, and Predictive Analytics, Clever Ways of Communicating Science and Policy, Policy on Development of Ocean and Maritime Resources, Thought Process Guiding Emergence of Indian Space Programme, ASD and Science Policy, Science and Modern Medicine, Science Administration and Management, Nano Science and Engineering, Psychiatry and Mental Health, Health Care and Science Policy, and Agriculture and Science Policy. Eminent speakers, who are experts in their field of work, were invited to deliver the lectures. In addition, the Programme featured public evening cultural programme on Navavarsham Nrtypushpam – A Festive Offering for the New Year by Ms Lakshmi Gopalswamy, well-known Bharatanatyam Dancer and Artist; evening public lecture on Challenges and Opportunities for Higher Education in India by Prof Anil D Sahasrabudhe, Chairman, AICTE, New Delhi; and a visit to Center for Nano Science and Engineering (CeNSE), IISc.

The Programme was coordinated by Prof Sangeetha Menon and Dr Nithin Nagaraj.

Ms S Lalitha assisted in the coordination of the Programme.



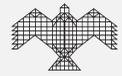
The Fifteenth Annual NIAS DST Training Programme on Multidisciplinary Perspectives on Science, Technology and Society

The Programme was conducted during December 11 and 22, 2017, and hosted 28 senior and mid-career scientist-administrators and technologists from various government organizations around the country. Being true to the title of the Programme was weaved around multiple aspects of science, technology and society. The topics included education, healthcare, energy, climate change, waste management, water-security, communication, wildlife conservation, heritage, corruption, political leadership, defence, and diplomacy. There were lectures on past, present and future policies for science and technology in the country. Eminent speakers, who are experts in their field of work, were invited to deliver the lectures. The inaugural address by Prof VS Ramamurthy on History of Science and Technology, set the tone for the workshop. The valedictory address was given by Prof Rajan Gurukkal on Science, Society and Education.

There were three evening public lectures during the workshop. 13th Raja Ramanna Memorial Lecture was given by Dr K Kasturirangan on Grand Challenges in Science and Technology – It's Multiple Dimensions. Another public lecture was delivered by Prof S Sadagopan on Effect of Digitization on Indian Society, that triggered discussions around job losses, skill retraining, and related societal issues.

The Programme was coordinated by Prof Sheela K Ramasesha and Dr Hippu Salk Kristle Nathan.

Mr KS Rama Krishna assisted in the coordination of the Programme.



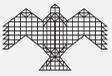
Inclusive Manufacturing Forum – 2017

Inclusive Manufacturing Forum took place in NIAS during April 6 and 8, 2017 in collaboration with Indian Institute of Science, Bengaluru and Cranfield University, UK. Along with the support of BRICS and Department of Science and Technology, Government of India.

Inclusive Manufacturing Forum mandate was prompting participation of people from all strata of society, especially the so far marginalized segment of the society; including rural, poor, under-privileged, disabled, women and senior citizens. Thereby democratize and distribute manufacturing activities across several regions as well as encourage local production using indigenous resources (materials, energy and skills), while they also network for inter-alia producing/consuming interactions. Rewards should accrue for developing communities and dividends should benefit all stakeholders. The overarching focus of inclusive manufacturing interventions was simply not for individuals or products instead communities of stakeholders. The main purpose of Inclusive manufacturing was yield higher income as well as pride and dignity for all stakeholders.

Tenacity of Inclusive Manufacturing was to evolve over domain immersion like instead of merely making cheaper versions of existing products the costs get engineered essentially about affordability perseverance. Appropriate technologies should be adopted to realize it like open designs, mobile/micro-factories, tele-services, digital platform to connect design, manufacturing and supply chain, and digital/online marketplace (last mile connectivity). Advanced technologies like additive manufacturing, Internet of Things (sensors and actuators), smart phones, GPS and GIS, Digital tools and platforms for product lifecycle engineering and management can spur inclusiveness for local needs both at peri-urban and rural areas. Automation should judiciously intend to get rid of drudgery, not jobs!

Novel academic and research interventions are crucial to sprint inclusive manufacturing over pertinent problems of the segments that're socially exclusive and vulnerable. The immediate challenge is to foster basic manufacturing, essential testing, validation, sentience of intellectual property rights and sustain the economy at the fringe parts of the society. This implies environment sustenance, preventing waste or reducing reliance on natural resources (materials, energy, water) have to begin from design.

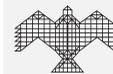


Inclusive Manufacturing Forum brought together over 100 invited participants, including 50 highly acclaimed thought leaders from engineering, social sciences and rural sector as well as the government. Dr R Chidambaram, Principal Scientific Advisor to the Government of India delivered inaugural address. Various ideas on eco-friendly, sustainable and affordable products and equipment were discussed and displayed during the event. Besides few students from reputed technical universities across India presented posters. All these deliberations were diligently summarized, compiled as a report and circulated widely.

Five thematic discussions included Design (coordinated by Prof Amaresh Chakrabarti, Indian Institute of Science, Bengaluru), Manufacturing (Dr Rajkumar Roy, Cranfield University, UK), Digital Supply Chain (Prof MK Tiwari, IIT Kharagpur), Quality and Validation (Prof Baldev Raj), Academic Research and Industry (Prof B Ravi, IIT Bombay), and Education (Prof PVM Rao, IIT Delhi). Several valuable insights and suggestions evolved during these discussions. As a part of the event NIAS organised the cultural event by the team NRITYAGRAM. Inclusive Manufacturing Forum was successful only because of the generosity of its sponsors including various business houses , Government organisations and institutions such as Tata Consultancy Services, Bharat Forge, Tata Steel, Unilever, Department of Science and Technology, Board of Research in Nuclear Sciences, Science and Engineering Research Board, NITI Aayog, The Defence Research and Development Organisation, Mishra Dhatu Nigam Limited, Indian Space Research Organisation, Council of Scientific and Industrial Research, The Office of The Principal Scientific Adviser to Government of India, British Embassy, VIT University and SASTRA University.

Inclusive Manufacturing Forum was coordinated by Prof V Bhujanga Rao and Dr Muralidhar Lakkanna.

Mr KS Rama Krishna assisted in the coordination of the Forum.



DOCTORAL PROGRAMME



Doctoral Committee

Prof Sundar Sarukkai, *Chairman and Academic Head*

Prof Anindya Sinha, *Member*

Prof Sangeetha Menon, *Member*

Prof Anitha Kurup, *Member*

Prof D Suba Chandran, *Member*

Dr TS Gopi Rethinaraj, *Member*

Dr Shalini Dixit, *Member*

Dr MB Rajani, *Member*

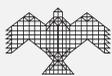
Two PhD Student Representatives –
By choice of the Committee

The second semester of NIAS academic year ended in April 2017 with the four Schools offering various courses for the NIAS PhD students in a range of sub-disciplines and specialised areas keeping in view the specific requirement of the concerned students. On June 23, 2017 the PhD Committee also successfully completed the entrance examination and interviews for selection of PhD students for the 2017 batch. The NIAS PhD Programme is a unique interdisciplinary training programme that bridges the gap between the natural and engineering sciences, social sciences, and the humanities and admits bright and committed postgraduate students interested in pursuing independent research cutting across disciplines for the award of doctoral degree by Mysore University or Manipal University.

There was a surge in the number of applications (over 300) this year because of the increased flexibility in admitting candidates with and without financial support. The national level entrance exam and interviews for admission to the NIAS Doctoral Programme was held during June 21, 22 and 23, 2017. Of the 142 shortlisted candidates, 10 candidates were selected for the 2017 August intake after an entrance test and two rounds of intensive personal interviews. Of these, six candidates will work under funded projects by TCS and DST. This is the fourteenth batch since the beginning of the NIAS PhD Programme. The academic year begun on August 1, 2017 and NIAS faculty members offered courses in a wide range of areas to the new students, continuing students, and students and general public outside of NIAS.

Ms Soundarya Iyer from the School of Social Sciences presented her final colloquium on 'Dynamics of Rural Transformation in Karnataka: A View from three Villages' on April 14, 2017 to the NIAS community and submitted her thesis to the Manipal University. She has taken up a research position at the Indian Institute of Human Settlements (IIHS) recently.

Mr Sashi Kiran C defended his proposal on 'Modeling Electricity Demand in the Indian Context for Planning, Management and Integration of Renewable Technologies' at Manipal University and Mr Vijay CS defended his proposal on 'Electricity System Modelling for Large Scale Renewable Integration in India' on April 8, 2017 at Manipal. Both have registered at Manipal University.



Ms Aditi Kathpalia attended the conference 'The Science of Consciousness (TSC)' in San Diego, California, USA during June 5 to 10, 2017 and gave a paper presentation at the above conference on 'A New Approach to Causality based on Compression-Complexity' on June 7, 2017. She received travel support from the Science and Engineering Research Board (SERB), DST, to attend the conference.

The NIAS Director reconstituted the PhD Committee on June 23, 2017 and has appointed Prof Sundar Sarukkai as the Academic Head of the NIAS PhD Programme and Chairman of the PhD Committee. The new Committee became effective on July 1, 2017 and comprised Prof Sundar Sarukkai, Prof Anindya Sinha, Prof Sangeetha Menon, Prof Anitha Kurup, Prof D Suba Chandran, Dr TS Gopi Rethinaraj, Dr Shalini Dixit, Dr MB Rajani, and two PhD Student Representatives.

A total of ten students spread across the four Schools joined the NIAS PhD Programme on August 1, 2017. The current batch includes the following students: Mr Ajit Kumar Babu, Ms Ashni K Dhawale, Ms Chandana R Bindu, Ms Cheshta Arora, Ms Jahnvi Sharma, Mr Nitesh SA, Mr Sarvajeet K Sinha, Mr Shilajit Sengupta, Mr Snehashish Mitra, and Mr S Vignesh. The Orientation Programme for the batch was held on August 2, 2017 with the Director's welcome address followed by briefings by the Academic Head, Deans of the four Schools, and other faculty members.

NIAS faculty members are currently offering a wide range of interdisciplinary courses to the new batch, students from the earlier batches, and interested others outside NIAS. There are three mandatory courses for the first-year students: Foundation Course, Research Methodology and a Thesis Proposal Course.

NIAS had a major rethink on the Foundation Course (FC) and created a list of one credit courses. The students could take combination of four of them. The aim is to transmit an idea of interdisciplinarity not through disciplinary concerns alone but through the world of ideas in different disciplines. The aim of the one credit modules was to exhibit the ways of thinking in these different disciplines, as well as showing how new and original ideas arise.

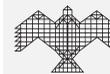
The Research Methodology Course (RM) was designed so as to give foundational training in research methods in the different disciplines. This was a focused, coherent course that covered basic training in research methodologies in different disciplines. The RM course also had short workshops like seminars which deals with Project Management (billing and other administrative details), Project Writing, Research and library access etc.

The Proposal Course was a course where the output is a well-crafted research proposal with literature survey and other required elements of the thesis proposal. This course was offered by the guide(s) with added inputs by other faculty and Student Advisory Committee. This course helped the student to write the proposal in line with the research theme and included course content of the required literature.

The courses taught in the August-December semester were: Understanding Conflict: Theoretical Constructs, An Introduction to Mind, its Functions and Purpose, Ancient Astronomy in the Indian Subcontinent, Indian Temple Architecture – Origins and Evolution, Topics in Information, Coding Theory and Chaos with applications to Consciousness Studies, Philosophy for (academic) Survival, Measuring Development, Energy, Environment, and Natural Resources – Policies and Practices in the Indian context, Human Animal Studies, Primate Behavioural Ecology, Capital and Labour in the New Millennium, Inequality, Reading the Economy, Feminism and Techno-science, Migration and Development, Dimensions of Entrepreneurship, Effective Research Writing, and Contemporary India: Ethnographic Perspectives.

Students from 2015 batch have completed two years (Mr S Siddharth, Mr Sashi Kiran C, Mr Shyam Hari P, Ms Meera Sudhakar, Mr Sreedhar V, and Mr Vijay CS.) and promoted from Junior Research Fellow to Senior Research Fellow.

Students from 2013 batch completed four years at NIAS and gave a colloquium for their fifth-year fellowship extension. (Mr Venkatesh KN, Mr Nishant Srinivasaiah, Mr Shaurabh Anand, Ms Ankita Rathi and Ms Anamika Ajay).



Ms Soundarya Iyer, doctoral candidate working under the supervision of Prof Narendar Pani from the School of Social Sciences, defended her thesis on 'Dynamics of Rural Transformation in Karnataka: A View from Three Villages' and was awarded PhD on September 13, 2017 by the Manipal University.

Ms Aditi Kathpalia, doctoral candidate working under the supervision of Dr Nithin Nagaraj defended her proposal on 'Theoretical and Experimental Investigations into Causality, its Measures and Applications' and registered with Manipal University.

Ms Kuili Suganya, doctoral candidate working under the supervision of Dr MB Rajani defended her proposal on 'Geospatial Analysis of Water Features in the Archaeological Landscape of Malaprabha River Valley' at NIAS.

Ms Ekta Gupta, doctoral candidate working under the supervision of Dr MB Rajani defended her proposal on 'Advancing Archaeological and Geomorphological Understanding of the Indian Coast using Old Cartographic and Visual Records' at NIAS.

Ms Sherin Ajin, doctoral candidate working under the supervision of Dr M Mayilvaganan defended her proposal on 'Spatializing Nation-state through the Discourses of Development and Security at the Borderland: A Case Study of Tawang' at NIAS.

Mr Surya Sankar Sen, doctoral candidate working under the supervision of Dr Anshuman Behera defended his proposal on 'Implications of Local Conflicts on Bilateral Relations: Cases of Land Boundary and Enclave Conflicts on India-Bangladesh Relations' at NIAS.

Mr Subroto Dey, doctoral candidate working under the supervision of Dr Shivali Tukdeo defended his proposal on 'Dreams and Discontents: Understanding Career and Life-Path of High School Students in Mandla, Madhya Pradesh' at NIAS.

Ms Vijayshree C S, doctoral candidate working under the supervision of Prof Carol Upadhyia defended her proposal on 'Understanding Ritual Objects: An Ethnography of *Bhuta* Visual Culture' at NIAS.

Ms Hema Thakur, doctoral candidate working under the supervision of Prof Sharada Srinivasan from the School of Humanities presented her final colloquium on 'Pre-thesis colloquium by Ms. Hema Thakur on 'Emergence of urban settlements in North Karnataka – c.300 BC-c.300 CE with particular reference to Sannati'.

NIAS has a Research Ethics Policy working under a set of committee of NIAS faculty members. Prof Carol Upadhyia is the Chairperson for this Ethics Committee.

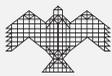
All research proposals that include work with animal and/or human subjects must include an ethics statement, based on the above guidelines and standard ethical principles in the researcher's discipline or area of research. The ethics protocol should refer to the methodology section of the proposal and address all the relevant points outlined above, e.g. how informed consent will be obtained, how confidentiality will be assured, and data protected, how the well-being of animals will be ensured, and so on.

A research ethics statement or protocol is an essential part of every proposal for research involving human and/or animal subjects and must be submitted to the NIAS Ethics Committee for review and approval.

Activities of the Students

Ms Nimisha Agarwal was invited as a panelist for LGBT and Feminism at St. Joseph's College held on 11th August 2017 and also Church and LGBT issues in contemporary India at United Theological College held on August 30, 2017.

Mr Sreedher Vijaykrishnan attended the Student Conference on Conservation Science held at the Indian Institute of Science between September 21 and 24, 2017, Attended and Co-organised a workshop on Animal Behaviour at the Student Conference on Conservation Science held at the Indian Institute of Science on September 21, 2017 (Other organizers: Mr Nishant M Srinivasaiah and Ms Samira Agnihotri of NIAS). He gave



a talk on Demography and Distribution of Elephants in the Annamalai Landscape (based on PhD work) at the Annual Academic Meet of the Nature Conservation Foundation held at Mysore in August 2017 and another talk on Conservation Conundrums in Today's Context, to high school students from various schools of Chennai, attending a nature camp at the Annamalai Tiger Reserve.

Ms Aditi Kathpalia delivered a talk on 'Mathematical Methods in Neuroscience with Emphasis on EEG Analysis' in a Symposium on Current Approaches in EEG Analysis in NIMHANS on January 19, 2018.

Ms Aditi Kathpalia participated in seminar on 'Altruism, Well-being and Purpose' organized by NIAS Consciousness Studies Programme and METI International, held in NIAS, February 1 and 2, 2018.

Mr Varun S Bhatta was awarded ICPR Junior Research Fellowship 2017-18.

The new batch students (2017-18) successfully completed the course work of the first semester. The next step for the students was the qualifying examination. The aim of the exam is to help the student prepare for their thesis work. Qualifying exam was an open book exam spread over for three days. Ten students have successfully qualified the exam.

The Student Advisory Committee (SAC) was set up after the students passed the qualifier exam. The SAC is responsible for recommending further coursework, assessing the student's performance periodically, discussing and evaluating the research proposal and monitoring their progress.

Ten first-year students gave their proposal presentation to the NIAS community.

Mr Nitesh S Anchan, doctoral candidate working under the supervision of Prof Anindya Sinha defended his proposal on Other Minds: Philosophical and Empirical Approaches in the Conceptualization of the Nonhuman Mind, January 16, 2018.

Ms Ashni Kumar Dhawale, doctoral candidate working under the supervision of Prof Anindya Sinha defended her proposal on Monkey on a Hot Tin Roof Ecological and Behavioural Adaptations of Lion-Tailed Macaques to a Rainforest-Anthropogenic Habitat Matrix in the Western Ghats Mountains of Southern India, January 16, 2018.

Ms Cheshta Arora, doctoral candidate working under supervision of Prof Anitha Kurup defended her proposal on Scientific, Technological, and Gendered Relations: An Ethnographic Study of Women Scientists, Engineers and Factory Workers, January 23, 2018.

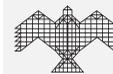
Mr Snehashish Mitra, doctoral candidate working under the supervision of Prof Carol Upadhyya defended his proposal on Contestations over Urban Land and Environment: Negotiating Citizenship in the Hills of Guwahati, January 23, 2018.

Mr S Vignesh, doctoral candidate working under the supervision of Prof Sindhu Radhakrishna defended his proposal on Interactions of Consent: Human – Bovine Relations in Tamil Nadu, January 24, 2018.

Ms Chandana R Bindu, doctoral candidate working under the supervision of Prof Narendar Pani defended her proposal on Patterns of Response to Inequality in Relation to the Development Process: A Study of Two Villages in Gujarat and Kerala, January 30, 2018.

Mr Ajit Kumar Babu, doctoral candidate working under the supervision of Prof Narendar Pani defended his proposal on Inequalities in the Process of Former Agriculturists Learning Non-Agricultural Skills, January 30, 2018.

Mr Shilajit Sengupta, doctoral candidate working under the supervision of Prof Narendar Pani defended his proposal on Political Consequences of Intra-Village Inequalities in Rural Transformation: A Study of Two Villages in West Bengal, January 30, 2018.



Ms Jahnavi Sharma, doctoral candidate working under the supervision of Dr Hippu SK Nathan defended her proposal on Towards Self-Sustaining Ecosystem: Conceptualization and Assessment for Opencast Coal Mine Closure, January 31, 2018.

Mr Sarvajeet Kumar Sinha, doctoral candidate working under the supervision of Prof R Srikanth defended his proposal on Consolidation of Laws Related to Environment Protection in Surface Coal Mining in India - Prospects and Challenges, February 21, 2018.

NIAS has signed a MoU with The Institute of Trans-disciplinary Health Sciences and Technology (also known as TDU). The MoU provides scope for students registration for the PhD Programme. Students from NIAS have been registering with the TDU and MAHE.

The Institute's PhD Programme offered various courses for students and research associates in the second semester of the 2018-19 academic year, from January to April 2018. Various courses in different disciplines are being offered by NIAS faculty members based on the research interests of the new batch of students. The courses taught in the current semester are: Ethnographies of Labor, Causality Testing and its Applications, Reading Landscape through archaeology and ecology, GIS for spatial data visualization and analysis, Ontology of Indian Development, Ethnographic Dissertation Writing, Seminar on Urban Political Ecology, Mobility and Informality, Trade Networks in Indian Ocean 1500-1800.

The senior batch students completed their research and presented their final colloquium to NIAS community and submitted their thesis to the concerned Universities.

Ms Nimisha Agarwal, doctoral candidate working under the supervision of Prof Anindya Sinha from the School of Natural Science and Engineering presented her final colloquium on Rethinking Climate Change: Vulnerability, Perception and Adaptation Among Rice and Wheat Farmers in Northern India, January 12, 2018.

Mr Sanket Sudhir Kulkarni, doctoral candidate working under the supervision of Dr M Mayilvaganan from the School of Natural Science and Engineering presented his final colloquium on India's Energy Security Concerns and Decision Making: Case Studies of Cross-Border Natural Gas Pipelines, February 15, 2018.

Ms NS Nalini, doctoral candidate working under the supervision of Prof Narendar Pani from the School of Social Sciences presented her Pre-thesis colloquium on First Nature and Urbanisation: Terrain and Urban Development of Bangalore, 1971-2011, February 28, 2018.

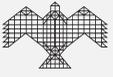
Mr Chetan B Singai, doctoral candidate working under the supervision of Prof Anitha Kurup from the School of Social Sciences presented his final colloquium on Higher Education and University Governance in India: A Case Study of two Universities in Karnataka, March 1, 2018.

Mr Naresh Keerthi, doctoral candidate working under the supervision of Dr Rajesh Kasturirangan from the School of Humanities presented his final colloquium on The Cognitive Polysemy of Sensory Terms in Sanskrit, March 13, 2018.

Ms Meera HR, doctoral candidate working under the supervision of Dr Rajesh Kasturirangan from the School of Humanities presented her Pre-thesis colloquium on Language Game and the role of Suggestion (Vyangya) Therein, March 15, 2018.

Advertising for applications for the admissions to NIAS PhD Programme for the August 2018-19 intake has been released. The announcement has been sent to various institutions/universities inviting applications for the various disciplines.

Manipal Academy of Higher Education will organise a scientific poster exhibition to showcase the research work done by the PhD candidates registered with MAHE. This year poster presentation is scheduled on April 4, 2018 at Manipal. MAHE invited this year 2012 batch of students from NIAS i.e. Mr Venkatesh KN, Mr Nishant Srinivasaiah, Mr Shaurabh Anand, Ms Ankita Rathi, Ms Anamika Ajay, Ms Keya Bardalai and Mr Varun S Bhatta.

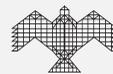


Every year NIAS annual student's colloquium will be organised in which students present their work to the larger NIAS community. The annual colloquium is considered to be a part of the review process of the doctoral scholars. The NIAS Annual Student Colloquium is scheduled to be held on April 17 and 18, 2018. Students are required to present her/his work before the larger NIAS community. The purpose of the annual colloquium is to give feedback and it is part of the review process of doctoral students. It is also time for Student Advisory Committee members to see where the students might need help and what steps should be taken in the near future.

The senior batch students completed their research and presented their final colloquium to NIAS community and submitted their thesis to the concerned Universities.

Ms Hema Thakur, doctoral candidate working under the supervision of Prof Sharada Srinivasan from the School of Humanities presented her final colloquium on 'Pre-thesis colloquium by Ms Hema Thakur on 'Emergence of Urban Settlements in North Karnataka – c.300 BC-c.300 CE with particular reference to Sannati' on September 20, 2017.

Dr Shankar R, doctoral candidate working under the supervision of Prof Sangeetha Menon from the School of Humanities presented his pre-thesis colloquium on A Qualitative Approach to the Psychology of Three Self-conscious Emotions from Sanskrit Poetics, December 20, 2017.



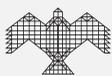
NIAS FOUNDATION DAY AND JRD TATA'S BIRTHDAY

The NIAS Foundation Day and also the Birthday of JRD Tata, the founder of NIAS was celebrated on July 29, 2017. The JRD Tata Memorial Lecture was delivered by Mr Suresh Krishna, Chairman and Managing Director, Sundram Fasteners Limited on “The Idea of Excellence in Industrial Harmony”.

In the morning an entertaining cultural event was organised after a short in-house interaction on “Yesterday, Today and Tomorrow: JRD Tata’s Vision and Repositioning Ourselves”.

In the afternoon, as a part of the celebrations, the Institute organised a panel discussion on “The World We Leave Behind: The Impact of Our Present on the Future”. The panelists were Prof PS Goel, Former Secretary, Ministry of Earth Sciences, Amb PS Raghavan, Convener, National Security Advisory Board (NSAB), Ms Bindu Subramaniam, Lyricist, Pianist and Musician, and Prof Balakrishna Pisupati, Vice Chancellor, Trans-Disciplinary University.





ANNUAL MEMORIAL LECTURES

Six annual memorial lectures were organised – Dr Raja Ramanna Memorial Lecture, Prof MN Srinivas Memorial Lecture, Prof RL Kapur Oration, Prof CV Sundaram Memorial Lecture, Mr K Subrahmanyam Memorial Lecture and Prof Baldev Raj Memorial Lecture.

Dr MB Rajani is the Coordinator of Annual Memorial Lectures.

FIRST BALDEV RAJ MEMORIAL LECTURE



Prof S Ranganathan

Honorary Visiting Professor, IAS
*A Personal Tribute – A Visionary Technology Leader
and a Citizen of the World*
February 28, 2018

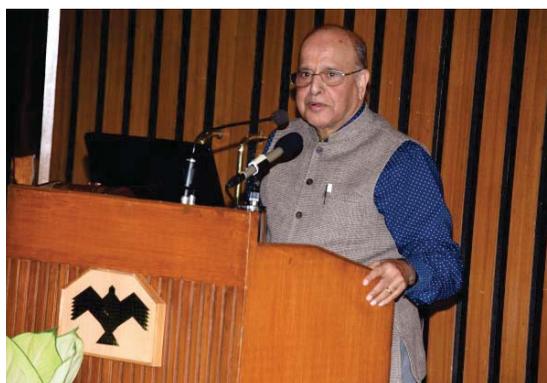
SEVENTEENTH MN SRINIVAS MEMORIAL LECTURE



Prof Ravinder Kaur

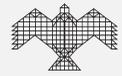
Head, Department of Humanities and Social
Sciences
Indian Institute of Technology Delhi
*Strangers as Spouses: Sex Ratio Imbalances and
Cross-Region Marriage*
January 23, 2018

THIRTEENTH RAJA RAMANNA MEMORIAL LECTURE



Dr K Kasturirangan

Chairman, National Education Policy and Karnataka
Knowledge Commission and Emeritus Professor,
NIAS
*Grand Challenges in Science and Technology: It's
Multiple Dimensions*
December 12, 2017



FIFTH K SUBRAHMANYAM MEMORIAL LECTURE



Dr S Jaishankar

Secretary, Ministry of External Affairs, Government
of India

Navigating an Uncertain World

August 4, 2017

FIFTH RL KAPUR ORATION



Prof Gilles Bibeau

Professor Emeritus, Université de Montréal, Canada
*Drift of Contemporary Ideologies: Social and Psychic
Defenses in the Discourses and Practices of Hate*

June 16, 2017

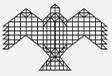
THIRD CV SUNDARAM MEMORIAL LECTURE



Prof Michel Danino

Guest Professor, IIT Gandhinagar
How Can Ancient India Help Today's India?

June 28, 2017



PUBLIC PROGRAMMES



Dr VV Krishna

Professorial Fellow, FASS at the University of New South Wales, Sydney, Australia

Changing Social Relations between Science and Society: Challenges in the 21st Century

March 22, 2018



Prof Amit Basole

Associate Professor, School of Liberal Studies, Azim Premji University, Bengaluru

The Twin Crises in Education and Employment and Ways Forward

March 19, 2018



Mr Leo F Saldanha

Full-Time Coordinator of Environment Support Group, Bengaluru

Beerappa's Angst -Film Screening and Discussion

March 7, 2018



Dr A Sivathanu Pillai

Honorary Distinguished Professor, ISRO

Innovation and Convergence of Sciences

March 6, 2018



Prof Sudipto Chatterjee

NIAS

Prof Mohan Issac

University of Western Australia, Perth

Dr Hamid Dabholkar

Parivartan Trust and ANIS, Pune

Prof Mohan Gupte

Past Director, National Institute of Epidemiology

Mr Avinash Paranjpe

Developmental Expert

Interactive Panel Discussion on Out of the Shadows: Mental Health in India and A Time for Action

February 15, 2018



Dr Yamato Tsuji

Primate Research Institute, Kyoto University

Macaques as Seed Dispersal Agents in Asian Forests

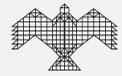
February 14, 2018

Justice Prabha Sridevan

Former Judge, Madras High Court

Gender and Leadership: Making the Workspace Equal

February 9, 2018



Dhaatu

Bengaluru

Puppet Show: Kalidasa's Abhignana Shakuntalam, Act 4

February 7, 2018



Amb Shivshankar Menon

Former National Security Advisor and Former Foreign Secretary,
Government of India

India and the Evolving World Order

February 6, 2018

Disciples of Shree Ramana Maharishi Academy for the Blind

Bengaluru

Classical and Folk Dance

January 24, 2018



Mr Jaykumar Menon

Open Source Pharma Foundation, McGill University

Open Source Model for Affordable Health Care and Wellbeing

January 12, 2018

Prof Purnapurna Banger

Professor of Mathematics and Music, University of Kansas, USA

Geometry in Music

January 9, 2018



Prof Anil D Sahasrabudhe

Chairman, All India Council for Technical Education, New Delhi

Challenges and Opportunities for Higher Education in India?

January 4, 2018

Ms Lakshmi Gopalswamy

Well-Known and Award-Winning Bharatanatyam Dancer and Artist

Navavarsham Nrtyapushpam: A Festive Offering for the New Year

January 1, 2018

Dr Venkat Iyer

Editor, The Round Table, Northern Ireland

Brexit: A Leap in the Dark?

December 22, 2017



Prof S Sadagopan

Director, IIIT-Bangalore

Digitization and Indian Society

December 20, 2017

Mr Chinmai Athreya A

Founder, Sangeeta Simplified, Bengaluru

Vocal Recital

December 19, 2017

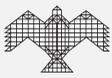
Prof Kisor K Chakrabarti

President, Institute for Cross Cultural Studies and Academic Exchange,
Elon, North Carolina

The Problem of Consciousness and Self-Consciousness

December 14, 2017





Pujyapad Jagadguru Puri Shankaracharya Swami Sri Nischalananda Saraswati

145th Shankaracharya of Rigvediya Poorvamanyam Goverdhan Mutt, Puri Peeta, Orissa

Reality: Modern Science and Ancient Indian Wisdom

December 11, 2017

Prof Antonia Darder

Professor Emerita of Educational Policy, Organisation, and Leadership, University of Illinois

Schooling the Flesh: The Body, Pedagogy and Inequality

December 5, 2017



Prof BV Sreekantan

Hony Visiting Professor, NIAS

Neutron Stars Collision (A Cosmic Deepavali) that Happened 130 Million Years Ago

November 27, 2017

Prof Roy Perrett

Visiting Professor of Philosophy, Ashoka University, Delhi

Memory, Doubt and the Self

November 24, 2017



Prof Stuart Hameroff MD

Professor, Anesthesiology and Psychology, Director, Center for Consciousness Studies,

Banner-University Medical Center, The University of Arizona, Tucson, Arizona,

Does Consciousness Depend on Quantum Brain Biology?

November 14, 2017

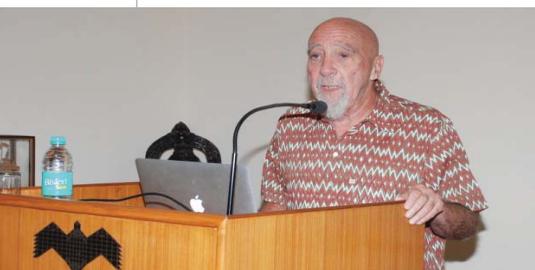
Mr Prem Chandavarkar

Managing Partner, CnT Architects, Bengaluru

The Smart City and the Indian Urban Condition

(City at Its Limits – Public Lecture Series)

November 3, 2017



Film Screening and Discussions

'Our Gauri', a documentary film on Gauri Lankesh

October 10, 2017

Dr R Gopichandran

Director, Vigyan Prasara, Department of Science and Technology, Government of India

Emerging Dynamics of Science Communication

September 27, 2017



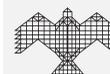
Ms Jessica Lynn

International Speaker and Outspoken Advocate

My Transgender Journey - An Interactive Talk

(In collaboration with Queer Straight Alliance, Indian Institute of Science, Bengaluru)

September 13, 2017



Dr V Bhujanga Rao

ISRO Chair Professor, NIAS

Bionic Ear and Bionic Eye: Progress against Hearing Disabilities and Visual Impairment

September 7, 2017

Dr K Gopinath

Department of Computer Science and Automation, Indian Institute of Science, Bengaluru

Eighth FIRST (Forum for Interdisciplinary Research and Studies) Lecture on Indic S&T and the Computational Thinking Metaphor

August 30, 2017

Ms Meera S

PhD Scholar, NIAS

Agnisakshi (Malayalam Novel) written by Ms Lalithambika Antharjanam – Book Reading and Discussion Meeting by STILL (Social Transformation in Indian Languages and Literature)

August 24, 2017

Dr Marieke van Vugt

University of Groningen, The Netherlands

Classical Ballet: An Introduction with Excerpts from Swan Lake, Sleeping Beauty, La Bayadere

July 31, 2017

Mr Suresh Krishna

Chairman and Managing Director, Sundram Fasteners Limited

JRD Tata Memorial Lecture: The Idea of Excellence in Industrial Harmony

July 29, 2017

Dr PS Goel

Former Secretary, Ministry of Earth Sciences (Science, Technology, Innovation and Society)

Amb PS Raghavan

Convenor, National Security Advisory Board (NSAB) (Geo-Political Realities)

Ms Uma Mahadevan

Principal Secretary to Government of Karnataka, Women and Child Development and Empowerment (Gender and Child)

Ms Bindu Subramaniam

Lyricist, Pianist and Musician, Bengaluru (Fine Arts and Society)

Prof Balakrishna Pisupati

Vice Chancellor, Trans-Disciplinary University (Education)

Panel Discussion on The World We Leave Behind: The Impact of Our Present on the Future

July 29, 2017

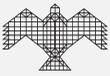
Dr Marieke van Vugt

University of Groningen, The Netherlands

Studying Tibetan Monastic Debate in India: Psychology Outside The Box

July 28, 2017





Prof Narendar Pani

Professor, NIAS

First Book Reading and Discussion Meeting by STILL (Social Transformation in Indian Languages and Literature)

July 13, 2017

Mr TCA Srinivasa Raghavan

Senior Journalist, Author and Economist

Dialogue of the Deaf: The Government and the RBI

July 6, 2017



Dr Badri Narayanan G

Economist, School of Environmental and Forestry Sciences, University of Washington-Seattle

Potential Global Economic Impact of OPEC's Oil Production Freeze

July 3, 2017

Prof Ramesh Chand

Member, NITI Aayog

First Dadabhai Naoroji Lecture on Inequality

Agricultural and Rural Sectors in Indian Economy: Issues Related to Growth and Inequality

June 6, 2017



Dr Arun Shourie

Former Minister for Communication and Information Technology

Two Saints: Speculations Around and About Ramakrishna Paramahansa and Ramana Maharshi – Book Launch

(In collaboration with HarperCollins Publishers India)

June 5, 2017

Prof Sisir Roy's "Decision Making and Modelling in Cognitive Science" Book Release and Discussion

Panel Discussion By: Prof Narendar Pani, NIAS; Prof Anindya Sinha, NIAS and Prof R Srikanth, Poornaprajna Institute of Scientific Research, Bengaluru

May 30, 2017



Lt Gen Prakash Menon (Retd)

Adjunct Professor, NIAS

L'Affaire Human Shield – What Does It Signify?

May 30, 2017

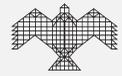
Prof Sundar Sarukkai

Professor, NIAS

Seventh FIRST (Forum for Interdisciplinary Research and Studies) Lecture on Natural/Social

April 28, 2017





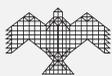
Prof BV Sreekantan

Hony Visiting Professor, IAS
Multi-Billion Dollar Projects to Find Answers to Some Fundamental Questions in Physics and Astronomy
April 19, 2017

Prof Sriram Ramaswamy

Bengaluru
Mass Movements – A Physicist Looks at Living Matter
In memory of H Y Sharada Prasad (April 15, 1924 – September 2, 2008)
April 15, 2017





WEDNESDAY DISCUSSION MEETINGS

NIAS Wednesday Discussion Meetings is one of the outreach events that have continued since the inception of the Institute. The faculty of the Institute meets every Wednesday morning for semi-formal academic discussions after a lecture delivered by a member of the faculty. These Wednesday meetings also serve as a forum for invited guest speakers to deliver lectures on subjects of their choice.

Prof Sangeetha Menon is the Coordinator of Wednesday Discussion Meetings.

Ms Albane Julia

Master's Student in Energy Engineering, The Ecole des Mines de Paris, France
What Role for Electric Vehicles in India?
March 28, 2018



Prof Sheela K Ramasesha

Principal Scientist, Energy and Environment Research Programme, NIAS
Solar Energy Harvesting on The Go
March 14, 2018



Mr VVR Sastry

Former Executive Director C-DOT and CMD, Bharath Electronics Limited, Bengaluru
Digital Economy – Technology Evolution
March 7, 2018



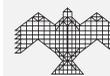
Dr Navakanta Bhat

Chairperson, Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science, Bengaluru
Science and Technology Initiatives for Society: Musings from Two Tales
February 28, 2018



Dr Hemangini Gupta

Postdoctoral Associate, NIAS
Precairy in Experimental India: Travel Consultants, Cooking Robots, and Gendered Care Work
February 21, 2018



Mr Nitesh Anchan

Doctoral Scholar, IAS

Mr Nishant M Srinivasaiah

Doctoral Scholar, IAS

Prof Anindya Sinha

IAS

A Dialogue and Interactive Session on Animal Minds

February 14, 2018



Ms Adrienne Lee Atterberry

Syracuse University, The Maxwell School, Sociology
Graduate Student

*Exploring the Connections between Migration,
Education and Citizenship*

January 17, 2018



Dr R Chidambaram

Principal Scientific Adviser to the Government of
India and Chairman, Scientific Advisory Committee
to Cabinet

*Thought Leadership and Institutional Eminence in
Science and Technology*

February 7, 2018



Dr Patnam R Krishnaswamy

Visiting Scientist, CeNSE, IISc and Adjunct Professor,
IAS

*Modern Medicine for the Healthcare and Well-being:
Challenges and the need for a New Paradigm*

January 3, 2018



Ms Pritha Chakraborty

Research Associate, Gifted Education Team, IAS

*Graphical Representations of Characters in the
Ramayana and Its Ideological Effects on Viewers*

January 31, 2018

Prof SS Meenakshisundaram

Visiting Professor, IAS

*Science, Technology and Society; Role of Political
Leadership*

December 20, 2017

Prof PS Goel

Raja Ramanna Chair Professor, IAS

*Science, Technology and Society; Issues, Linkages and
Challenges*

December 13, 2017

Prof VS Ramamurthy

Emeritus Professor, IAS

Communication in a Connected World

December 6, 2017

Prof J Srinivasan

Distinguished Scientist, Divecha Centre for Climate
Change, Indian Institute of Science, Bengaluru

The Science of Climate Change

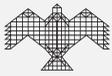
January 24, 2018

Ms Sumitra Sunder

PhD Scholar, IAS

*Yellammaanaata an Overnight Performance and
Contemporary Play*

November 29, 2017



Prof LM Patnaik

Adjunct Professor and INSA Senior Scientist,
Consciousness Studies Programme, NIAS
*From Turing Test to Humanoid Citizenship: An
Intelligence Race between Machine and Its Maker?*
November 22, 2017

**Prof Carol Upadhyay, Prof Sundar Sarukkai, Prof
Sangeetha Menon and Dr Shivali Tukdeo**
NIAS

*A Dialogue and Interactive Session on "The Subject
and 'Subjective' Data: Revisiting Objectivity, Validity
and Knowledge across Disciplines"*
November 15, 2017

Prof Narendar Pani

Head, RBI Programme on Interdisciplinary
Approaches to Economic Issues, NIAS
*Two Stones in a River – GST, Demonetisation and
Processes in the Indian Economy*
November 8, 2017

Mr Srikumar Pullat

Visiting Professor, NIAS
Unmanned Aerial Systems – Kal, Aaj aur Kal
October 25, 2017

Dr Kshitija Joshi

Assistant Professor, NIAS
Chitties as an Informal Response to Uncertainty
October 11, 2017

Dr Hippu Salk Kristle Nathan

Assistant Professor, NIAS
*Substitutes and Complements – The Curious Case of
Poverty Measure*
October 4, 2017

Mr PM Soundar Rajan

Visiting Professor, NIAS
Avionics as the Force Multiplier of Air Power
September 20, 2017

Dr Namitha A Kumar

Research Director, Centre for Health Ecologies and
Technology, Bengaluru
Reconfiguring the Humanities PhD in the Digital Age
September 13, 2017

Mr Nishant Srinivasaiah

PhD Scholar, NIAS
*Lights, Camera, Action! Behind the Scenes of a Study
of Asian Elephants in a Human-Dominated Landscape*
September 6, 2017

Dr MB Rajani

Assistant Professor, NIAS
The Untold Tales of Srirangapatna's Myriad Monuments
August 30, 2017

Mr Chetan Singai

Assistant Professor, National Law School of India
University, Bengaluru
*Policy Recommendations and Policy Change:
Connections, Gaps and Contradictions*
August 23, 2017

Prof PS Goel

Raja Ramanna Chair Visiting Professor, NIAS
Space Exploration: Do We Need Man in Space
August 16, 2017

**Prof Sangeetha Menon, Dr Nithin Nagaraj and Dr
Shankar Rajaraman**

Consciousness Studies Programme, NIAS
*A Dialogue and Interactive Session on Beyond the
Binary: Exploring Causality and Consciousness*
July 26, 2017

Dr Anshuman Behera

Assistant Professor, NIAS
*Political Inequality and Political Violence: Indian
State and the Maoist Conflict*
July 19, 2017

Prof Sharada Srinivasan

Professor and Dean, School of Humanities, NIAS
Some Ethnoarchaeological Aspects of Nilgiris
July 12, 2017

Dr M Mayilvaganan

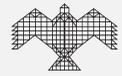
Associate Professor, NIAS
*High Frontiers and Emerging Strategic Challenges: The
Case of Tawang*
July 5, 2017

Prof Janaki Balakrishnan

Professor, NIAS
Complex Dynamics of the 'Simple' Nonlinear Pendulum
June 28, 2017

Prof Narendar Pani

Professor, NIAS
*India in a Changing World: Standing Firm or Fearing
Change?*
June 14, 2017

**Dr Shalini Dixit**

Assistant Professor, NIAS

Living Others' Histories with Our Memories: Identity, Social Conflict and Education

June 7, 2017

Prof Malavika Kapur

Visiting Professor, NIAS

Whose Right To Education (RTE) Is It Any Way?

May 31, 2017

Dr Shoibal Chakravarty

Assistant Professor, NIAS

India's Demographic Transition

May 24, 2017

Mr Posina Venkata Rayudu

Research Fellow, NIAS

Neuronal Adaptations to Environmental Change

May 17, 2017

Dr VV Binoy

Assistant Professor, NIAS

Forbidden Knowledge: Understanding Martial Arts

May 3, 2017

Prof Anindya Sinha

NIAS

Reaching Out: Intentional and Referential Multimodal Communication between Wild Bonnet Macaques and Humans

April 26, 2017

Dr Jayasree Vaidyanathan

Principal Investigator, Water Programme, NIAS

Drought Severity Assessment and Its Mapping in the Drier Regions of Karnataka

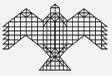
April 19, 2017

Dr Smriti Haricharan

Assistant Professor, NIAS

Ancient Monument or Concrete Temple: One Site Many Visions

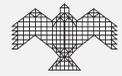
April 12, 2017



ASSOCIATES' PROGRAMME

NIAS shares its experiences, both intellectual and cultural, with a select group of distinguished persons. As Associates, they enjoy certain privileges, including access to the NIAS library, invitations to all major events and opportunities to dine with the NIAS faculty and distinguished visitors. As of now we have 135 distinguished personalities as our associates. NIAS organises regular associates meetings, which include lectures, plays, and performing arts events.

Currently, Prof S Setter is the Chairman for the Associates' Programme.



LITERARY, ARTS AND HERITAGE FORUM

The Literary, Arts and Heritage Forum aims to be an innovative platform for occasional lectures on diverse topics of cultural interest and of interest to science and culture, science and society, including literature, the arts and aspects of heritage. Major events and public lectures were held over the past year.

Prof Sharada Srinivasan and Prof Sangeetha Menon are the Coordinators of the NIAS Literary, Arts and Heritage Forum.

Ms Samana Gururaja

Doctoral Student, University of Pennsylvania, USA

Medieval Mobility: Tracing the Movement of Individuals in the Hoysala Period

January 22, 2018

Prof Mark Kenoyer

University of Wisconsin-Madison

The Indus Civilization: New Insights on Trade, Technology, Ideology and Writing

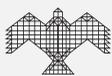
August 18, 2017

Prof Vasudha Narayan

University of Florida

Vishnu Iconography and Art and Temple Architecture in the Angkorian Period

August 11, 2017



LIBRARY

The Library continues to support research, teaching and training activities of Institute by acquiring relevant resources and providing facilities for Library research. Book acquisition was a major activity during the year. Patron driven acquisition aids in building a comprehensive collection of reading material relevant to the research programmes of the Institute. 670 books have been acquired, taking the total print collection to 17,130 books. In addition, the Library also received 105 donations and acquired 112 books in Kannada language. The Library subscribes to 68 print journals.

New Subscriptions include Taylor and Francis collection of 1,500 e-journals, 16 new journals and two databases from Centre for Science and Environment namely Environment Governance Database and Environment-in-Court Database. Other data resources include Indiastat.com, a portal for India's socio-economic data and EPWRF IndiaTime Series data with 16 modules. The library continues its subscription to archival resources like JSTOR and Economic and Political Weekly archives. These electronic resources can be accessed within campus as well as remotely.

The support service for plagiarism detection in student proposals and theses is being provided by the Library.

NIAS has an in-house publication programme since 1998. The early publications of this programme have been digitized and uploaded into the institutional repository during the year. Currently the newspaper clippings related to institute activities is being digitized and uploaded into the repository.

The Library website provides access to licensed content and Library catalogue. Users are also provided with facilities for scanning, printing and photocopying. The total number of photocopies made and articles printed by Library users is 19883 pages. The library had 1282 visitors during the year.



Hamsa Kalyani
Library and Information Officer

Room No. G 01
Tele: 080-22185022
Fax: 080-22185028
Email: hamsa.kalyani@nias.res.in

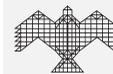
Joined NIAS on: May 1, 1992

Lecture

Libraries in Cityscape: Imagining the Future, Panel Discussion on Reading in the City: Conversations with Bengaluru's Librarians, Indian Institute for Human Settlements, Bengaluru, February 16, 2018.

Library Resources

Sl No.	Library Resources	2017-2018
1	Books	17130
2	Kannada Books	564
3	Donations	1105
4	Theses	32
5	E-Journals Subscriptions	1556
6	Print Journals	68
7	Bound Volumes	2554
8	Data CDs	290
9	CDs	477
10	Lectures on DVDs	802
11	Magazines	6
12	Newspapers	10



PUBLICATIONS

BOOKS

Settar S (2017). Rev Ed. *Pursuing Death: Philosophy and Practice of Voluntary Termination of Life*. New Delhi: Primus Books.

Settar S (2017). Rev Ed. *Inviting Death: Historical Experiments on Sepulchral Hill*. New Delhi: Primus Books.

EDITED BOOKS

Mallik Anupama, Santanu Chaudhury, Vijay Chandru and Sharada Srinivasan Eds. (2017). *Digital Hampi: Preserving Indian Cultural Heritage*. Singapore: Springer Nature.

Menon Sangeetha, Nithin Nagaraj and Binoy V V Eds. (2017). *Self, Culture and Consciousness: Interdisciplinary Convergences on Knowing and Being*. Singapore: Springer Nature.

Pani Narendar and Anshuman Behera Eds. (2018). *Reasoning Indian Politics: Philosopher Politicians to Politicians Seeking Philosophy*. London: Routledge.

MONOGRAPHS

Srinivasan Sharada (2018). Chola and Vijayanagara bronzes: Archaeometallurgical mapping of shifting iconographies. *Second Dr. Frank C. Chookolingo and Evamaria R. Chookolingo Memorial Lecture 2017* edited by Atul Tripathi (pp 1-50). Varanasi: Banaras Hindu University, 1 March 2017.

SPECIAL ISSUES OF JOURNALS

Upadhya Carol, Michael Goldman and V Gidwani Eds. (2017). Special issue on Bangalore's 'Great Transformation': A symposium on urbanization, ecological change and activism. *Seminar* 694, June.

Upadhya Carol and Leah Koskimaki Eds. (2017). Special Issue on 'Reconsidering the region in India', *Journal of South Asian Development*, 12(2). August.

RESEARCH PAPERS

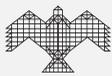
Anand S, V V Binoy and Sindhu Radhakrishna (2018). The monkey is not always a god: Attitudinal differences toward crop-raiding Macaques and why it matters for conflict mitigation. *Ambio*, 1-10.

Balakrishnan Janaki, Sudharsana V Iyengar and Juergen Kurths (2017). Missing cycles: Effect of climate change on population dynamics. Indian Academy of Sciences Conference Series 1, 93-99 (from: *Pramana: Journal of Physics*).

Ashok B, T Hongray and Janaki Balakrishnan (2017). The charged bubble oscillator: Dynamics and thresholds. Indian Academy of Sciences Conference Series 1, 109-115 (from: *Pramana: Journal of Physics*).

Balasubramanian Karthi, K Harikumar, Nithin Nagaraj and Sandipan Pati (2017). Vagus nerve stimulation modulates complexity of heart rate variability differently during sleep and wakefulness. *Annals of Indian Academy of Neurology*, 20(4): 403-407.

Barua M and Anindya Sinha (2017). Animating the urban: An ethological and geographical conversation. *Social and Cultural Geography*, DOI 10.1080/14649365.2017.1409908



Behera Anshuman (2017). Development as a source of conflict: The sahumars, displaced people and the Maoists in Koraput. *The Round Table: The Commonwealth Journal of International Affairs*, 106(5): 543-556.

Behera Anshuman (2018). The majoritarian way to democracy: The Bodo land conflict in Assam. *Alternatives: Global, Local, Political*, 42(3): 135-145.

Das Sonia, Ekta Gupta and M B Rajani (2017). Archaeological remains in and around Avati hill. *Indian Journal of Archaeology*, 2(3):36-47.

Dixit Shalini (2017). School admissions: A matter of choosing education over lifestyle. *The New Leam*, 3(25): 20-22.

Dutt Neesha (2017). Being green? *Seminar*, 694: 50-54.

Goldman Michael, Vinay Gidwani and Carol Upadhy (2017). Bangalore's great transformation- the problem. *Seminar*, 694: 12-16.

Gupta Ekta, Sonia Das, Kuili Suganya, Balan Chittirai, Viraj Kumar and M B Rajani (2017). The need for a national archaeological database. *Current Science*, 113(10): 1961-1973.

Kapur Malavika (2017). Quality primary education. *Mentor*, 10(9): 14-17.

Kosambi R, A Mali and Shivali Tukdeo (2018). Ashram school sanhita: Need for a new perspective [Marathi]. *Sadhana* 30: 15-23.

Koskimaki Leah and Carol Upadhy (2017). Introduction: Reconsidering the region in India-mobilities, actors and development politics. *Journal of South Asian Development*, 12(2): 89-111.

Kurup Anitha, Leya Mathew and Taniya Singh (2017). Taking the next steps. Meeting report on NIAS collaboration with women in STEM in India. *Current Science*, 112(10): 1986-1987.

Majumdar Sarangam and Sisir Roy (2018). Relevance of quantum mechanics in bacterial communication. *NeuroQuantology*, 16(3): 6.

Mathew Leya (2018). Aspiring and aspiration shaming: Primary schooling English and enduring inequalities in liberalizing Kerala (India). *Anthropology and Education Quarterly*, 49(1): 72-88.

Mathew Leya (2017). Mandated resistance, embodied shame: The material and affective contours of a TESOL method. *TESOL Quarterly*. URL: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/tesq.420>

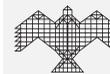
Meenachi N M and M Sai Baba (2017). Application of pareto optimization method for ontology matching in nuclear reactor domain. *Kernteknik*, 82(6): 678-684.

Menon Srikumar M (2017). Temples of memory: The Bhutnath temple environs at Badami as a commemorative landscape. *Heritage: Journal of Multidisciplinary Studies in Archaeology*, 5: 576-605.

Mutalikdesai Amruta and Sheela K Ramasesha (2017). Emerging solar technologies: Perovskite solar cell. *Resonance*, 22(11): 1061-1083.

Nagaraj Nithin and Karthi Balasubramanian (2017). Three perspectives on complexity: Entropy, compression, subsymmetry. *The European Physical Journal Special Topics*, 226: 3251-3272.

Nithin Nagaraj and Karthi Balasubramanian (2017). Dynamical complexity of short and noisy time series: Compression-complexity vs. Shannon entropy, *European Physics Journal Special Topics (Special issue: Aspects of Statistical Mechanics and Dynamical Complexity)*, 226(10): 2191-2204.



Nagaraj R, D Thirugnanamurthy, M M Rajput and M Sai Baba (2017). Brackish water RO plant as a variable load for renewables based hybrid power system for increased power input. *Desalination and Water Treatment*, 88: 33-40.

Navalgund Ranganath and M B Rajani (2017). The science behind archaeological signatures from space. *Current Science*, 113(10): 1859-1872.

Pani Narendar (2017). Experiential regionalism and political processes in South India. *India Review*, 16(3): 304-323.

Pani Narendar (2017). First nature and the state non-emergence of regional capital in Mandya. *Economic and Political Weekly*, 50(46): 73-77.

Panneerselvam Prakash (2018). Additive manufacturing in aerospace and defence sector: Strategy of India. *Journal of Defence Studies*, 12(1): 39-60.

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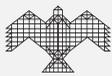
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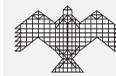
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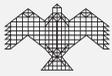
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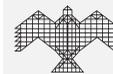
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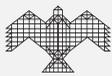
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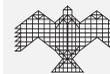
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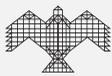
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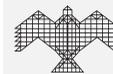
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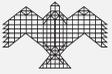
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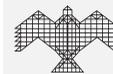
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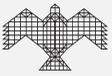
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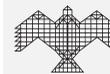
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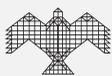
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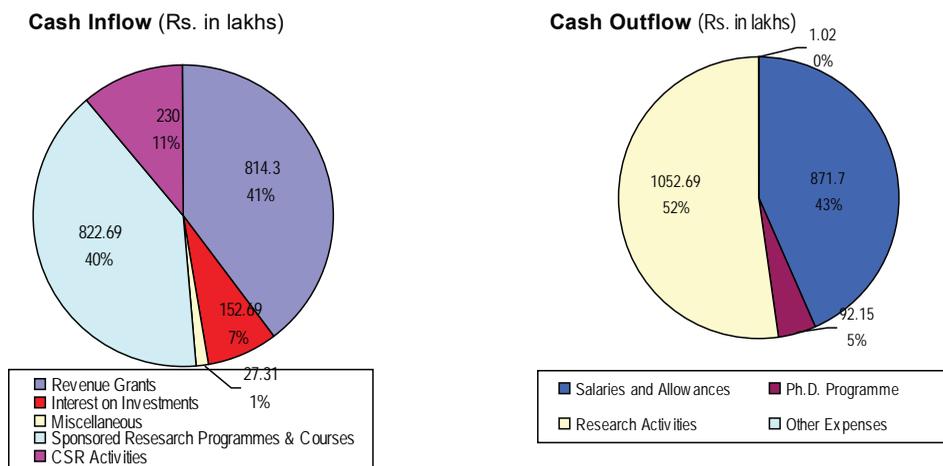


ADMINISTRATION

As a registered society, NIAS derives its administrative and financial authority through the society, represented by the general body. The Council of Management which is currently chaired by Mr S Ramadorai, is vested with full power and authority to do all acts, deeds, etc which are necessary for the promotion and fulfillment of the objectives set out in the Memorandum of Association. The Director, presently Dr Shailesh Nayak is the chief executive and exercises general, administrative and financial control over the affairs of NIAS. The Director is assisted in the administrative and finance matters by Head (Admin. & Finance).

Besides management of all resources such as infrastructure, finance, human resources, estates etc. general administrative matters are also handled by Head (Admin. & Finance). Administration enables recruitment and deployment of staff, servicing their needs and empowering them to effectively contribute to the objectives of NIAS. It services the students programme in which forty-three students work for their Ph.D. degrees. Administration also takes care of the campus, its facilities such as the Auditorium, lecture halls, meeting rooms, classrooms, guesthouse, dining halls, etc and all other infrastructure of NIAS. Administration also plays a unique role in conducting various programmes including training courses. Procurement of materials and consumables, maintenance of facilities, inventory control, etc are also done by Administration. Compliance with various statutory requirements such as Provident Fund, Professional Tax, Income Tax, etc. is also taken care by Administration. The administrative set up consists of, in addition to the Head-Administration, an Office Manager, two Assistant Manager's in the area of Administration and Accounts & Finance and other Secretarial/Office/Supporting Staff, in all numbering 27.

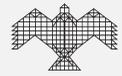
Finance management, accounting, auditing (internal and statutory), resource mobilization and expenditure control are carried out systematically. An overview of finances for the year 2017-18 is given below:



NIAS has a specified investment of Rs.1,924 lakhs (exclusive of project funds) as on March 31, 2018.

During the year, the Institute has received 22 new research projects with a total value of Rs.1,012 lakhs. Total value of projects handled during the year including the projects sanctioned in the earlier years was Rs.2,922 lakhs. This is inclusive of CSR funded initiatives. Foreign exchange component included in this sum was Rs.231.60 lakhs.

The construction of TCS Knowledge Centre with the financial support from TCS Foundation is under completion and we expect to occupy the same by end October 2018. This would ease the space constraint currently faced by the Institute.



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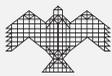
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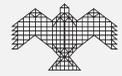
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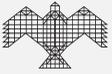
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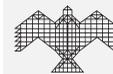
Joined NIAS on: July 1, 2011



SUPPORT STAFF



*Left to Right Top: SR Rathnam, G Venugopal, Mohammed Umar, G Nagaraja, Mujeeb Pasha, Gajanana S Naik, N Rajesh
Left to Right Bottom: S Sampath, B Shivanandappa, V Srinivasa, R Harish, N Ramesh*



NIAS FINANCIAL REPORTS

NATIONAL INSTITUTE OF ADVANCED STUDIES

SIGNIFICANT ACCOUNTING POLICIES AND NOTES ON ACCOUNTS FORMING PART OF THE FINANCIAL STATEMENTS AS AT MARCH 31, 2018

1) (a) Organization Overview:

The National Institute of Advanced Studies ("Society/Institute") is registered as a Society under the Karnataka Societies Registration Act, 1960, vide No.139/88-89 dated June 20, 1988.

Society is registered under Section 12A (a) of the Income Tax Act, 1961, vide No. Trust/718/ 10A.Vol. AII/86/459/1986-87/CIT.II, dated April 15, 1986.

Society is registered under Foreign Contribution (Regulation) Act, 1976 ("FCRA") vide registration no. 094420614 dated October 1, 1993. During the year, FCRA authorities has renewed FCRA certificate for the period starting from November 1, 2016 to October 31, 2021 dated June 27, 2016.

(b) The main objectives of the Society include:

- I. To establish and develop an Institute of Advanced Studies in order to impart higher knowledge and conduct Research;
- II. To set up and sponsor research groups on problems relating to the development of the country and for identifying problems which require immediate study and resolution; and
- III. To provide programmers of varying duration for executives and officers of Government, Public and Private Enterprises, and Personnel of Universities, Defense services and the Professions, to broaden their cultural and academic background for the successful performance of their duties.

2) Significant Accounting Policies:

A. Basis of Preparation of Financial Statements:

The financial statements has been prepared in accordance with historical accounting convention and on the accrual basis of accounting. The Accounting Policies adopted in preparation of financial statement are consistent with those followed in the previous year.

B. Fixed Assets:

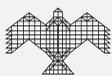
Fixed assets are stated at written down values i.e. cost of acquisition less accumulated depreciation. Cost of acquisition of fixed assets includes all direct expenses relating to acquisition of the asset.

C. Depreciation:

Depreciation on the fixed assets has been provided on written down value basis, in accordance with the rates prescribed under Income Tax Act, 1961.

D. Revenue Recognition:

- a) Donation/Revenue Grants are recognized as income in the Income and Expenditure Account in the period in which the collections are actually received.
- b) Earmarked grants are initially credited to a liability account in the Balance Sheet and are transferred to Income and Expenditure Account in the year in which and to the extent to which the Institute complies with the conditions attached to them.
- c) Interest Income is recognized in the time proportion basis taking into account the amount outstanding.



d) Income from symposia, seminars and workshops are recognized as income as and when symposia, seminars and workshops are organized and held.

E. Foreign Exchange Transactions:

Transactions denominated in foreign currency are accounted at the transacted exchange rates.

F. Investments:

Investments are stated at cost less provision for diminution, other than temporary, in the value of such investments.

G. Employee Benefits:

I. Short Term Benefits: Short term Employee Benefits are accounted as an expenses in the income and expenditure account in the year in which service is rendered.

II. Post employment Benefits and other long term Employee Benefits:

a. Provident Fund: The Society has created a Provident Fund Trust. The society's contribution to the provident fund is recognized as expenses in the Income and Expenditure account of the year in which the contribution is paid to the provident fund trust. Any deficit in the Provident Fund Trust is recognized as expense in the Income & Expenditure Account of the Society.

b. Gratuity Fund: The Society has created a Gratuity Trust. The Society's contribution to the Gratuity Fund is recognized as expenses in the Income and Expenditure account of the year in which the contribution is paid to the gratuity trust. Any deficit in the Gratuity Trust is recognized as expense in the Income & Expenditure Account of the Society.

H. Provisions and Contingent Liabilities:

Provisions are recognized when the society recognizes that it has a present obligation as a result of past events, it is more likely than not that an outflow of resources will be required to settle the obligation and the amount can be reasonably estimated.

Provisions are not discounted to their present value and are determined based on best estimate required to settle the obligation at the balance sheet date. These are reviewed at each balance sheet date and adjusted to reflect the current best estimates.

Contingent liabilities are not recognized but disclosed in the notes to financial statement. Contingent assets are neither recognized nor disclosed in the financial statement.

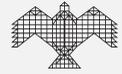
I. Revolving Fund:

Revolving Fund is in the nature of contingency reserve fund. The interest earned on investment made out of the Revolving fund is used to meet the revenue expenditure of the Institute and the fund may be used to meet shortfall, if any, in general fund and replenished back as and when surplus funds are available, in order to keep the revolving fund intact.

J. Recognition of Capital Grants:

Capital Grants received towards cost of fixed assets is credited to Capital fund. The society has adopted Accounting Standard -12 issued by ICAI, in the case of Capital Grants. Accordingly, an amount equal to the depreciation on the assets created out of such grants is transferred from Capital fund to Income and Expenditure Account.

3. The Society is registered under Section 12AA of the Income Tax Act, 1961, vide No. Trust/718/ 10A.Vol. AII/86/459/1986-87/CIT.II, dated April 15, 1986 which entitles it to claim an exemption from Income tax provided certain conditions laid down in the Income Tax Act 1961 are complied with. Provision for tax will be made only in the year in which the Society is unable to establish reasonable certainty of its ability to fulfill these conditions.



4. During the previous year, prior period adjustment aggregating to Rs. 405,180 disclosed in the Income and Expenditure account relates to rectification of error on account of migration of tally accounts in the earlier years.
5. Previous years' figures have been regrouped/ reclassified wherever necessary.

For and on behalf of National Institute of Advanced Studies

Place: Bangalore

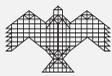
Date:

Dr. Shailesh Nayak

Director

P. Srinivasa Aithal

Head-Administration



BALANCE SHEET AS AT MARCH 31, 2018

Particulars	As at March 31, 2018 (In Rupees)	As at March 31, 2017 (In Rupees)
FUNDS AND LIABILITIES		
Funds		
(a) Corpus Fund	3,35,00,000	3,35,00,000
(b) Fixed Assets Fund	2,39,87,263	2,52,93,724
(c) Earmarked Funds	9,58,03,822	6,04,99,201
(d) Other Funds	19,00,78,879	17,78,87,372
(e) Income & Expenditure Account	3,10,11,387	3,10,96,551
	37,43,81,351	32,82,76,848
Current Liabilities and Provisions		
(a) Current Liabilities	45,34,693	35,33,592
(b) Provisions	2,98,53,359	2,07,31,325
	3,43,88,052	2,42,64,917
TOTAL	40,87,69,403	35,25,41,765
ASSETS		
(a) Fixed assets		
-Tangible Assets	4,98,92,492	5,29,23,887
-Capital Work-in-Progress	1,75,36,564	18,49,508
(b) Investments	13,28,42,300	10,45,39,000
(c) Loans and advances	3,79,84,956	97,90,932
(d) Cash and bank balances	17,05,13,091	18,34,38,438
TOTAL	40,87,69,403	35,25,41,765
See accompanying notes forming part of the financial statements		

In terms of our report attached.
For **Deloitte Haskins & Sells LLP**
Chartered Accountants

For **National Institute of Advanced Studies**

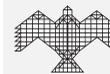
Joe Pretto
Partner

Dr. Shailesh Nayak
Director

P. Srinivasa Aithal
Head-Administration

Place : Mumbai
Date :

Place : Bangalore
Date :



INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED MARCH 31, 2018

Particulars	2017-18 (In Rupees)	2016-17 (In Rupees)
Income		
Grant income	18,66,99,064	13,49,27,294
Other income	1,80,00,575	1,80,85,460
Total Income	20,46,99,639	15,30,12,754
Expenses		
(i) Sponsored Research Expenditure	10,52,68,917	8,14,30,086
Total (A)	10,52,68,917	8,14,30,086
(ii) Employee Benefit Expenses	8,40,04,496	7,53,61,084
(iii) Other Expenses	1,20,65,582	1,29,87,540
(iv) Depreciation	34,45,808	49,95,941
Total (B)	9,95,15,886	9,33,44,565
Total expenses	20,47,84,803	17,47,74,651
Excess of (Expenditure over Income) for the year	(85,164)	(2,17,61,897)
Add: Prior Period adjustments	-	(4,05,180)
Excess of (Expenditure over Income) for the year	(85,164)	(2,21,67,077)
See accompanying notes forming part of the financial statements		

In terms of our report attached.
For **Deloitte Haskins & Sells LLP**
Chartered Accountants

For **National Institute of Advanced Studies**

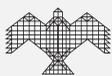
Joe Pretto
Partner

Dr. Shailesh Nayak
Director

P. Srinivasa Aithal
Head-Administration

Place : Mumbai
Date :

Place : Bangalore
Date :



NIAS COUNCIL OF MANAGEMENT

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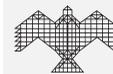
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Prof Sundar Sarukkai (Secretary)

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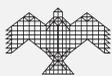
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Roddam Narasimha
VS Ramamurthy

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PS Goel, *Raja Ramanna Chair Visiting Professor*
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SS Meenakshisundaram
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Rajaram Nagappa
Srikumar Pullat
PM Soundar Rajan
N Ramani
V Bhujanga Rao, *ISRO Chair Professor*
Sisir Roy, *TV Raman Pai Chair Visiting Professor*
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KM Suresh (*upto September 30, 2017*)

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S Settar
BV Sreekantan

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Sheela K Ramasesha

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Sangeetha Menon
Narendar Pani
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Paula A Pebsworth
Sindhuja CV
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Hamsa Kalyani

Head (Administration & Finance)

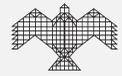
P Srinivasa Aithal

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A Deva Raju

**Assistant Manager (Accounts & Finance)**

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KS Rama Krishna

S Lalitha

Gayathri N Lokhande

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Bharat Chandra BK

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R Vijayalakshmi

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G Nagaraja

Gajanana S Naik

Mujeeb Pasha

N Rajesh

N Ramesh

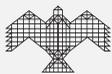
SR Rathnam

S Sampath

B Shivanandappa

Mohammed Umar

G Venugopal



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Dr Krishna Mohan Thamattoor

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Dr R Gopichandran

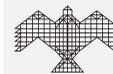
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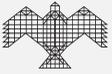
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(upto July 31, 2017)

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