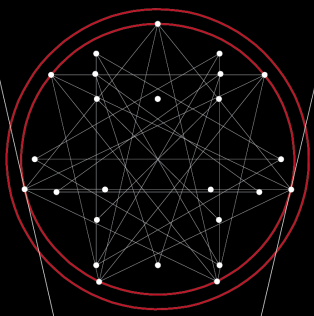
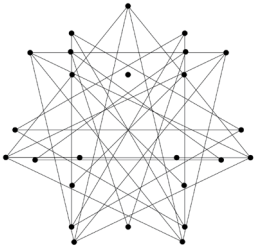


CREATIVE ENCOUNTERS WITH SCIENCE AND TECHNOLOGY

Legacies, Imaginaries and Futures

Printed at CEPT University, Ahmedabad 2017



CREATIVE ENCOUNTERS WITH SCIENCE AND TECHNOLOGY

Legacies, Imaginaries and Futures

at Kochi-Muziris Biennale 18th and 19th February 2017

A two-day research symposium with international participants, which aims to bring forgotten histories of creative mediation to bear on current technological imaginaries and their futures.

Institutional Partners

Srishti Institute of Art, Design and Technology, Bengaluru, India
CEPT University, Ahmedabad, India
Transtechnology Research, Plymouth University, Plymouth, United Kingdom

with support from Goethe-Zentrum Trivandrum

Convenors:

Dr. Joanna Griffin is a UK artist who is currently a Teaching Fellow conducting postdoctoral research at CEPT University, Ahmedabad in the Faculty of Design. She is also Associate Researcher with Transtechnology Research, Plymouth University and former Artist-in-Residence at Srishti Institute of Art, Design and Technology, where she led a three-year project called Moon Vehicle that brought together space scientists and design students to create learning opportunities for children. In her doctoral research she unpacked the motivations of the project's participants and the tactical use of visuality deployed through its transdisciplinary, creative encounters. Her current research concerns comparable activities in 1970s Ahmedabad. As an artist she has held an International Artist Fellowship at the NASA Space Science Lab, UC Berkeley and presented in space industry conferences internationally. She writes about the motivations behind transdisciplinary activities between artists and scientists.

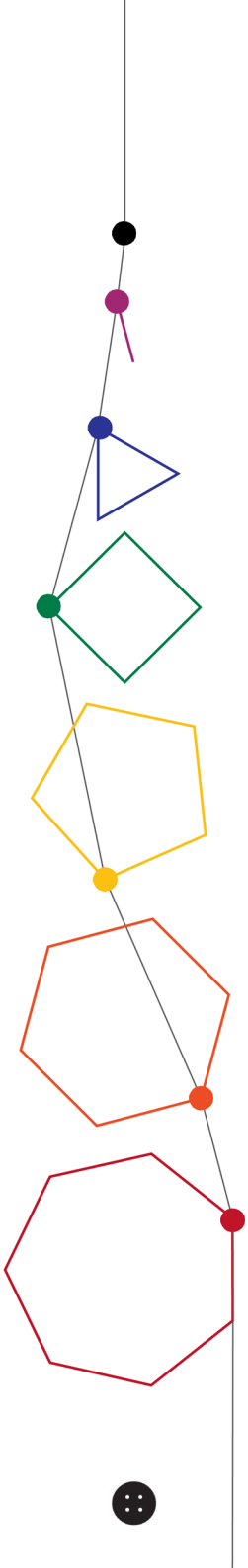
Dr. Muthatha Ramanathan is a human geographer who has conducted extensive ethnographic research into the use of remote sensing technologies by NGOs in Karnataka. In her dissertation research she developed a place-based critique of technocratic spatial planning in India. She is Faculty at Srishti Institute of Art, Design and Technology leading the postgraduate programme in Land and Livelihood Studies. Her current interests are centred around researching and teaching across disciplinary boundaries, specifically working with design students to historicise design and thereby develop connections between the politics of place and difference, and art and design practices.

Concept Note:

By focusing on creative encounters, the symposium aims to amplify transdisciplinary negotiations of art and science via tangible technologies and intangible infrastructures, through social domains. As a fresh wave of media ideologies enter India's state policy, such as in the form of the Smart Cities Mission, the symposium provides a timely pause for reflection on the roots, legacies and consequences of participatory technological infrastructures, in India as well as on the global stage.

In the context of India, a thread we are interested in opening through the symposium is the cosmopolitan, critical discourse that took place in India through the 1960s to 1980s around the extent to which development technologies, such as television, space technology, farming methods and nuclear power delimited or extended agency. Sources from this time that retrace concerns for intimacy within large-scale infrastructure and its structural blind spots include Johan Galtung's 'Violence, Peace and Peace Research' (1969), Victor Papanek's Design for the Real World (1971), Michel Foucault's Discipline and Punish (1977), Ivan Illich's 'The De-linking of Peace and Development' (1980), and Ashis Nandy's 'Counter-Statement on Humanistic Temper' (1981). In addition, the public discourse and activities of key technocrats in India's media histories, such as Yash Pal and Vikram Sarabhai, forged connections between science, technology, design and the arts. The notion of transdiciplinarity, as used in recent times to describe temporary mobilisations of a range of disciplinary perspectives in order to engage with emerging problems (Nowotny, Scott and Gibbons, 1994, 2001 and 2003), becomes a relevant analytical tool with which to reassess less familiar patterns of creativity within genealogies of art/science encounters.

Setting such discussions within the Kochi-Muziris Biennale draws attention to the performance of science as experience, affect and visuality, which marks artistic practices and intervention. It highlights the intimate contexts in which large-scale technological infrastructures are encountered. The symposium, as intervention, sets out to critically re-examine historical experiences in order to better negotiate future scenarios.



Themes:

The broad themes around which we invited presentations were as follows:

Experiential histories of science and technology in India (as understood through Art/ Science/Craft/Design/Technology encounters) and their relevance now,

Aesthetics and imaginaries of Science and Technology,

Intellectual cosmopolitanism of artists, scientists, philosophers, educators, architects, planners via collaborative forums such as conferences, building projects and educational initiatives,

Legacies of technological/development architecture/ infrastructure/ideology from the 1960s and 1970s,

Material and visual culture of technology in scientific practice,

Philosophies of infrastructures including participatory infrastructures,

Mappings of epistemic communities across social geographies,

In addition we invite contributions on other themes you consider relevant to this framing of concerns.

Welcome to the Creative Encounters Symposium at the Kochi-Muziris Biennale. Over the next two days we bring to you an extraordinary collection of research studies by a diverse group of practitioners who work between and across boundaries of Art and Science, broadly speaking.

As convenors, we trace our own collaboration back to 2012 when we were both working on our respective dissertation projects in Bangalore. We have both been preoccupied with understanding the very live histories of esoteric space technologies in the hands and imaginaries of people on the ground such as the scientists who build the technology, school students, development workers and farmers. Over the years we have reveled in different ways of building similar understandings. You could say that it is this sense of irreconcilable simultaneity that we have experienced in our respective research and between us in our conversations, that we seek to nurture in this symposium, because it is a way to force rethinking and produce new figurations.

We have two aims in this symposium on Legacies, Imaginaries and Futures. Firstly, we would like to unpack the glimpses seen through the visualising work of creative practitioners in contexts ordered by science and technology. Thereby we hope to gather the tools to critique the scientific and technological agendas we find ourselves within now and which are often harder to see than those of the past or future.

Secondly, we propose to challenge the time-space orderings of these contexts by looking back at recent histories particularly. Recent histories can remind us of how quickly the past is covered over and repeated. Useful lessons that have been a struggle to achieve, are sometimes too easily brushed aside in pursuit of the 'new'. For instance, in India, the symbiotic links between scientific activity and creative activity that existed in the sixties and seventies have been largely forgotten. Hence we would also like to ask questions about the way art/science discourses have been constructed in the recent past in India, and in places outside India.

Broadly the research presented at the symposium works against the grain of established discourse in many inter-connected disciplines, concerning the encounter of art and science, theory and activism, and labour and technology. Some of our speakers challenge the limiting assumption that artists can bridge the work of scientists for a generic public by softly illustrating hard scientific phenomena. Some others challenge the linearity of discourses that have come to order technology and labour, and myths and science in hierarchical relationships. In this symposium, our participants become the producers of discourse and the activators of revisionist histories, which re-engineer the present.

We also include in this booklet, provocations of three speakers who could not be present with us. Michael Punt, Director of Transtechnology Research, Plymouth University and Ashoke Chatterjee, former Director of the National Institute of Design, Ahmedabad, trace notions of transdisciplinarity from different locations and times. Kavita Philip, a refreshing voice in the sociology and history of science, shares with us some thoughts on the real-time transfer from academic discourse to activism and material practices.

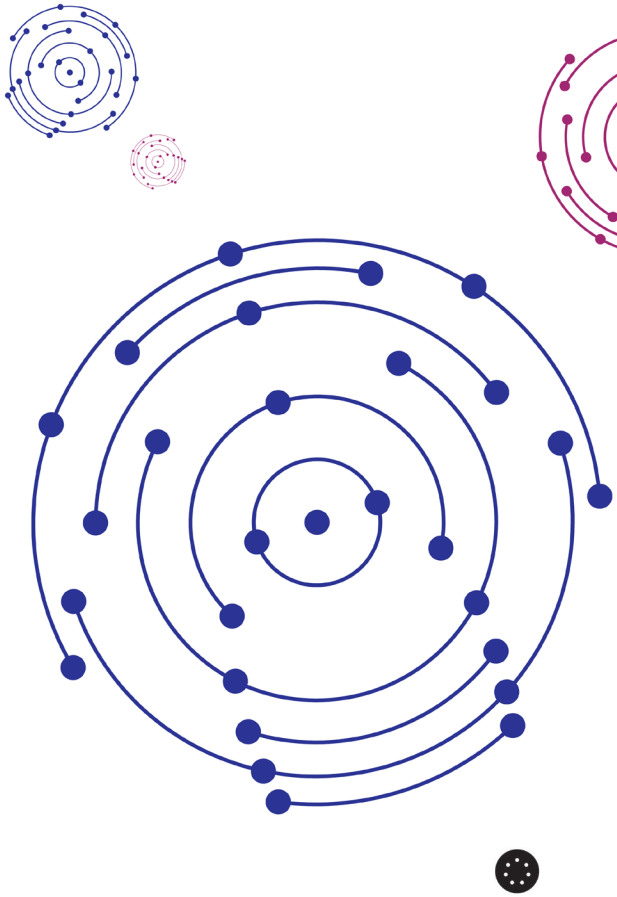
The three institutional partners that come together for the first time and have made the symposium possible through their support, each add a lineage of distinctive and enriching concerns. CEPT University, the Centre for Environment, Planning and Technology, has advocated through its Faculty of Design for the status of craft and artisan knowledge within the built environment and integrated

indigenous knowledge of science and technology into its design teaching. Srishti Institute through its artist-in-residence programmes has brought artists, designers and scientists together to create productive learning networks and new kinds of knowledge necessary for navigating emergent ecologies. Transtechnology Research has generated a unique intellectual platform from which practitioners coming from the arts and design articulate perspectives on technologies and scientific practices, foregrounding the imaginaries from which the world is described and constructed.

We hope you enjoy being a part of the conversations over the next two days. We are thrilled to be hosting these conversations at the Kochi-Muziris Biennale which has been curated with a vision that aims to bring together multiple positions from multiple locations and questions what it means 'to be together in time – to be contemporary'. We hope that in the conversations that transpire, the opportunities and ramifications of creative encounters will be revealed and will further enrich the creative activity necessary in many spheres of society to achieve a better present.

Muthatha Ramanathan
Joanna Griffin

February 2017



Programme of Speakers

Saturday, February 18, 2017

9.00 Arrival and registration

10.00 Welcome and Introduction by Joanna Griffin and Muthatha Ramanathan

10:30 Archit Guha, Srishti Institute
Steaming Histories of the Present: Situating the art-science movement in India

10:50 Geetha Narayanan, Srishti Institute
Critical Reflections on Art-Science Pedagogy

11:10 BREAK

11:30 Gautam Sharma, Central University of Gujarat
Alternative Imagination of Science and Technology in India: A historical perspective

11:50 Sandeep Mertia, The Sarai Programme, CSDS
Did Mahalanobis Dream of Androids?

12:10 Panel Discussion

1:00 LUNCH and Marialaura Ghidini, Srishti Institute
Installation – Silicon Plateau

2:00 Jacqui Knight, Plymouth University
The Ecology of Photographic Practices Towards an Aesthetic of the Posthuman

2:20 Gavin Keeney, CEPT University
Representation as Research?

2:40 Dina Boswank, Bauhaus University (Supported by Goethe-Zentrum Trivandrum)
'Construction for Destruction': A research study into notions of technology, creativity and participation in India by reenacting the letter publications of G.D. Naidu

3.00 Panel Discussion

3.30 BREAK

3:45 Dinaz Kalwachwala in conversation with Joanna Griffin
Grounding Space Technology in 1970s: The NID - ISRO television experience

4.15 Shai Heredia, Srishti Institute, Experimenta India
Artists in Action (Curated film)

5.15 – 6.00 Panel Discussion

Sunday, February 19, 2017

10.00 Agi Haines, Plymouth University
Ideas Exchange in Simulating Technological Scenarios

10:20 Sharath Chandra Ram, Srishti Institute
Signal Territories, Infrastructures and Intermediaries: New interfaces for art, science and policy

10:40 Nicholas Chrisman and Dennis Dreher,
Weaving Art, Design and Computer Graphics at the Harvard Lab 1967-1982

11:00 Shruti Tamboli, CEPT University
Taknik and Technology: Meanings of makings

11:30 BREAK

11:45 Panel Discussion

12:45 Eugenia Stamboliev, Plymouth University
Performing Emotions: Humanoid robots beyond bad acting

1:15 LUNCH & Marialaura, Srishti Institute
Installation – Silicon Plateau

2:15 Hannah Drayson, Plymouth University
All Kinds of Magic: Instrumental representations of mind-body medicine as a way to make things happen

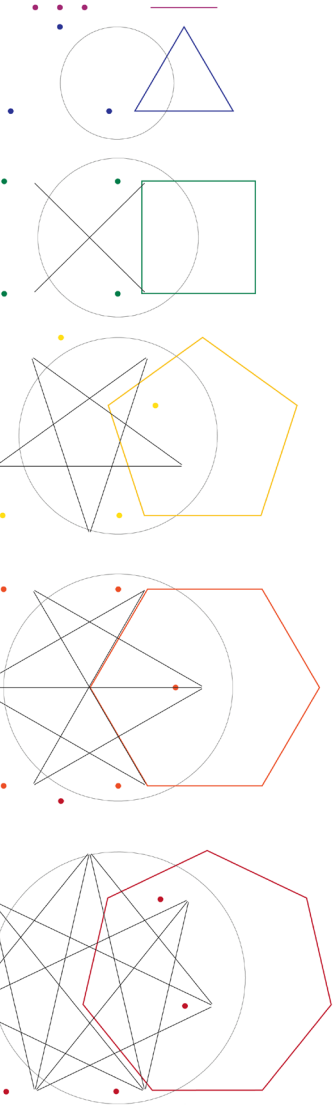
2:45 Zainab Bawa, HasGeek Learning
The Narrative of Digital Colonialism – and the project to build Indian technology for India

3:15 BREAK

3:30 Snehal Nagarsheth, CEPT University
Astronomical Landscapes

4:00 Chandan Gowda, Azim Premji University
The Pasts of Technology

4:30 to 5:30 Panel Discussion and Closing Thoughts



Invited Speakers:

Zainab Bawa, HasGeek Learning

Fabiane M. Borges, (PPGAV-NANO-UFRJ)

Dina Boswank, Bauhaus University (Supported by Goethe-Zentrum Trivandrum)

Sharath Chandra Ram *(Sharathchandra Ramamkrishnan)*, Srishti Institute

Nicholas Chrisman, Editor CAGIS
and
Dennis Dreher, Artist

Hannah Drayson, Plymouth University

Marialaura Ghidini, Srishti Institute

Chandan Gowda, Azim Premji University

Archit Guha , Srishti Institute

Agi Haines, Transtechnology Research and CogNovo, Plymouth University

Shai Heredia, Srishti Institute and Experimenta India

Kruno Jošt, UKE, Croatia

Dinaz Kalwachwala, Filmmaker/ Producer

Gavin Keeney, CEPT University

Jacqui Knight, Plymouth University

Sandeep Mertia, The Sarai Programme, CSDS

Snehal Nagarsheth, CEPT University

Geetha Narayanan, Srishti Institute

Gautam Sharma, Central University of Gujarat

Eugenia Stamboliev, Plymouth University

Shruti Tamboli, CEPT University

Zainab Bawa
Editorial Chief and Director at HasGeek Learning

The Narrative of Digital Colonialism – and the project to build Indian technology for India

Digital colonialism refers to the (spatial) colonization of the Internet. In the Global South, this phrase has been used to argue against American hegemony of the internet.

In India, the discourse has been used in two contexts. Between 2015 and 2016, those associated with the #SaveTheInternet movement used the term digital colonialism to argue against Facebook's colonization of the Internet through its Free Basics offering. The primary contention was that an international giant was using the Indian telecom regulatory system to wall the internet from users by exposing them only to Facebook and a few other sites under Free Basics. This move resembled the manner in which the East India Company drew resources from India leaving Indian masses impoverished.

The discourse of digital colonialism has also been used as lament about economic subjugation and imperial domination by the British in the past, and by American companies such as Uber, Facebook, Twitter, Google and others, recently. This lament has then successfully deployed to champion and push (subversively and forcibly) projects such as Aadhar, United Payments Interface (UPI) and other protocols and standards that are being developed in India, for India, by India. For those promoting this discourse of digital colonialism therefore, the counter to American hegemony is building Indian technology for India – let us build our own social media, and technology that will make India a great nation.

My presentation attempts to map the problematic trajectory of this discourse of digital colonialism. The mapping will demonstrate the role that Bangalore, its prominent technologists, interest groups and the startup ecosystem have played in producing and shaping the discourse. I also intend to explain how countering digital colonialism by building 'native' technology now allows one arm of the state to control and colonize dissenters from within the state – its other arms.

Zainab Bawa is the co-founder and director of HasGeek Learning Pvt Ltd, an initiative based out of Bangalore. Zainab curates and produces some of India's best technology conferences on IT infrastructure, machine learning and data science, and web technologies. Most recently, she curated an inter-disciplinary conference on payments – 50p – in India to argue about the need to move beyond the binary of digital and offline payments. Formerly trained in ethnography and political science, Zainab writes about sexism and gender diversity in Bangalore, and on the politics of knowledge. Her writings can be found on:

https://medium.com/@zainabbawa

Fabiane M. Borges
(PPGAV-NANO-UFRJ)

ANCESTERFUTURISM – FREE COSMOGONY – RITUALS DO IT YOURSELF

This presentation proposes a double articulation: 1) To elaborate the concept of Ancesterfuturism, 2) To share both the research and the experiments that we have been undertaking in the field of Free Cosmogony and Do It Yourself Rituals, on the meetings of technoshamanism network.
The incompatibility between a future presented by modernity and a future verifiable in contemporaneity has been serving as a platform for a wide range of speculations, in fields ranging from economy to philosophy, science to metaphysics. It is in this conjuncture that technoshamanism presents itself as a speculation network too, as countless other social movements that dwell in this dilemma. It produces conjectures, it constructs narratives and develops practices that endorse a provocation against the present order of relations between culture and nature, and additionally proposes alternatives while it experiments with new and remixed processes, one of them being ancesterfuturism, with its free cosmogonies and do it yourself rituals.

In order to understand ancesterfuturism's magnitude it is necessary to build a network of concepts that supports it, so that it can assume its creative character, so that it functions as a rupture device with systems fixated on metaphysical interpretation (theology/religion) and becomes a generator of free imaginaries.

Hiperstition, Free Imaginaries, Spectrology, Dreams, Fabulation and Science Fiction are some of the concepts and practices we work with. This presentation shows the relation between the ideas and experiences that connect technology and deep knowledges as shamanism or immersive process.
Three works will be shown. 1- Technology and immersive experience (shamanism); 2- A meeting that conjures ritual with a live cinema (science fiction); 3- The connection between an indigenous village with free software and workshops as intranet, mesh network, cinema, and so on.

Fabiane M. Borges is a Brazilian artist, clinical psychologist and essayist based in Rio de Janeiro. She is doing a Post-Ph.D in art and technology in NANO (Nucleo of Art and New Organisms - PPGAV-UFRJ). She is one of the articulators of the technoshamanism network and take back the space. Her research is about clinic, art and technology. Works with clinical psychology, work groups, space art, immersive process).

http://catahistorias.wordpress.com
http://tecnoxamanismo.wordpress.com

Dina Boswank
Bauhaus-University Weimar

'Construction for Destruction': A research study into notions of technology, creativity and participation in India by reenacting the letter publications of G.D. Naidu

"Construction for Destruction. My Compelled Drum Series" (Coimbatore, Tamil Nadu, India, 1948) is a compilation of letters commenting on the performed, yet actual, destruction of G.D. Naidu's radio inventions in the late 1940s by G.D. Naidu himself. Those letter dialogues, also collected and published by G.D Naidu, are full of curious interpretations of his destruction performances and form the basis of the research project. Because of their age, but significant and yet (academically and artistically) unexplored content and placement, the letters bear the potential of being a discursive foil assembling both technological and cultural subjects of different times and matters.

I take up G.D. Naidu's letters as my research tool to span time, space and mediality and encourage situations similar to his destruction performances, through (1) reading aloud the letters together with researchers in India, (2) creating a divergently accessible audio archive of those sessions, (3) rewriting the letter's texts by filling in the commentaries being made and (4) experimenting with its auditive and staged encounters in the public urban realm. The practice of re-enacting the letters through mutual reading aloud offers a possibility to identify one's self with the writer's self, appropriating the content through consciously repeating it. Which phrases in the letters trigger what knowledge or experience? Is creativity, protest and technological access a reference and to whom/what is it attached?

The paper will discuss how this methodology poses questions as to what is knowledge and what is experience (particularly of technology) and how can both be mutually productive? It will do this firstly by considering the manifestations of G.D. Naidu's public radio destruction performances in 1948/54 and their impact and context within the realm of technology as such during that time. Secondly, the paper will contextualise my research practice, as well as the media practices described during the interviews, as a social practice by drawing on cultural and media anthropology and media art.

Dina Boswank is a Berlin-based artist following a PhD in Media Art at Bauhaus University, Weimar, Germany. She wanders through practices of creative access to technology and its defining media cultures both by textually researching and reenacting them. Among her work and think stations we find Bangalore in India (2009/10), military training sites in Brandenburg, the Dresden Zwinger (2011), Coimbatore and New Delhi (2015/16). Just recently she got involved in two research projects ("Imaginary Fitness", "The entanglement of gesture, media and politics", funded by Volkswagen Foundation) to trace and widen the collaborative practices of scientist and artists.

http://schnittmengen.de/compelled
http://schnittmengen.de/cfd sound archive on pad.ma:
https://goo.gl/tYpdnX

Sharath Chandra Ram (Sharathchandra Ramamkrishnan)
Faculty, Srishti Institute of Art Design and Technology
Researcher, Centre for Internet and Society

Signal Territories, Infrastructures and Intermediaries: New interfaces for art, science and policy

"Biocreation of Informatics" is an ongoing art-science research project that seeks to decipher, expose and contrast informational patterns that exist in natural ecosystems and that of man-made informational representation of command, control and dissemination mediated by its infrastructural aspects. Enabled by leaps and bounds in the evolution of the information society, 'data' has become the most important economic resource of the networked economy, characterized by the co-located and instantaneous access, dissemination and communication of information amongst people across vast distances. Central to these various transactions that occur in our network culture, there exist numerous policy propositions that seek to regulate the archiving, access, sharing, use and dissemination of information. These policy propositions are often enforced upon users, instead of being an organic creation of the very participants of the network. Furthermore, the design of most policy recommendations that have deep socio-economic and political implications have been restricted to reflecting the views of legal scholars and members of the technology industry, giving little or no room for a larger public discourse that is fuelled by trans-disciplinary and multi-stakeholder approaches. This paper seeks to explore how transdisciplinary creative art-science media practitioners can address contentions in communication and data ecosystems to re-imagine them and at the same time engage members of the general public to reflect and contribute to a larger inclusive discourse that might help re-shape public policy surrounding data ecosystems and new interfaces for networked communication. We will examine these issues by revisiting some emerging techniques in transmission art and data sonification to critically examine and expose invisible data ecosystems ranging from polar orbiting weather satellites and airport sensors to the maritime navigation of ships and open channels of communication.

Sharath Chandra Ram's (Sharathchandra Ramakrishnan) practice and research interests lie at the intersection of law, technology and society with a focus on citizen science, civic media and open spectrum, and extends his art-science practice as a transmission and information artist. He has installed his sound and multimedia work in several national and international collaborations including the Jogja National Musuem (Indonesia), Parque Explora (Medellin - CAP2016, International Astronomical Union Commission C2 Conference) and Science Gallery Bangalore (part of Science Gallery Dublin and CEMA-Srishti). He engages actively with the local open source and research community at the Centre for Internet and Society and as a licensed amateur radio broadcaster (callsign: VU3HPA), he is actively interested in communication policy research. He is currently Faculty at the Srishti Institute of Art Design and Technology across the Centre for Experimental Media Arts and also the Information Arts and Information Design Practices (IAIDP) Program. He specialized in Interactive Virtual Environments at the University of Edinburgh, School of Informatics.

Prof. Nicholas Chrisman, Editor CAGIS
Dennis Dreher, Artist

Weaving Art, Design and Computer Graphics at the Harvard Lab 1967-1982

It is well documented how the Harvard Laboratory for Computer Graphics and Spatial Analysis contributed to the development of the worldwide interest in Geographic Information Systems technology (for one account, see *Charting the Unknown*, Chrisman 2006 ESRI Press). One element of this history involves the intersections and negotiations between design, art and the computer graphics field. The founder of the Laboratory, Howard Fisher, was an architect who wanted to develop means to visualize 'facts' with rather crude computer technology available at the time. He had a designer's eye to colour, including explorations of alternatives to Munsell's colour wheel (the Pope solid and others).

At a later point in the Lab's evolution as colour displays became available in prototype form, Dennis Dreher and Gemma Dreher (artists) became connected with the Laboratory. They produced a massive three-dimensional colour cube (with axes Red, Green, Blue) on painted wooden balls held in place by wire circles. Dennis produced a 'jitterbug' transformation that transforms an octahedron to a cubed octahedron in a smooth motion, the Octobug. The octahedron has been used for Fuller's *Dymaxion* map projection, so this gives a dynamic form to world visualizations. Dennis Dreher has continued to work on spatial arrangements now using glass marbles in wire framings (for example on his website: http://dennisdreher.com/Tutti-Fruti/index.html). The connection between technology and art was bidirectional.

For this presentation, Nicholas Chrisman will reflect on the intersections of art, design and computer graphics. He will also reflect on writing balanced history of technology in first person. The presentation will also include the exhibition of a few Dreher sculptures and practical models of Octobug.

Nicholas Chrisman is currently Editor of the journal Cartography and Geographic Information Science, and retired as Professor at RMIT University (Melbourne, Australia) and Université Laval, (Québec). His engagement with geographic information started in the 1970s at Harvard University, Laboratory for Computer Graphics and Spatial Analysis.

Dr. Hannah Drayson
Transtechnology Research, Plymouth University

All Kinds of Magic: Instrumental representations of mind-body medicine as a way to make things happen

Fundamental to the practice of contemporary biomedicine is the use of systemic, causal models to explain the efficacy of treatments. Despite their reductive and rationalistic approach to the body, this paper will argue that the impact of these explanations on the experience and healing of patients should not be overlooked, as it is itself effective. In some cases, the simplicity of these explanations seems unlikely to accurately represent the complexity of the body's behaviour and healing, or are not sufficient to truly explain the healing that takes place. For example Mosely's placebo studies of heart surgery using lasers tested a treatment that appeared to be effective because it sounded impressive, rather than having the more easily imagined physical effect.

Reflecting on the placebo literature, and the author's own training as a psychotherapist and artist, this paper will consider these extra effects of explanation and representation on the body of the patient and how they offer insight into how instrumental rationality is used in medical and therapeutic settings. It will argue that these offer an avenue for creative intervention and explorations of the affective interplay between culture and therapeutics. It proposes that we should attend both to the meaning of instrumental actions, rather than their proposed effects, and that these meanings are used as an intervention into the irrational, or at least exceedingly complex, space of the living body by a number of actors across not only medical and disciplinary cultures.

Rational models of causality in medical settings can be understood as part of a practice of symbolic healing, and therefore to many are nothing mysterious. However, the paper will attempt to put forward some ideas about what the increased acceptance for phenomena such as placebo effects might mean for how arts practitioners think about their work, and some of the difficulties with adopting medical – or healing – imperatives from other disciplines. These forms of explanation are not only ways to give a sense of control over an ineffable and unrepresentable body, but also to intervene.

Hannah is a Lecturer in the School of Art, Design and Architecture at the University of Plymouth. She is co-convenor of Transtechnology Research, a transdisciplinary research group based in the arts and humanities whose constituency are concerned with understanding emerging technology as shaped by cultural imperatives. Her research concerns scientific instrumentation and the body, and the understanding of meaning and experience as biologically active. As an artist and trained hypnotherapist, Hannah's interventionary and participatory works creatively explore the media of suggestion, guided dreaming and hypnotism. The Transtechnology office is the home of the reviews section for Leonardo Journal of the Arts, Sciences and Technology. Hannah supervises doctoral research within the COGNOVO ITN at Plymouth in collaboration with colleagues across Psychology, Arts and Humanities, the Medical and Dental School, Architecture and Computing.

Marialaura Ghidini
Shristi Institute

SILICON PLATEAU—Vol.1

Silicon Plateau—Vol.1 (2015) is an anthology part of the publishing series *Silicon Plateau* which scope is to observe how the arts, technology and society intersect in the city of Bangalore. What the series as a whole aims to offer—also with the forthcoming *Vol.2* (2017)— are tangible accounts based on the encounters—fortuitous, anticipated or even inconvenient—that contributors from a variety of fields of work have had with the city of Bangalore; accounts that offer renewed and unexpected entry points into the city.

As editors (see biographical information below) our interest is two-fold. On the one side, there is the city of Bangalore, the trigger for various reflections about the way in which technology (old or emerging, as a service or as infrastructure) informs the socio-cultural and political environment. On the other side, there are the arts and creative thinking which offer languages, lenses and methods for interpreting technological developments and discussing their role and impact in the present time.

The editor's intent to instigate renewed readings of the Bangalorean urban and socio-cultural landscape came with an array of questions related to our methodological approach. We knew the danger of falling into the trap of developing superficial impressions of the city of Bangalore, or the difficulty of tackling the layered histories and socio-political life of a fast-changing city, for example. We decided to adopt an hybrid approach; one rooted in our belief in the importance of understanding technologies in their specificity, and through the personal observation of the art and cultural practitioner. Hence, *Silicon Plateau—Vol.1* became a container for the forms of research pertinent to the various fields of work of our contributors—from visual art to journalism and writing. Inspired by practice-based artistic research, we proposed a series of questions to trigger an exploration of how the representations of the city of Bangalore are manifested in the public domain and impact the lives of the city's inhabitants.

For the symposium we would like to propose a display of some of the contributions included in *Silicon Plateau— Vol.1*, with the intent to offer a different way of reading an anthology of artist and writer's works exploring how the arts, technology and society might intersect.

Silicon Plateau—Vol.1 was edited by Marialaura Ghidini and Tara Kelton, and produced and published in collaboration with The Centre for Internet & Society and T-A-J Residency in Bangalore, India. Dr. Marialaura Ghidini is an Italian curator and researcher. She is Faculty at the Srishti Institute of Art, Design and Technology and Director of Programs at T-A-J Residency in Bangalore, India. Tara Kelton is an artist, designer and co-founder and director of T-A-J Residency in Bangalore, India.The Centre for Internet and Society in Bangalore, India, is a non-profit research organisation that works on policy issues relating to freedom of expression, privacy, accessibility, access to knowledge and intellectual property rights and openness. It engages in academic research on recontigurations of social processes and structures through the Internet and digital media technologies, and vice versa.

Prof. Chandan Gowda
Professor, School of Development, Azim Premji University, Bengaluru

The Pasts of Technology

The arrival of new technologies often brings with it a reordering of historical memory. Viewing newer technologies as progressive - in terms of their capacity to be better instruments, and thereby their cherished place in linear time - is also tied to their liberatory social potential: they make for a comfortable life, they reduce human dependence on labour and thereby erode the hierarchical dependence of social labour. Such a reading is enabled precisely by modern habits of abstracting technology as an extraneous and independent material entity. Histories of technology retrofit this insular view of technology to past experiences and complete the triumph of modern views of technology. (Indeed, the other "logical" next step of isolating the skills of technology and their differential valuation proceeds easily too.) In this paper, I revisit hagiographical accounts of Itagi Bhimavva, the popular deity from North Karntaka and a few Shiva's devotees from the Virasaiva tradition, where technology is not the master or an independent force, but a subordinate part of a metaphysical framework whose view of labour as God included a concomitant view of various kinds of labour as equally worthy. This is an exploratory attempt to show the ethical and political necessity of pluralizing the temporal horizons of technology.

Chandan Gowda teaches at Azim Premji University, Bengaluru. He has recently translated UR Ananthamurthy's story, Bara (Oxford Univ Press, 2016) and edited Theatres of Democracy: Selected Essays of Shiv Visvanathan (HarperCollins, 2016). He has also directed Sahitya Sahavasa (In the Company of Literature), a series of video lectures of UR Ananthamurthy on modern Kannada writers which were telecast on Doordarshan in 2014. He is presently completing a book on the cultural politics of development in old Mysore state and editing The Post Office of Abachooru, a book of translations of the short fiction of KP Purnachandra Tejasvi (HarperCollins, 2017). He also writes a weekly column on culture and politics in Bangalore Mirror.

Archit Guha
Srishti Institute of Art, Design and Technology

Steaming Histories of the Present: Situating the art-science movement in India

The recent clarion calls to make STEM (Science, Technology, Engineering, and Medicine) STEAM (Science, Technology, Engineering, Arts, and Medicine) belie the intersections between Art and Science that while simmering for much of the twentieth century remain diffuse and hard to locate. In the West, the birth of the *Leonardo Journal of Arts and Science* in 1968 signalled the formalisation of an interdisciplinary inquiry into the modalities that bound art and science, and the subsequent rise of "artsci" as an umbrella term gave impetus to scientifically minded contemporary art (Miller 2014). In India, this historical moment of crystallisation remains slightly more elusive. On the one hand, the Nehruvian emphasis on techno-development led to a particular interest in popularising science through cultural institutions like museums where a uniquely nationalist and modernist vision of the history of science and technology tended to be preserved, and on the other, the more contemporary moment has allowed for independent contemporary arts institutions and collectives like KHOJ and SARAI to reframe the epistemological axes of art and science and move towards complicating narratives we have received thus far. Through my recent research, I have become interested in the Foucauldian notion of the "history of the present" to understand how the Art-Science Movement in India today, coupled with the increasing use of science and technology in the service of the state through biopolitical surveillance, might help us reflect on past legacies, while charting different itineraries and imaginaries for the amalgamation looking towards the future. Moving away from an instrumentalist view of art in the service of science and technology or vice-versa, I hope to ask how the knowledge they collectively produce might allow for uniquely located critiques of the anthropocenic crises we are currently contending with.

Archit Guha researches and archives at the Centre for Public History in the Srishti Institute of Art, Design and Technology. He has been involved in the setting up of the archive of the National Centre for Biological Sciences among other public and oral historical projects. Feverishly engaged with the reticulations of South Asian history and politics, his special interests lie in knowledge production—(natural and social) scientific, literary, legal, artistic, and cultural—and their translation and migration across continua of spaces and times.

Agi Haines
Transtechnology Research and CogNovo, Plymouth University

Ideas Exchange in Simulating Technological Scenarios

How might the production of diegetic prototypes encourage reflection regarding the representation of nascent biomedical and healthcare technologies?

This paper looks at how the production of objects that fit within a fictional scenario can highlight shared concerns regarding the onset of new technologies. Arguing that the production of such objects may encourage sensitivity towards visual representation of scientific concepts. By reviewing examples of both the final outcomes and visible working processes behind speculative design works that have been created through art and science collaborations. I will consider how particular works successfully inspire reflection, which may in turn promote a lasting impression that can foster sensitivity towards representation when future ideas are conceived.

To examine how insights regarding representation can be gained through the working process and transferred to an audience through the making of a series of objects, I will discuss a personal project titled 'The Anatomy Lesson: Dissecting Medical Futures'. This interactive exhibition and panel event held at the Theatrum Anatomicum in the Waag Society Amsterdam was a project that was designed to promote discussion one on one with the attendees, in order to open a critical dialogue with an audience via interactions with quasi-simulations of potential future medical procedures. This conversation, led through a simulated anatomical dissection, confirmed that the general public could undoubtedly recognise issues and ethical implications I intended to raise through the objects but also they offered significant and detailed ideas regarding the technologies, which was triggered through the interaction with the work itself. These types of diegetic prototypes can offer a platform for critical thinking across disciplinary boundaries, and the ideation that occurs whilst engaging with them may help develop an imprint in the thought process concerning how the representation of upcoming technologies are considered.

Agi Haines' work is focused on the design of the human body. How might people respond to the possibilities of our body as another everyday material and how far can we push our malleable bodies while still being accepted by society? Her current position as PhD researcher at Transtechnology Research is funded by Plymouth University. This research sits within a transdisciplinary department called Cognovo - a large scale Marie Curie funded ITN (Innovative Training Networks) exploring cognitive innovation. Haines' research uses design methods to question the representation of nascent biomedical and healthcare technologies.

Shai Heredia
Srishti Institute of Art, Design and Technology

Artists in Action (Curated films)

India's quest for modernity via the Nehruvian experiment of building modern temples i.e. industry powered by science & technology, is interestingly represented in the propaganda films produced by Films Division India in the 1960's and 1970's. This screening programme showcases a few of these films. By engaging how the Indian state imagined and depicted itself, this programme looks to ultimately evoke the complexity of Indian modernism as was illustrated in scientist Homi Bhabha's legendary statement, "It is true that India neither produced the motorcar, the refrigerator, the airplane. Nor did it manufacture these in the overwhelming quantities of other industrialized countries. But for hundreds of years when the Indian peasant did not have to work, he sat in the shade of a tree and thought. He thought the philosophy of truth in life, and he thought as an artist in action."

Shai Heredia is a filmmaker and curator. She studied at St.Xaviers College, Mumbai and Goldsmiths College, London. In 2003, she founded Experimenta, the international festival for experimental cinema in India. She has curated experimental film programs at film festivals and art venues worldwide, including the Berlinale, Germany and the Tate Modern, London. Her film 'I Am Micro' (2012) co-directed with Shumona Goel, has screened at several international film festivals in Europe, North America & Asia. The film received critical acclaim and won prestigious awards, including a National Award from the Government of India. Heredia & Goel's's latest film 'An Old Dog's Diary' (2015), won the Best Short Film award at the BFI London International Film Festival, and is currently being screened at festivals worldwide. As an arts grantmaker with the India Foundation for the Arts (2006-2011), Heredia set up the curatorship and arts practice grant programmes. She is currently based in Bangalore, India where she teaches at the Srishti Institute of Art, Design and Technology and runs Experimenta India.

Kruno Jošt
UKE, Croatia

Off the Grid – Sounds of Agri-Culture

Paper and presentation offer first hand experiences into "post-growth", "simple living" and "off-the-grid" lifestyle. It presents how creative practices based on "do-it-yourself" attitude, hacker strategies and combination of science/art develop our optional future.

Artistic practices reflected in works "Guidelines for Possible Futures", "Environmentomania" and "Mobile Art Dome" all led to the on-going "Centre for Creative Solutions" that took my family and me to rural area of Lika region, next to the Velebit mountains situated in south Croatia. After research on off-the-grid living we have collectively embarked this self sufficiency adventure and used it as an agency to change our proximal world.

Creative practices, usually reserved for the art world, helped us through the disciplines we had to bridge – architecture, technology and energy resources, legislative, agricultural as well as social. In return, knowledge acquired in the process led to new artworks that wittily question human relationship to our environment.

As a part of contribution to symposium "16 Channels Sound Fertilizer" sound installation is presented outside the Biennale Pavilion. Renewable energy sources are used to run multiple speakers that play sounds offered by various researchers. Sounds include different frequency ranges, noise generators and musical interpretations as well as sound compositions offered by French mathematician and physicist Joel Sternheimer who developed a study on protein synthesis activation. Installation inquires in an alternative to industrial agriculture and its extensive usage of pesticide and chemical fertilizers that is contributing to climate change.

Kruno Jošt studied Art Academy Zagreb, Gerrit Rietvield Kunst Akademie, Amsterdama and holds MFA at Transart Institute in Berlin. His latest on-going work "Center for Creative Solutions" is examining off-the-grid lifestyle, with energy independence as a base for his art practice. In his recent sound installation "16 Channels Sound Fertilizer" he is looking for non-human audience in the plant world, while "Close Encounters" is an effort to close the gap between humans and their mono-culture exploited co-habitants – the potato. In an effort to think about the strategies for a better world, he uses renewable energy source to power his installation and quiet often utilizes open source software and DIY technology. His off-the-grid life at rural mountain side of Lika region brings him and his family closer to permacultural lifestyle and self-sufficiency.

Dinaz Kalwachwala

Filmmaker/ Producer - Writer - Designer

Grounding Space Technology in the 1970s : The NID - ISRO television experience

1. 26th Dec 1973. Our first day in the class of Elements of Film Making. We meet the ISRO team. We are informed that NID has agreed to collaborate on two films with ISRO on 35mm film, to be made for SITE (The Satellite Instructional Television Experiment), one fiction and another a documentary. The students would learn from this 'live collaboration' instead of typical classroom sessions. This process of shoot, edit and discussions lasts for almost six months.

2. 1976. My three-month Industrial training with ISRO begins. I assist a senior ISRO Producer- director on 33 episodes of different serials. One of them 'Hun ane Haan', of a man and a (donkey) puppet friend duo who share current political and social views. The other, based on 'Bhavai' a folk form of Gujarat – with renowned theatre performers of Darpana Academy.

3. 1977. I develop a five-episode TV series 'Reyti ni Otli' (A heap of sand) as my NID Diploma project in a docu-drama format, the concept based on the power of decision making amongst children. The creative and execution ground was the Kheda Television project, of ISRO. My performers, 8-10 children of landless and oppressed sections living, in Rooppura village of Kheda. Our audience, the same unprivileged sections.

Dinaz graduated from National Institute of Design (Ahmedabad, India) with specialization in Film making in 1978. She has communication and media experience in Film/video direction and production, script writing, Production design, Academics and Graphic print design. In a career span of 39 years (1978 to 2017) Dinaz worked in development communications at grass root level on Gender, Tribal and Human rights, Equitable distribution of natural resources, Sustainability, Nomads and other issues, with National and International organizations - CBO's, NGO's and the government. She has also trained film/video students, media professionals, social activists and teacher-trainers in India and South-East Asia. Besides making documentaries (with her partner-husband Amit Bhavsar), Dinaz is also been involved in screenplay, script writing and production design for Hindi mainstream cinema. Presently, she resides in Mumbai.

Dr. Gavin Keeney
CEPT University

Representation as Research?

With the proliferation of analog and digital platforms for the development, editioning, and dissemination of works of architecture and art, the intermediate zones between multiple disciplines are becoming increasingly dynamic or blurred in terms of representation as a form of research. This extends to thesis projects at both the Master's and PhD levels in architectural schools and in programs where media is the central focus of artistic production.

Arguably, the most dynamic aspect of this contemporary intermundia (Lucretius' "place between worlds" where the gods dwell) is the complex of forces and methodologies developed somewhat haphazardly in the intersection of video, performance, and installation, with impersonal forms of subjective agency or formal properties of the media involved assuming the role of the authorial voice traditionally associated with research in the Arts and Humanities.

"Representation as Research?" questions the privileging of non-human actants in the production of the architectural project and the attendant issues of what constitutes research or critique today through an examination of the critical capacities of visual media to comment upon or offer alternatives to contemporary architectural and urban-design methodologies.

The project presentation will examine what otherwise passes as mediatic or artistic spectacle within the art world versus schools of architecture or art per se, suggesting that much of the present-day penchant for such spectacle does not constitute research in any normative sense and that its importation into academic programs (where it does not necessarily originate) constitutes an opportunity for such experimental media to become critical.

The presentation will address experimental work recently produced by students at CEPT University for an international design competition for the Liberty Island site in New York Harbor, home of the Statue of Liberty, plus documentation of multimedia works associated with Archiprix +++/C'est la CEPT events scheduled for February 1-10, 2017.

Gavin Keeney is 2016-17 Teaching Fellow at CEPT University. His 2011-14 PhD thesis, "Visual Agency in Art & Architecture," Deakin University, was conducted sur travaux and resulted in curation of two multimedia exhibitions, "'Shadow-lands': The Suffering Image" (2012) and "'Shadow-lands' II: Not-I/Thou" (2014), plus two monographs, Dossier Chris Marker: The Suffering Image (2012) and Not-I/Thou: The Other Subject of Art and Architecture (2014). Postdoctoral projects include a 2015 Fulbright Specialist Program six-week seminar, "Knowledge, Spirit, Law: A Phenomenology of Scholarship," in association with the University of Ljubljana, and the Igor Zabel Association for Culture and Theory, Ljubljana, Slovenia

Jacqui Knight
Plymouth University

The Ecology of Photographic Practices Towards an Aesthetic of the Posthuman

This paper reconsiders the received history by which the study of media forms are positioned, and discusses film and photographic practices as the reciprocal affective relationship between the maker, their intentions, materials, technologies, non human agents and the environment. By rejecting an innate anthropocentrism of art historical narratives, which exclude corporeality and materiality as drivers of human history, we are able to discuss the complex dynamic meshwork of determinants that bring photographic artefacts into existence: the lived, animate, vital materialism at once emergent and mixing of different causalities and temporalities.

Within this position I will provoke discussions of cognition and photography by recalibrating the moment of acting to a model that recognises a distributed nature of human action into the material world of things. It tries to propose a new relational history of media artefacts, which decentralises the dominance of the photographer or filmmaker in the complete authorship of the work.

This new materialist position has implications for the way we understand the emergence of media artefacts. In this paper I try to sustain this argument with documentary evidence from the archive by making a close reading of a particular photographers contact sheet, which shows up some of the dynamics of a complex meshwork playing upon the photographer during the act of photographing. Through this reading we can begin to think about the implications for the way we understand the emerging aesthetic discourse of posthuman technological photographic practices.

Jacqui Knight MA is a Marie Curie (ITN - Innovative Training Networks) research fellow with the Cognition Institute, and contributing researcher with Transtechnology Research at Plymouth University. As a practicing artist and doctoral researcher she is concerned with the simultaneity of experiences as a 'generative moment' that brings an artefact into existence and results in the emergence of artistic forms. Her research uses artistic practice specifically photography, film and print as a tool to understand the conditions of these generative processes and their affective implications. She lectures across various institutions in the South West of England and is co-founder of artist film cooperative Cinestar based in Cornwall, dedicated to supporting creative work with analogue film through experimental workshops, screening events and education. She has exhibited and curated numerous film screening events and group exhibitions throughout the UK and has had a solo show at Nancy Victor Gallery, London. Her work has been published in numerous specialist art journals.

http://trans-techresearch.net/
http://www.cognovo.eu/
https://plymouth.academia.edu/JacquiKnight
http://www.cinestar.org.uk/

Sandeep Mertia
The Sarai Programme, CSDS

Did Mahalanobis Dream of Androids?

The 'Data Revolution' has sparked many debates on how new affordances and immanence of technology have reconfigured – if not transformed – earlier modes of collecting, storing, cleaning, processing, computing and visualising 'data'. The nature of these reconfigurations is far from just 'technical'. As we know, 'Raw Data' is an oxymoron, and different disciplines cook and savour data as per their historically and culturally constructed epistemologies. It also follows that, how data is framed and how it frames us is contingent upon the concepts, tools, techniques and infrastructures available to work with it. The processes through which data is collected inscribe and affect its subsequent material and social possibilities, especially in a developing world context where data exists in multiple or mixed materialities – with several micro differences within macro categories like paper and digital. 'Data collection' thus becomes a key register for opening the debates on how data is produced

The social data ecosystem in India, which has been around since at least the first Census conducted by the East India Company in 1868, and much before that as well in different princely states in different forms – is a veteran of many revolutions. This ecosystem offers many relevant sites for meditating on the social of the computational and vice versa. In this paper, I will try to reflect upon some fragments of long histories of social data analytics and explore connections between the earlier modes – 1930s to 1950s with emphasis on the work of P C Mahalanobis (PCM), the pioneer statistician and founder of the Indian Statistical Institute (ISI) – and the contemporary material lives of social data in India. Based on archival material on PCM, and ethnographic material from my on-going fieldwork on Android tablet based surveys, I will try to touch upon the shifts or lack of, in organisations of surveys, and the epistemic and material cultures of data-collection in the two epochs.

Sandeep Mertia is a Research Associate at The Sarai Programme, Centre for the Study of Developing Societies, Delhi. He is an ICT engineer by training with research interests in Science & Technology Studies, Software Studies and Anthropology. He is currently conducting an ethnographic study of emerging modes data-driven knowledge production in India.

He can be reached via Email: sandeepmertia@gmail.com and Twitter: SandeepMertia" \n _blank@SandeepMertia.

Snehal Nagarsheth
CEPT University

Astronomical Landscapes

Man has been fascinated with the dome above us for centuries. This exposition deals with this fascination through examples from farmlands to Jantar Mantar to Eco farms. The relationship of man and technology and their representative landscapes both reveal great abilities of observations and are surrounded by mysteries. The attempt here is to showcase the ways in which the landscapes around us over time have been represented, transformed and harnessed. These shifts are a record of our relationship from dependency, to the times when we interpret, and times when we simulate these relationships. These readings are a fascinating tale of technology that influences our landscapes.

Snehal Nagarsheth has an M. Arch. in Urban Design from CEPT University and Bachelor's degree in Architecture from School of Architecture, CEPT University, Ahmedabad. She is an Associate Professor and has taught at the Interior Design as well as Architecture programs at CEPT since 1994. She was the Co-ordinator of Under Graduate Program at the Faculty of Design, CEPT University from 2012-2016. While being actively involved in academics she has presented at National and International Conferences and was the Convenor of an International Conference in Design Samvad : Dialogue (2011) and Inside Future : Future Inside (2015). In 2009, she co-authored Living with Memories : Parsee dwelling in early settlements of Gujarat; a book which is an attempt to construct history through the lens of material culture; constructing the scenario not only through drawings and photographic records, but also weaving the layer of experience through narratives. The book focuses on dwelling, which is seen in the manner Parsee community define their homes and institutions. She also has a collaborative practice in Architecture and Interior Design and her projects have been published by national and international publications.

Dr. Geetha Narayanan
Founder/ Director, Srishti institute of Art,Design and Technology

Consciousness as Confluence

Today, even as notions of the hybrid, the mutant and the inter or trans disciplinary, take pivotal positions in dialogue and praxis, we can still see strong remnants of the "Two Cultures" thinking as articulated by C.P Snow in 1959. Creating new consciousness, as evolving from direct first person and embodied experience, by creating design intersections between the arts and the sciences has been the work of the Centre for Experimental Media Arts at the Srishti Institute of Art Design and Technology Bangalore. This emerging consciousness has articulated a space for both praxis and discourse that focuses simultaneously on experimentation and narrative, on artificial intelligence and virtual reality, on memory and history.

This paper will share a ten year retrospective of positions, paradigms and works that helped generate an understanding of a world beyond the Two Cultures within the Indian milieu of art and design pedagogy.

Geetha is an educator with over four decades of experience as a teacher, an educator, a curriculum and instruction designer. At all times a catalyst Dr. Narayanan has tried over the years to evolve paradigms of learning that integrate the mind, body and consciousness and in the last few years has worked at creating collaborative pedagogical frameworks for the teaching of mathematics, science and languages within the Indian educational system at the informal and formal levels of schooling.

Dr Narayanan is currently Founder Director of Srishti Institute of Art Design & Technology; Principal Investigator of Project Vision, a Director's Fellow at the Media Lab, MIT, USA and a visiting faculty at the Future of Learning Institute at Harvard Graduate School of Education USA.

Gautam Sharma
Central University of Gujarat
Centre for Studies and Research in Science, Technology, and Innovation Policy

Alternative Imagination of Science and Technology in India: A historical perspective

In the wake of independence in India the first prime minister of the country Jawaharlal Nehru visualised adoption and integration of Science and Technology (S&T) with national planning to improve the socio-economic condition of India. However, the alternative views on science for the civil society were present since independence. This alternative imagination of science was spearheaded by Indian philosophers and freedom fighters like Tagore and Gandhi. The paper begins with the alternative discourse on S&T in India with Gandhi's critique of Nehruvian scientific model and the rural reconstruction plan of Tagore. Gandhi's opposition to industrialisation and mechanisation is well known. Gandhi supported production by masses as opposed to mass-production. The simple technology he wanted to be in every home was the charkha which according to him was a symbol of self-reliance. The paper then proceeds to discuss the 1970s when the optimistic expectations of S&T started to get undermined due to the long term adverse effects of S&T. This was the time when appropriate technology (AT) as an ideological movement dominated the development discourse in the developing world. AT had its roots in the philosophy of Gandhi and sought to redefine the technology as a tool of development. The AT searched for an alternative technology that suited the local conditions and provided some improvements in rural communities' socio-economic circumstances. However the movement failed to achieve its objective. Finally, the paper presents a new social movement known as 'grassroots' innovations movement started in the 1990s by activists, academics, farmers and policy makers to bring the technologies developed and used by the small and marginal into the mainstream. The movement recognises the poor as knowledge holders and advocates for recognising their knowledge and solutions to combat the daily hardships and struggles. The paper argues that there was always an alternative imagination of science in India that was against the linear models of innovations dominant at those times.

Gautam Sharma is a doctoral fellow at Centre for Studies in Science, Technology and Innovation Policy, Central University of Gujarat. He has completed his MPhil in Studies in Science, Technology and Innovation Policy and presently registered as a PhD scholar at the centre. His research interests include intellectual property rights, grassroots innovations, design and STS, socio-technical systems, national and regional innovation systems.

Eugenia Stamboliev
Plymouth University

Performing emotions: Humanoid robots beyond bad acting.

The field of artificial emotions (AE) is focused predominantly on phenomenological and aesthetic qualities when simulating and representing emotions or affects (Fong et. al. 2003). This can be unpacked by looking into humanoid robotics (HR) being grounded in materialistic and expressive ways to think AE (Ekman 1999, Picard 1997). One path of unpacking such performative structures is to discuss the use of humanoid robots as 'emotional actors' in contemporary plays, on dramatic stages. I aim to use the artistic stage context to point to a lacking differentiation in AE sciences between what is means to have or to perform human qualities such as emotions. Precisely, I use this theoretical ground to critique how human qualities and attributes such as emotions, are being highly aestheticized through their performative expression only. I shall point out where differences lie between the 'aestheticization' of emotion in film and dramatic performances (Deleuze 1986) acted out by and through human bodies and a certain double performativity between HR and humans on a dramatic stage.

What this context will point to is less the entertaining, clumsy or (less) advanced qualities of HR on stage in being bad actors only, but I will display how the structural issue of being always actors only becomes apparent within the performative performance. In fact, I will unravel that there is no off-stage context when it comes to AE, what will be shown in HR not having an off-stage character. This will lead me to acknowledging a structure of what I call the 'aesthetic bias' that points towards AE being always aesthetically driven in representing emotion.

The consequences of such aestheticized research can be seen in the strong avoidance to think and debate the future understanding of emotions from an ontological, even post-human point of view (Braidotti 2013).

Eugenia Stamboliev is an associated researcher at Transtechnology Research at Plymouth University and a PhD fellow in the Marie-Curie initiated doctoral training network, CogNovo. Her current research explores the phenomenology and codification of intimacy within different fields, such as film, theatre and science. Her explicit focus lies on discussing how the visual, affective and the imaginary are intertwined to standardise experience in favour of representation. Her background is in Media Studies (University of Arts, Berlin), Philosophy (European Graduate School, Saas-Fee) and in Law, Art History and German-Jewish Literature (Free University Berlin).
http://www.cognovo.eu/people/research-fellows/eugenia-stamboliev.php

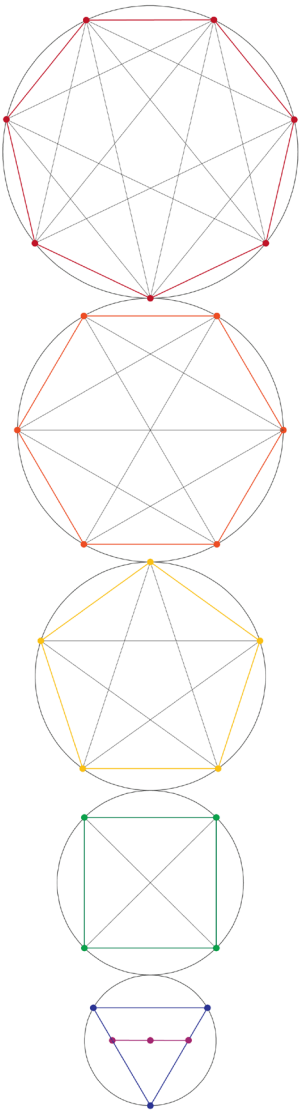
Shrutie Tamboli
CEPT University

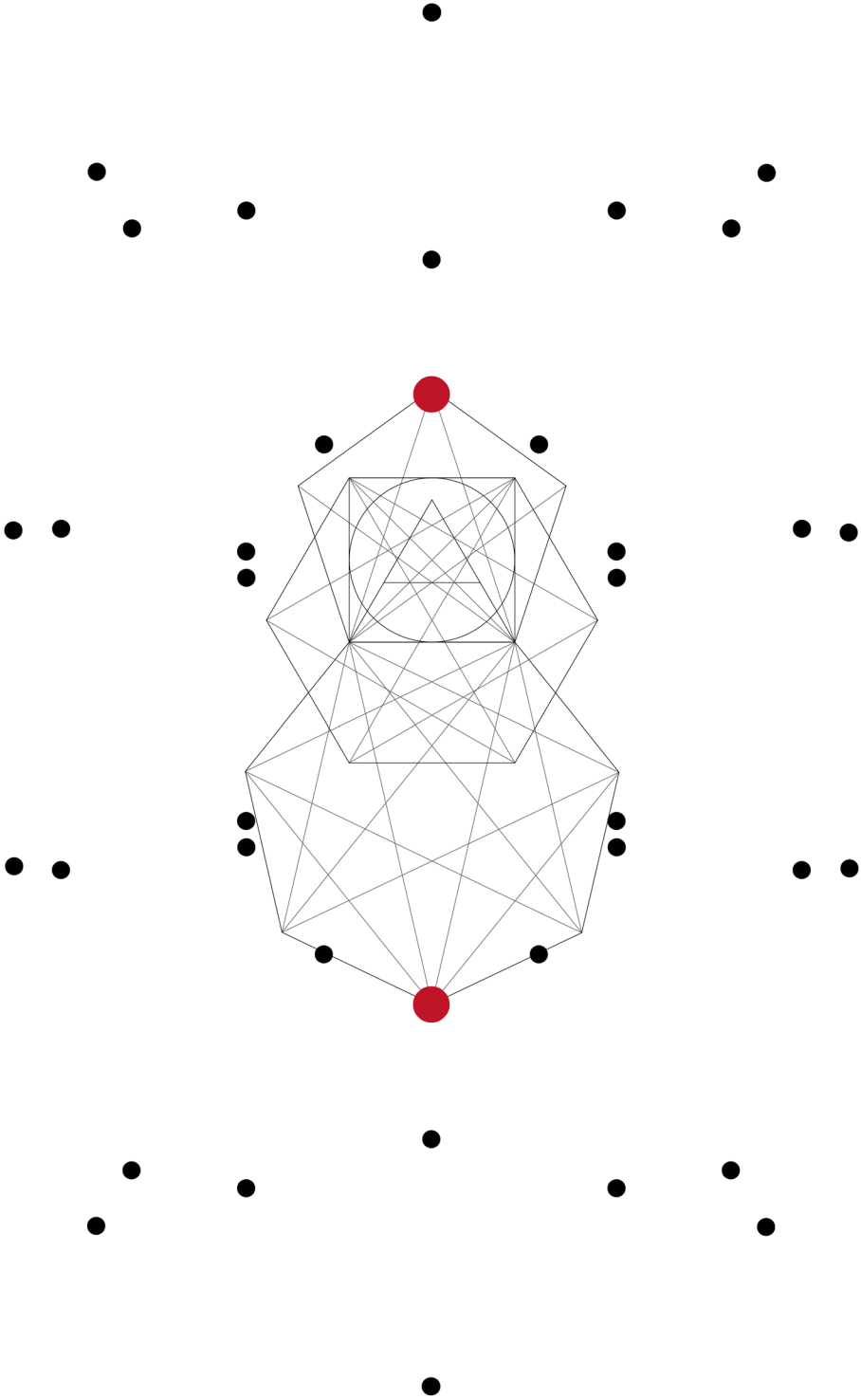
Taknik and Technology : Meanings of makings

The impression of technology and the many interpretations of the term in its usage demonstrates how this term extends itself to different characters. The discussion of this paper reveals 'Practice of making' by three characters who interpret technology in three different ways exposed in the most amusing way.

A craftsman refers to this as taknik ... clearly meaning methods of making. This perception dismantles the relationship of technology as an extension of himself and engages us with the spirit of making. The other two characters reveal technology to their position with reference to making.

Shrutie Shah Tamboli is an Architect and an Independent Researcher. She did her Masters in Industrial Design - Furniture at the National Institute of Design, 1989-90. Presently Associate Professor at the Faculty of Design, CEPT University, Ahmedabad and a Visiting Faculty at the National Institute of Design, she is also a practicing architect. Her firm 'vistas' was founded in 1992 in Ahmedabad and has designed and executed projects for clients that include government and non governmental agencies, corporate as well as private individuals and institutions.





Reflections and Provocations

Prof. Ashoke Chatterjee

Former Director of the National Institute of Design,Ahmedabad

Design Education: Transdisciplinarity in an Indian experiment

Design education through the National Institute of Design (NID) came as an experiment almost 70 years ago, directed at "a sober investigation into those values and those qualities that Indians hold important to a good life" (India Report –1958, Charles and Ray Eames of Los Angeles). An early challenge was to position design within a pattern of higher education inherited from colonial rule. Despite efforts by Rabindranath Tagore and Mahatma Gandhi to create alternatives that reflected Indian heritage and need, tunnel-vision specialization remained the hallmark of prevailing systems. Yet the India Report called for bringing together "all the disciplines that have developed in our time --- sociology, engineering, philosophy, architecture, economics, communication, physics, psychology, history, painting, anthropology… Anything to re-state the questions of familiar problems in a fresh clear way. The task of translating the values inherent in these disciplines will be difficult, painful and pricelessly rewarding".

It was this need for daring which in the 1960s led NID's founders to create a space for design education outside the constraints of an inflexible university system. Support was sought not from the Ministry of Education but rather from departments concerned with industry and commerce, where problem-solving rather than clearing exams might be better understood, and Indian design might emerge as the lofty ideal offered in the India Report: design as "service, dignity and love" within the mammoth task of nation-building.

Balancing the past with the present as well as with the future now demanded a pedagogy capable of linking heritage, need and values through a Bauhas inspiration of 'learning by doing'. For this, a cadre of Indian design teachers was required. Candidates were drawn from established disciplines of art, engineering and architecture. They revealed how difficult transdisciplinarity could be for those with specialized backgrounds moving toward 'generalization' as a new specialization. In industry the term design still evoked engineering or art, while for parents and young people a career directed at resolving unknown problems seemed fraught with obscurity. The search began for clients and students with a stamina for risk and uncertainty. NID educators decided to 'catch them early': a programme was innovated for school-leavers, the first of its kind. Exposure to the real world was grounded on priority sectors of development, harnessing every possible source of experience and wisdom. Transdisciplinarity in the classroom meant demonstration of the professional credibility of educators. NID clients had to be located by need, rather than their understanding of design or willingness to pay for it. The challenge was to transform real need into felt need by demonstration and delivery at key levels of industry. Yet India in the '60s and '70s was a rigidly protected market, devoid of competitive pressures that elsewhere created the demand for design intervention. Opportunities had now to be extracted from wherever change was making its impact: traditional crafts challenged by mass production, export prospects demanding marketing savvy, advertising agencies struggling with 'commercial art', India's cultural diplomacy requiring world-class communication capacities, and experiments in cutting-edge industries. Space was one of these.

NID's location in Ahmedabad near the campus of the Indian Space Research Organization (ISRO) emerged as a significant advantage. By the mid-1970s the SITE experiment in applying space science to village transformation had made ISRO a hothouse of inter-disciplinary discourse and effort. Public television decentralized for the first (and sadly the last) time meant media professionals

mingling with experts trained in space as well as with those in agriculture and natural resource management, social scientists, planners, village school teachers and traditional artists, activists in health, shelter and livelihood, leaders of communities still at the margins of society --- Dalits, minorities and women --- and from emerging disciplines including management, computer technology and now, design. ISRO proved a remarkably unorthodox community of thinkers, working out of the box with astonishing ease and for whom NID represented a shared and practical daring, the hallmark of SITE. Designers were welcomed not just to provide service but to participate in brainstorming on what needed to change in India's villages and in its functioning as a truly democratic society. In this churning within an institution that had made space science India's symbol of modernity, design ideals of "service, dignity and love" acquired new meaning.

Around the corner, other transformations were waiting: so-called liberalization and globalization in the 1980s. Within a decade, India would change, with the shopping mall as its new design aspiration and fashion as the overwhelming design image at the opening of a new millennium. Competition in a market-driven economy would bring design into the centre of a transformed industrial culture. Design education had begun its spread across India, and to urban street corners hawking 'design tuition' as a quick route to fortune. Would assembly-line concepts of design education crowd out genuine discourse between disciplines, or dismiss old talk about 'service, dignity and love'? Yet fresh concepts of development have also emerged through people's movements on the environment and on human rights. Design education now finds its space in other streams of learning: engineering, architecture, management, sciences. 'Design thinking' is everywhere, making its own demand for dialogue between disciplines. Heritage, identity and indigenous knowledge are mainstream issues, no longer at the fringe. As a signatory to the Earth Charter and to globally ratified goals and indicators of human development, design in India can find fresh relevance in its roots, while the concept of sustainability adds urgency to transdisciplinarity as a non-negotiable prerequisite for 21st century problem-solving. Caring for the earth and for each other may give a new generation of designers the task once again of "a sober investigation into those values and those qualities that Indians hold important to a good life", and of harnessing every source of wisdom to their quest.

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Academics usually do not talk about "tactics."

Sociologist David Banks, blogging in 2012 from Occupy Albany and discussing anarchist tactics, wrote: "Academics usually do not talk about "tactics." There are theories, methods, critiques, but we - as professionals - rarely feel comfortable advocating for something as unstable or open to interpretation as a tactic."

Banks, an academic sociologist, on a page devoted to "sociology that matters," was blogging about, and participating in, contemporary political activism. Casting about for a way to talk about both his academic and his activist practice, he used this opening "tactical" metaphor as framing device for his essay, drawing the term from the title of an article published in the academic journal Science, Technology, and Human Values only weeks earlier. The STHV article's authors drew on research findings from different parts of the non-western world.

This real-time dialogue between academe and activism, and the directions of metaphor-borrowing — from "Third" to "First" World, and from science and technology studies (STS) to the sociology of resistance — are, perhaps, signs of new kinds of dialogue.

This immersion in activism and in theory's consequences for material practice might be seen as a departure from conventional academic positioning. In scholarly studies of science and technology, however, it is not radically new. A generation earlier, the field known as STS (science and technology studies) had been shaped by works such Donna Haraway's Cyborg Manifesto and Evelyn Hammond's racesci.org web-resource. These emerged from socialist and anti-racist feminisms, and were aimed at activist and academic audiences alike. A range of non-STS work ranging from Lewontin and Levins' Dialectical Biologist (1985) to Third World Network's Modern Science in Crisis (1988) had also shaped the 1980s discourse on science and technology, drawing on the experiences of researchers who were not always located in the First World. The People's Science Movement, including groups like the Kerala Sasthra Sahithya Parishad and the Tamil Nadu Science Forum, produced scholars and policy-activists who shaped an Indian history of science in the 1980s. We could multiply the examples. Yet, because dialogue between First and Third World was limited to a small number of people and articles that managed to travel across the world, and because academia rewarded ivory tower publications more handsomely, these connections failed to grow. Instead, feminism, de-colonial movements, and marxist liberation struggles grew apart in the same decade that is now remembered more for the end of the Cold War and the triumph of neo-liberalism. The final nail in the coffin of First-Third World dialogue and activist science studies came in the middle of the 1990s with physicist Alan Sokal's "hoax." Sokal's parody of STS, published without peer-review in the journal Social Text, suggested that a wooly-headed post-1960s leftism and its deconstruction of scientific expertise were dangerous, and the preceding decades of feminist, anti-racist, and anti-Eurocentric science-critique needed to be consigned to the dustbin of history. A new era of pragmatic scientism, driven by experts, was heralded by mainstream news outlets, who linked the Science Wars to the post-structuralist philosophies that had travelled to the US from Europe. Anti-foundationalist philosophy and anti-realist STS were seen as dangerous, backward looking philosophies.

II. Science is Not a Right-wing Conspiracy?

Had leftists erred in misrepresenting contemporary scientific expertise as locked into a conservative, cultish circuit? Sokal, a leftist, was at pains to point out that his agenda was to save the left from its own postmodern silliness. At this point, the American left still saw science as a discourse of the powerful, and therefore its role was to subvert the authority of science. The Indian left did not share this view, and often asserted a strong need for science over superstition at the grassroot organizing level. The distance between first and third worlds began to grow. What is little remarked is that Andrew Ross, in the introduction to the infamous 1996 Social Text issue, invoked the Green Revolution as an example of Eurocentric top-down science and called for the need for alternative, local science to grow. While Third World development served as an ideological center of the US STS discourse, not a single non-western author or topic was included in the contents of the special issue on the Science Wars.

III. Science is not a Liberal Conspiracy?
T-shirt, 2017

On January 21 2017, the US erupted in the biggest public protest in its history. Among the protest signs seen at the marches was a sign calling for "evidence-based science," and emphasizing the importance of objective peer review. Have we come full circle? Today, we stand between the now-distant certainties of Enlightenment science and the terrifyingly-close superstitions of climate change deniers, white supremacists, and racialized discourses asserting the inferiority of immigrant and refugee populations. India and the US face similar social mobilizations for and against science, but the gulf between STS academics on these continents remains wide. A new fashionable trend in "postcolonial" STS has emerged, and it includes many different identities, but confusion persists about left and right, progressive and regressive, Enlightenment and anti-foundationalist discourses.

Provocation

How might we, situated on different continents, engage tactically and strategically, in scholarly and activist commitments, about the urgent ethical questions around science, technology, and justice? Communication technologies, global conferences, and international think tanks have proliferated since the experiments of the 1980s. Yet apparent incommensurabilities also appear to proliferate. Do we need a new vocabulary of science and justice? Do we need to re-visit older legacies of protest and globalisation, including nineteenth-century resistance movements that united labor, nature, and anti-colonial knowledge? Do we need to forge a new imagination of the future, drawing on science fiction, art, and theatre, rather than repeating conventions of academic debate and activist sloganeering? We are faced with a complex task, but one that has deep consequences for our futures.

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Creative Encounters Through Transdisciplinarity

In 2012 Martha Blassnigg and I were invited to contribute to a large scale project, initiated by SEAD, (The Network for Sciences, Engineering, Art and Design) to advise the National Science Foundation (U.S.A) on transdisciplinarity. We became involved because our shared research at Transtechnology Research explored the potential of science and technology as it has unraveled in the past two centuries to offer access to the imaginary that fuelled them as engines of knowledge. In our work, along with our collaborators, (some of whom are participating in this event) we wondered what imagined world the practice of scientists and technologists could reveal if we viewed them with empathy. For this we had to resist the lure of the apparent autonomy of science and technology and examine the aesthetic judgments, human desires, social ambitions and cultural norms that directed research priorities and privileged one technological form over another. For this we were fortunate in being able to assemble like-minded researchers with similar curiosities from art, design, anthropology, sociology, media theory, media practice, medicine and many more to revisit some assumptions about why science and technology have developed in the way that they have done. From this we endeavour to suggest future policy and scenarios that might better meet the human imperatives that are the fundamental drivers of enquiry and innovation. As we developed this project we realized that its scope and ambition required an innovative methodology if we were to return a dividend to the cultural and social domains for allowing us to more or less freely reinterpret them. This was the origin of our work on transdisciplinary method and our insistence that in true transdisciplinarity the object of enquiry is examined with scant regard to disciplinary boundaries in ways that expose new topics and concerns that can returned to the contributing disciplines.

I have copied below our introduction to the paper that we wrote for SEAD. The full text can be accessed at: http://www.trans-techresearch.net/wp-content/uploads/2015/05/TTReader2012_001_Punt-Blassnigg.pdf

> Until relatively recently science, engineering, art and design each had their own history. Increasingly they are becoming to be understood as components in the broad sweep of the production of knowledge for the good of humankind and the supporting environment. The most convincing evidence of this is in the shift in concern for the immediate and medium-term to the long-term sustainability of the earth as a nurturing environment e.g. approaches to climate change, water resources, holistic science, the socio-political and economic, as a global problem. The recognition of the interrelation and interdependence of hitherto discrete histories as important calls for new modes of interaction that are more than opportunist, convenient or problem-driven. This calls for more strategic approaches to transdisciplinarity as the organizing principle for research collaboration.
>
> In the last couple of decades voiced discussion around the new topic of transdisciplinarity has led to a growing awareness and application in the practice of more traditional interdisciplinary frameworks. Spearheaded by Helga Nowotny (2008, 2006, 1997; Nowotny et al. 2003) and Michael Gibbons et al. (1994) with a social science focus and by Basarab Niculescu (Camus and Niculescu 1997, Freitas et al. 1994, Niculescu 2008, 2002) with a science and humanities focus, the increasing literature on theoretical approaches and methodological reflections, shows transdisciplinarity to be more than

a fashionable turn and is strongly supported by concrete actions and requirements in current research frameworks.

The need for transdisciplinary strategies arises in recent years from the increasingly recognised complexity of contemporary problems, including the exponentially growing data- and information load in segmented fields and formats, the demand for a more inclusive engagement with all sectors and strata of society as well as a closer confrontation and need for integration of the multiplicity of perceived conceptions and models of reality. This need for larger overviews and shared engagements, so it has been argued, requires a robust foundation in disciplinary practices and innovative approaches to collaboration and knowledge production and exchanges in interdisciplinary frameworks. Therefore it can be stated that transdisciplinarity is by necessity informed by the complementary extensions of those methods, views, models and conceptions that the single disciplines in their canonical frameworks and specialisation, and their exchanges among disciplines through interdisciplinary engagement, provide. By the same token, no discipline is ever completely isolated and has to be understood always in relation to other knowledge practices. With the broader awareness of the term transdisciplinarity, however, there occurs a slack use of the term in the context of cross-disciplinary collaborations. It points to an urgent need to seek clarity and to unravel some of the inherent confusions of the meaning and value of transdisciplinarity of some of these interventions if the moment is not to be lost.

Our work on the scientific and technological imaginary and method continues and we look forward to CREATIVE ENCOUNTERS WITH SCIENCE AND TECHNOLOGY: Legacies, Imaginaries and Futures and its outcomes as an important contribution to our ongoing enquiry.

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