DISCIPLINARITY IN A DIGITAL AGE

10 – 12 January 2019

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES, INDIAN INSTITUTE OF TECHNOLOGY DELHI

AN INTERNATIONAL INTERDISCIPLINARY CONFERENCE

SENATE HALL

First Floor, Main Building

Indian Institute of
Technology Delhi

Hauz Khas – 110016

Image: Jeppe Hein, “A
New World.” Photo
by Kelly
Sikkema on Unsplash

Concept Note

The evolution of disciplines under the influence of digitization is a matter that demands urgent scrutiny. Both the sciences and humanities are confronted with ‘data’ poised for manipulation. While digitization can enrich the tools and methods available for investigation, it also rekindles dreams of a singular methodology universal enough to consolidate an unwieldy multiplicity of disciplines. But this promise of digitization must echo with the noise of ‘science wars’ in the nineties. That flashpoint was a sure betrayal of the territorial instincts that define academic departments thereby obscuring the real history of disciplines as they individuate out of the ferment of interacting discourses. As the Sokal affair saw the publication of a hoax article in a leading cultural studies journal, the parodical appropriation of scientific content was an occasion to ask if editorial ideology could ever qualify as a 'method'. All in all, digitization provides for a moment to reconsider both the future and the history of disciplines today.

Indeed it was the Sokal affair that also precipitated a growing interest in philosophy of science displayed by the absorption of Thomas Kuhn and Paul Feyerabend in discussions of postmodernism. Postmodernism itself is a condition mediated by the emergence of digital media. The pressure of this seemingly ubiquitous technological context leads one to question the very idea of disciplinarity in a digital age. As digitization creates ground for computation, does it necessarily propagate a view of science that is essentially about control and prediction? Or does the formalism heralded by digitization ask us to reexamine the role of formalization in science as such?

While science aggressively sets standards of intelligibility for the humanities, earlier attempts at formalizing the humanities had to negotiate institutional obstacles of another kind. Consider the curious contradictions forced into the thought of Vladimir Propp as one of those Formalists suspected for not being Marxist enough in Soviet Russia. External to disciplinary boundaries, there are also attempts to prop up grand programs which seek to unify all knowledge or systematize existing groups of disciplines. Auguste Comte places sociology at the top of the hierarchy of sciences because it can ill-afford to isolate its subject matter from its context unlike physical sciences. On the other hand, cybernetics and complexity studies drew inspiration from the dependence of sociology on context.

Hence we have ever more reason to persist in not reading scientism of the humanities as a mere symptom of disciplinary insecurity. Disciplines aspire to become scientific not merely to pass Karl Popper’s problem of demarcation (they often do not). Rather disciplines participate in and are constituted by a discursive totality that transcends their respective boundaries even if never all-encompassing. Superficially, it is clear that unlike literature, mathematization implies that economics is characterized by strong disciplinarity. But if we mark scientific attitude by a tendency towards formalization, the question is to ask what varieties of formalism prevail and what purposes they serve. As Michel Foucault cautions us that even the epitome of formalism:

mathematics is often loosely characterized as a progress from one naive formalism to another less so. Likewise, one may ask which stage of formalism another sub-discipline like theoretical linguistics is poised at?

Within the field of economics, formalization is often suspected as an excuse for “saying less” when one could say more. On the other hand, the digital humanities have been defended as an opportunity to expand upon the possibilities allowed by traditional techniques of literary criticism. Such was also the intent of the sociologist Gabriel Tarde when he criticized the economists not for being reductively calculative, but for not calculating enough. And now that the digital age allows for virtually limitless calculation, big data may allow for a quantification in sociology that could stretch the possibilities of economics itself. Digitization opens the Pandora’s Box not only for the quantification it accelerated but also for formalization, in general, as it spread across disciplines. The conference seeks to nurture this spirit of enquiry into the question of disciplinarity in the humanities and social sciences and its entanglement with the history and practice of sciences.

PROGRAMME

Thursday, 10 January 2019

9 – 10 am REGISTRATION

10 - 10.15 am Inaugural Session

10.15 am – 11.30 noon Session I

CHAIR *Adam Knowles*

SUKANTA CHAUDHURI – "Rethinking Disciplines: The Promise of Digital Knowledge"

11.30 – 1.30 pm Session II

CHAIR *Ravi Chakraborty*

EKTA SINGH - "Big Data and Explanation in Social Sciences"

HUZAIFA OMAIR SIDDIQUIE - "Flying by the Neural Nets"

1.30 -2.15 pm LUNCH

2.15 – 4.15 pm Session III

CHAIR *Elie During*

MOHIT ABROL - "Bergson, Entropy and the Neganthropocene"

MEERA S - "Alternative epistemic processes in practice-oriented disciplines"

4.15 – 4.30 pm COFFEE

4.30 – 5.45 pm Session IV

CHAIR *Divya Dwivedi*

ELIE DURING - "A Plea For Formal Time"

Friday, 11 January 2019

10 am – 12 noon Session V

CHAIR *Shinod N.K.*

RAVI CHAKRABORTY - "Is Mathematics a Model Discipline?"

SUDIPTO BASU - "Cybernetics, General Economy and the Possibilities of a Universal Discipline"

12 noon – 12.15 pm COFFEE

12.15 pm – 1.30 pm Session VI

CHAIR *Angelie Multani*

RICHARD WALSH - "Interdisciplinarity, Narratology, Complexity"

1.30 – 2.15 pm LUNCH

2.15 pm – 4.15 pm Session VII

CHAIR *Richard Walsh*

SUSAN HARRIS – "Singing the Storied Matter for the Anthropocene"

SUMITA SHARMA – "Towards a Scaled-Up Hermeneutics, Or, What to Do with the Big Data of Poetry"

4.15 – 4.30 pm COFFEE

4.30- 5.45 PM Session VIII

CHAIR *Subarno Chattarji*

MEERA NANDA – "The Mythology War: Myth as History and Science in India"

Saturday, 12 January 2019

10 am – 12 noon Session IX

CHAIR *Neha Singh*

SHINOD N.K. - "Computer Simulations and the Changing Ontology of Evidence"

MEGHA SANYAL - "The Epistemic Value of Digitisation in the Humanities"

12 noon -12.15 pm COFFEE

12.15 pm – 1.30 pm Session X

CHAIR *Sukanta Chaudhuri*

ANNE DUPRAT – "Literature and Information: Singularities, Resistances, Emergences"

1.30 – 2.30 pm LUNCH

2.30 pm – 4.30 pm Session XI

CHAIR *Meera Nanda*

CLAIRE BROLAN - "Right to Health Practitioners Cannot Be Left Behind"

SUMEET AGARWAL – "Evolution, Learning, and the Nature of Scientific Explanation"

4.30 pm Vote of Thanks and COFFEE

Abstracts

ANNE DUPRAT – "Literature and Information: Singularities, Resistances, Emergences"

The consequences of digitization on the humanities and specifically on literature and literary studies are often described, albeit in rather conflicting ways. Marginalized by the development of new creative and narrative practices (videogames, social networks, serialized fiction, sharing websites channels), literature is said to have lost in postmodern systems of representations the dominant position it had first gained during the Enlightenment, and had been able to maintain since then through the industrial and post-industrial ages. As for literary sciences – critics, literary theory, textual analysis — they are confronted to the general crisis of expertise caused by the sudden availability of vast ensembles of unprocessed textual information and data on the net.

This crisis of course concerns all discourses of knowledge. What is special about literary sciences is that they have to account for their inter- and trans- disciplinary value, and are therefore subjected to a double bind. Whereas they constantly have to demonstrate the specific (aesthetic, cognitive, moral, philosophical) and irreplaceable value of their object, they must at the same time prove that it answers the new standards of scientificity established by, and designed for "hard sciences": calculability, production and treatment of information, semantic performance, capacity for transfer into other domains of human activity.

Must we necessarily read this as the ending of the long process started in the early modern period with the emancipation of hard sciences from the authority of theological and then of human studies? The postmodern search of a universal methodology — characteristic for instance of complexity studies — would then be to interpret not as a return to the Humanist project of a general concordance of all discourses of knowledge on the world, but on the contrary as the logical conclusion of a marginalization, begun in the Enlightenment period, of the literary and textual construction of meaning and reality, resulting in a disciplinary take-over by information and technological sciences over human sciences.

Yet the recent history of literary analysis since the debates that have marked the aftermath of Sokal and Bricmont's affair in the 1990' on the use of scientific categories in social and literary studies does not seem to fit exactly into this global — and undoubtedly too general frame. Post-structural discourses on literary phenomenon have been marked by an increased exploration of all the dimensions that are specific to verbal and textual invention and composition *and* escape computing as well as formal thinking. Is this to be interpreted as a fallback on specific resources, characteristic of a discipline confronted to the reduction of its autonomy? I will suggest a slightly different reading of this recent evolution, by bringing up some of the many terrains on which literary analysis on its turn does propose new models for thinking plasticity, transformation and emergence in the world.

CLAIRE BROLAN – "Right to Health Practitioners Cannot Be Left Behind – Strategically Integrating Metrics Speak into Health and Human Rights Research and Advocacy"

Right to health research and advocacy is highly contextual and spans a number of fields and disciplines, including public health, global health, international human rights law, sexual and reproductive health and rights (SRHR), anthropology, the social sciences, the political sciences, international studies, development studies, Indigenous ways of knowing approaches, cultural studies, and policy and gender studies. Locating a flexible yet comprehensive interdisciplinary methodological approach to right to health research that examines complex cross-sectional issues– especially in the Sustainable Development Goal era – is thus necessitated moving forward. Indeed, it is proposed this is the second major paradigm shift in right to health scholarship. The first shift occurring in the 1990s when Jonathan Mann threw down the gauntlet to the biomedically focused public health world to suggest the 'tectonic plates' between the public health and human rights domains were necessarily overlapping for the betterment of health thinking and practice.

Although identifying an interdisciplinary right to health methodological approach is in itself an enormous challenge, this challenge is exponentially compounded by the onus placed by various bilateral, multilateral and other development stakeholders on data collection and information systems, quantitative data and statistics, numerical evaluations and the intense focus on Results-Based Management (RBM) approaches ('what gets measured gets done'). Such focus is evidenced by the theme for the World Data Forum in Dubai of October 2018 on civil registration and vital statistics (CRVS) system strengthening and the SDGs.

This presentation will therefore examine both the 'why' and 'how' - how can right to health practitioners through both research and advocacy meaningfully and pragmatically navigate policy and decision-making development (and related) environments dominated by the power and pathology of numbers, and why is the engagement of right to health practitioners strategically important. This presentation will explore the value of actors engaging in metrics-speak as a human rights strategy to ensure that issues of health and human rights significance are prioritized in international development agendas and frameworks. Translating fundamental human rights into numbers is not a particularly palatable proposition for many human rights and development practitioners worldwide. However, this presentation will argue that a happy medium must be found.

EKTA SINGH – "'Big Data' and Explanation in Social Sciences"

'Big data' in the form of large voluminous data sets generated at increasing speed from varied sources and with variable nature has attracted widespread attention of researchers across the spectrum of disciplines. The potential promise and also dangers of 'big data' for modes of inquiry in social sciences have only begun to be debated. On one side is the optimism that 'big data' in the form of large data sets can generate insights that were previously impossible adding to the repertoire of knowledge in social sciences. On the other hand, usage of 'big data'

to analyse social reality has also invited scepticism as concerns are raised that fixed bias can actually grow with bigger data sets and the need to be alert about possible misuse of big data for manipulation and surveillance. Given the excitement and concerns with the possibility of a data intensive social science the paper seeks to investigate the role of social sciences in converting these data sets into meaningful information. Instead of seeing the emergent context as a scenario where social sciences need to adapt to the data based analytics, the paper asserts that social sciences need to reclaim a central place in research facilitated by big data. Given this backdrop the paper would reassert the importance of explanation in social sciences to critically engage with the onset of technology and digital age.

ELIE DURING – "A Plea for Formal Time"

The purpose of my talk is to take up the issue of cognitive and scientific attention in the digital age from the perspective of the philosophy of time, drawing from Bergson and Bachelard (among others). The hypothesis I wish to examine is that the disruption, scattering or distribution of attention resulting from the intensive use of digital media amounts to a reconfiguration of our sense of simultaneity, coexistence and community, and that this reconfiguration, in turn, affects the way we navigate the timescape of knowledge and negotiate disciplinary boundaries—not necessarily for the worse. As our attention spans keep shrinking, how do we go about defining the "contemporary" state of knowledge within a particular field, or across different fields? It is not enough to acknowledge a variety of temporalities and rhythms of duration within and among disciplines: we need to develop a general sense of their coexistence. This requires some philosophical elaboration. Most often, the laments about the digitalisation or discretisation of time only reinforce an unquestioned attachement to the broad continuities of experience. Playing out the thick time of attention against the phantasms of instantaneity, the dialectic of depth and shallowness turns on a rather coarse phenomenology of the "flow" of time. Yet the actual constructions of time spontaneously achieved at a psychological and formal level turn out to be more interesting. They involve superimposed temporalities, porous simultaneities, as well as something more obscure: the hollow presence of a negative *nexus* supporting the modes of separation between things and events. Those are some of the issues behind what I call "formal time"—the time of thought.

HUZAIFA OMAIR SIDDIQUIE – "Flying by the Neural Nets: Ray Brassier's Critique of Paul Churchland's Neurological Idealism"

This paper will consist of three parts. In the first part I will examine Brassier's critique of Churchland with regard to the issue of representation. I will closely follow Brassier's conclusion that the PVA system of weighted neural networks remains unable to explain reality as it is outside of all representation, and thus faces the risk of collapsing into a neurological idealism which belies its pretension to the sanctity of the scientific image. In the second part of the paper I will review Brassier's criticism of the phenomenological project from Husserl to Michel

Henry. Brassier's criticism is premised on the prioritization of the manifest image in the phenomenological method, which leads to what he calls an "absolute solipsism" where "our experience of appearance is entirely adequate to that appearance" by the time we reach Michel Henry in the second half of the twentieth century. In the final part of the paper I will argue that contrary to Brassier's belief, Michel Henry's critique of ontological monism does not result in a two world theory, but is rather very similar to Brassier's own dual-aspect world. Henry's concept of Life is not as Brassier claims, an experience beyond judgment, but as I will demonstrate, the name for the problem one stumbles upon when attempting to discover objective knowledge of the objectivating structure itself. Following up on this perspective, I will conclude that a third person scientific rendering of the sub-personal neurobiological processes (which Brassier claims Churchland is unable to provide) is possible only if we confront the aporia that is the objective knowledge of objectivating structure like Michel Henry attempts to do in his phenomenological work on Life.

MEERA NANDA – "The Mythology War: Myth as History and Science in India"

There is a mythology war going on in the academic discipline of history in India. Historians who bring the methods of social sciences to make sense of the largely mythic narratives of the Puranas, Mahabharata and Ramayana are under assault for bringing a Eurocentric/Enlightenment sensibility to India's past. The "mythographers," on the other hand,insist that instead of historicizing the myths, India needs to embrace the mythic past as a repository of the people's collective memories and moral order. In the current context of ascendant Hindu nationalism, the mythographers are winning the war: myths are increasingly being presented as historical facts, be it in the ongoing battle over Rama's Janmbhumi, or in embellishing the achievements of ancient India in science and technology.

While both sides of this "war" take the mythic nature of the *Itithas-Purana* tradition for granted, this presentation seeks an explanation of why the poetic and mythic imagination has dominated over the referential and the factual through much of Indian intellectual history. The question is not *whether* ancient India had a historical consciousness, or a scientific understanding of the physical universe, but rather *why* it expressed itself in a discourse in which facts were seamlessly knitted into fables. Why, to use Sheldon Pollock's expression, the "referential intention" remained submerged in a metaphysical pathos that actively erased history and materiality?

Explanation is sought not in some timeless "Hindu mentality," but in the history of *how knowledge was transmitted* through the early and classical period of India's intellectual history. Using the well-known "literacy thesis" developed by Jack Goody and Ian Watts, the enduring power of the mythic is located in the preference for the oral over the written in the Vedic paradigm of what constituted knowledge. The late development of writing and the preference

for memory and orality, it will be argued, discouraged a differentiation of the mythic from the factual.

MEERA S – "Alternative epistemic processes in practice-oriented disciplines – an illustration using developments in policy sciences"

The growth of knowledge in a discipline is characterized by their material objects (what it is about) and formal objects (disciplinary perspectives) of study. In traditional views of knowledge accumulation in a discipline, an early phase of description is followed by integration of knowledge through a set of generalizations, thus progressively narrowing the material objects of the study. In this paper, I contrast this with knowledge processes in the discipline of "policy sciences" to illustrate the "heuristic" purpose that formal objects from other disciplines have served in the face of a critical ontology regarding its own material object of study.

Policy sciences started off with an avowedly multidisciplinary agenda, in acknowledgement of the complexity of the reality that it was trying to explain - the sum total of how demands, hopes and aspirations of various actors are translated into authoritative government action that changes rewards, incentives and deprivations in society. Considering the view of state-society relationship that was dominant at the time, the early methods of inquiry adopted the more abstract framework of "system theory", and concepts such as "control", "entropy" and the notion of the error term as ways to explain variations in outcomes of state-led interventions. However, its theories of change have become broader and more accommodating of the multiple sources and processes of change along with changes in its goals of inquiry. I illustrate how such a view of knowledge accumulation, progresses by using formal frameworks and models to serve as epistemic tools that are relevant in the context of action for "guessing" the ontology, even if incorrectly, and for legitimizing such actions in the face of complexity. This would require a broader conception of knowledge as suggested by scholars of the interpretive tradition – one that includes judgement, intuition and interpretation along with reasoning.

MEGHA SANYAL – "The Epistemic Value of Digitalisation in the Humanities: A Cognitive Framework"

Digitalisation in the fields of Humanities is bringing multifaceted changes in terms of its goals and practices. As is demonstrated by Katheryn Hayles in her work "How We Think: Digital Media and Contemporary Technogenesis," the field of digital humanities (although an entirely heterogeneous field) changes from traditional humanities in terms of scalability, collaboration patterns and methodology which also brings in new lines of enquiry and new theoretical possibilities (Hayles, 2012). Looking into this shift of medium in the humanities, the key cognitive process that Hayles focuses on is that of attentional mechanism (ibid). I aim at furthering the cognitive framework that Hayles provides by bringing in insights from studies looking at the possible cognitive mechanisms underlying the process of scientific discovery. The

shift towards computational modelling in the fields of natural sciences has been postulated as a process of "externalising of imagination"; a process which brings into focus the quality of dynamicity that digital media has, as opposed to paper/print media (Chandrasekharan, 2009; Chandrasekharan & Nersessian, 2015). In such an explanation, the process of building the computational model becomes a dynamic epistemic activity. What I am therefore trying to explore in this paper is whether the cognitive framework provided by the studies exploring scientific discovery can be used to understand the digitalisation practices in the Humanities. One argument to support the applicability of the above-mentioned cognitive framework is because of its basis in the 4E (embodied, embedded, enactive and extended) approach to cognition.

MOHIT ABROL – "Bergson, Entropy and the Neganthropocene: A Philosophical Inquiry in a Digital Age"

An exploration into the very concept of 'disciplinarity' in a Digital age has to begin with Henri Bergson who, in many ways, brought the scientific developments of the late nineteenth century such as thermodynamics and neo-Darwinism closer to the metaphysical totality where empiricism and naturalism could suggest a "philosophy of the new". Bergson's absolute which is perceived as the " totality of differences in the world, differences of degree and differences of kind" contains the potential to consolidate the multiplicity of disciplines. Bergson showed a firm grasp on the history of science and was known as an empiricist in his own times. As a young scholar, Bergson studied the concepts of absolute space, absolute time and of stable, permanent universe based on Newtonian physics. In this deeply structured and mechanical understanding of cosmos Bergson looked for change, for dynamism, for an integral force which is present everywhere and binds it all. Bergson challenged the stability of such a system and proposed "conceptual innovation" which would transform the existing sets of knowledge. This paper aims to present Bergson's belief which is highly significant in the twenty-first century that "Philosophers can not today content themselves with vague generalities, but must follow the scientists in experimental detail and discuss the results with them". Seizing this Bergsonian impulse of change, the paper will further lay emphasis on 'entropy' as a metaphor which can be used to suggest that, in the contemporary times, the source of knowledge seems to be on move from the scientific camp to the ones such as philosophy and sociology where the authoritative standpoint assumed by science has been called to question. Entropy connotes disorder. Through the use of entropy as a metaphor, I would suggest that the culture based on science itself is on decline and hence the urgent need to redefine disciplinarity in a Digital age. The territorial disputes between science and philosophy in the wake of Sokal affair need to go through another chain of revolutionary transformation which can emerge from Bergson's philosophy. Finally, the paper will draw on Stiegler's concept of "negentropy" (where the world of philosophy comes very close to the world of science) which demands novelty and creating difference in the age of Anthropocene. This Anthropocene age is actually accelerating the entropic tendencies and destroying the biospheres around the world. Here, the new knowhows, the 'philosophy of the new' contain the potential to create psycho-social counter

tendencies which can defer the Anthropocene and lead to the constitution of a new era that Stiegler calls “Neganthropocene”. This paper will show that there is a creative and continuous philosophical impulse between Bergson and Stiegler and that Bergson’s philosophy remain crucial not to compare philosophy with science or to suggest truth or falsity of either but to argue how ‘appropriate’ both of them are to think beyond the human condition.

RAVI CHAKRABORTY - “Is Mathematics a 'Model' Discipline?”

The question of disciplinarity is foregrounded when there is a conspicuous lack of it, especially in the humanities. Digitization seems to suggest a certain mathematization of discourses as a prescription. But the presumption that mathematics itself exhibits strong disciplinarity needs to examined. The supposed unity of mathematical discourse, as well as a notion of necessity that seems to guide the history of the mathematical discipline, are some factors which lend it a strong disciplinarity.

Mathematics then emerges as a possible model for other disciplines in two specific senses. One sense, suggested by Albert Lautman, is that mathematics is a model for non-mathematical domains in the manner through which they are structured by the dialectic of Ideas. Following this suggestion neither is the rigorous mathematization of non-mathematical discourse like literary studies necessitated nor does it expect a certain unity from the concerned discourse.

The second condition of disciplinarity that will be explored will be that of historical necessity. More than Albert Lautman, his contemporary Jean Cavailles stressed how problems of mathematics arise necessarily through the internal tensions of the field and are the conditions of existence of solutions and newer problems. Can such a formulation of the problematic be appropriated by non-mathematical discourses to 'discipline' their evolution through a notion of necessity? By highlighting the case of literary studies, we ask if certain selected formalisms can be tested against these model conditions of mathematization and thereby offer a critical evaluation of the effectiveness of the formalizations. Such an evaluation, it will be argued, benefits from a distinction between the formal and the mathematical.

RICHARD WALSH – “Interdisciplinarity, Narratology, Complexity”

Narratology has large claims to be an interdiscipline with a very broad range of relevance; so too does complexity science. But these respective spheres of influence are each predicated upon a basic congruence between the conceptual frameworks, methods and objects of study of the disciplines concerned; the relation between them is more vexed, one emerging out of the humanities, with strongly literary roots, the other drawing upon domains across the sciences and social sciences using techniques of modelling and analysis only possible in a digital age. I come to complexity science as a narratologist looking for the conceptual limits of narrative, and from that point of view the interest of complex systems lies precisely in their resistance to

narrative representation. What are the implications for interdisciplinary dialogue in such a case, where research paradigms, conceptual frameworks, even the objects of study themselves, are fundamentally at odds? This talk examines the methodological basis upon which I have pursued just such an interdisciplinary collaboration, and reports upon the empowering effect of reciprocal exchange between discordant disciplinary perspectives in recent work, published as *Narrating Complexity* (ed. Walsh and Stepney, Springer 2018). This work frames intriguing and mutually productive research questions in several related domains; I shall further argue that there is a direct relationship between the substance of these questions and the methodological innovation itself which offers us a clearer sense of the limits and the value of narrative as a mode of cognition and of cultural discourse, and of narratology as a research field.

SHINOD N.K. – "Computer Simulations and the changing Ontology of Evidence"

"Taking the experiment to cyberspace" reads the title of the popular information, provided by the Nobel Committee, about the Nobel prize for Chemistry in 2013. Martin Karplus, Michael Levitt and Arieh Warshel won the prestigious prize for developing multiscale models of complex chemical systems useful in modelling chemical reactions. Simply put, the prize was awarded for developing simulation technics. The Nobel committee report states that with the new simulation technique scientists could "examine[d] every tiny little step in complex chemical processes that are invisible to the naked eye". The title of the report is instructive. It talks about experiments in cyberspace. This recognition of the importance of experimentation in cyberspace suggests that computer simulation is being treated as sufficiently experimental. This is no news to scientists. Computer has been an integral part of research in science from the time of ENIAC, one of the first electronic computers. However, computer simulation (CS), if treated as an experiment, is at best an experiment in the virtual world. This means, unlike an experiment, a computer simulation does not share the ontology of the world. But this does not stop scientists from treating the results of CS as evidence for or against claims about the world. In other words, experimentation in the "cyberspace" is employed to know about the world. In this paper, I discuss the evidential status of computer simulation. I proceed as follows. I start with the distinction among data, phenomena, and evidence available in the philosophy of science literature. Then I try to establish the applicability of these distinctions in the employment of CSs. This would help clarify the nature of both the relata as well as the relation in the evidential relations established on the basis of CSs. Once this is made clear, I discuss the ontology or materiality of CS and explicate the consequences of "the ontology of CS" in constructing evidential relations. I conclude the paper by noting the untidy relations between theory and experiment in CSs and its implication for the notion of disciplinarity.

SUDIPTO BASU – "Cybernetics, General Economy and the possibilities of an Universal Discipline"

This paper studies the emergence of cybernetics as a historical/political transformation of disciplinarity at the dawn of the digital age in Cold War America. It proposes that blackboxing the world as unknowable in-itself paradoxically gave cybernetics a *productive positivism*: what could not be known *immediately* could nonetheless be grasped for a specific purpose by feedback-corrected modeling. This broke down erstwhile disciplinary boundaries in the natural/human sciences, re-structuring their epistemes, even as it integrated them under the dominance of an almost universal claim of scientificity. I shall map this re-structuring of disciplines through the oft-elided exchanges between cybernetics and post/structuralism.

But I'm also interested in something else. A contemporary of Norbert Wiener's *Cybernetics* treatise, Georges Bataille's*Accursed Share* proposed that social systems are situated within a cosmic General Economy that is defined by the inexhaustible circulation of energy initiated by the sun's gift of heat/light. Furthermore, it ruled, the resulting surplus in the world means that excess has to be burnt up through sacrifice or squander. Though both general economy and cybernetics emerged just after the War with a claim to be new *universal* disciplines, between them remained an irreducible political chasm (which might explain their widely diverging fates within the academy). Born within the 'closed world' of the Cold War military-industrial complex and yoked to a global process of securitization and accumulation, cybernetics was an anxious discipline where the encounter with an inhuman, cosmic totality almost immediately produced a deep desire to smuggle back the human. General economy, I argue, showed another ethical possibility for a universal discipline: it privileged the unconscious proliferation of the surplus, celebrated useless consumption of the excess and had no trouble accepting the sacrificial dimension of society. It proposed an acephalicdisciplinarity not subservient to the One of a polarizing closed world discourse: opening to the Earth as a space of regeneration far from closed to the future. My sense is that this conjunction of general economy and cybernetics might allow us to better understand the stakes of the disciplinary turn around the Anthropocene.

SUKANTA CHAUDHURI – "Rethinking Disciplines: The Promise of Digital Knowledge"

It would be unspeakably naïve to argue that digitization links all disciplines by reducing their varied material to a common medium of ones and zeros. But it may not be totally naïve to hold that by rendering all disciplines in terms of the binary code, digitization sets up a new metaphysic of knowledge common to them all. In the pre-digital age, while the material of knowledge might consist of greatly varied elements, they could effectively be analysed or even formulated in only two, natural language and mathematics. The digital medium provides an impressively powerful platform for combining, and thus in effect transcending, the two.

Digitization marks a still greater revolution. Natural language and mathematics had both operated in linear mode. You had to leaf through the pages of a book or follow the steps of an

equation. However subtilized or problematized, our processing of knowledge had to take place in real time. The digital mode, on the contrary, is radial and polydimensional: its most distinctive tool is the hyperlink. The hyperlink can manipulate both time and space. It can link virtually (pun intended) anything to anything across linear structures,and create new non-linear structures. It can thus uniquely integrate the material of different disciplines.

A third point, where binarity plays a fundamental role: digitization is non-logocentric. It de-thrones the word. Word, sound and image share a common status in binary terms – in fact, sound and image become more accessible, as their material is not so intrinsically symbolic and needs less semantic decoding. The relation between the material universe and its intellectual capture is no longer expressed primarily through words and other symbols. The substance of *all* disciplines can be, and in varying degree inevitably is, affected by this expansion of medium, which transforms the mode not only of recording but of apprehending the material of knowledge. This is a major epistemological shift.

Finally, sound and image have been traditionally less accessible to logical analysis than language; but now, these more intuitive, intellectively elusive sectors of experience are thrown open to the exceptionally logical and quantifying methods of digital recording and analysis. Digital humanities has a special role to play in this epistemological revolution, but the revolution should not be limited to the humanities. The epistemology of digitization holds promise to redraw the map of human knowledge.

Foucault talks of 'reveal[ing] in all its purity the space in which discursive events are deployed', of 'leav[ing] oneself free to describe the interplay of relations within it and outside it'. The digital medium afford unprecedented scope to redefine and finally transcend disciplinary boundaries in this way.

SUMMET AGARWAL – "Evolution, Learning, and the Nature of Scientific Explanation"

A longstanding topic of discussion in the philosophy of science has been to characterise what counts as a valid scientific explanation. In biology, the notion of explanation has often been associated with the discovery of mechanisms which account for, or cause, certain phenomena (this roughly corresponds to the Causal Mechanical model of explanation developed by Wesley Salmon). The most famous example of this can be seen as Darwin's theory of evolution by natural selection, which would appear to provide a mechanistic process for the emergence of various forms of life and biological phenotypes. Evolutionary theories have also been more broadly extended to the humanities and social sciences, to provide putative accounts of the development of various aspects of human society and culture.

However, there has been a lack of formal, quantitative analyses of the powers and limits of evolutionary explanations, because of the lack of a mathematical framework in which to carry out such analysis. Recent work by Leslie Valiant has for the first time provided us with the possibility of being able to formally characterise what is evolvable and what is not, by treating

evolution as a form of learning from the environment, and making use of tools and ideas developed in statistical learning theory. This opens up several intriguing possibilities for how we view evolutionary explanations. For one, it may allow us to see such explanations as not just mechanistic, but also as providing conditions of existence for natural phenomena: we observe certain things around us because the conditions existed to make their evolution possible (and equally, we do not observe other things because their evolution was not tractable). This might align with other, 'non-causal' models of scientific explanation, such as what Elliott Sober and others have called Equilibrium Explanation.

Another aspect of seeing evolution as a form of learning is that it may make the classic 'nature vs. nurture' debate with regards to explanations of human behaviour in psychology and other social sciences irrelevant, by allowing us to have a unified picture of how human/biological behaviour emerges from interaction with the environment. The 'nature' of organisms or societies can also now be seen as a consequence of their (or more precisely, their ancestors') 'nurture' over evolutionary timescales. Thus, the notion of evolution as learning seems to offer multiple exciting unificatory possibilities for our characterisation of what counts as a scientific explanation. Here we seek to discuss some of these possibilities and speculate on their broader implications for our understanding of biology and society.

SUSAN HARRIS - “Singing the Storied Matter for the Anthropocene”

There have been concerns about the reach of the Anthropocene across academic disciplines. Without rejecting it for its popularity, we must concede that the Anthropocene has become a shorthand to talk about the effect of humanity in the long term perspective of time and planetary history. Indeed, in the introduction to *Material Ecocriticism*, Serenella Iovino and Serpil Opperman discuss how material phenomena in the world can be understood in terms of narratives that makes ‘storied matter’ everywhere. How can we understand extinction in terms of such narratives? Precipitated by human activities, extinction can also be seen as a geological destiny through the lens of the Anthropocene. Where the sixth mass extinction may be underway, what does general biodiversity loss and endangered species mean to the human? The Anthropocene world registers a surfeit of declensionist narratives across disciplines, and this paper attempts to understand through the lens of extinction what disciplinarity problematizes in its discussion through an axis of poetry and the Anthropocene. Literature spells out the imaginative webs that surround the life stories of endangered and extinct species, and shows us forms of multispecies justice and multispecies cosmopolitanism that are rooted in cultures and contexts of the human. How does this storied matter translate to poetry in the Anthropocene? Outside the elegiac and the tragic, what modes of poetry can we contemplate and anticipate outside the dystopian or the pastoral? I explore these questions through Ben Lerner’s ‘Plume’ and W.S. Merwin’s ‘For a Coming Extinction’.

Bio-Notes

ADAM KNOWLES is assistant teaching professor of Philosophy in the Department of English and Philosophy, Drexel University. His research interests include Continental Philosophy, Phenomenology, Ancient Greek Philosophy and Existentialism. His recent publications include "Martin Heidegger's Nazi Conscience," in *Probing the Limits of Categorization: The Bystander in Holocaust History* (New York: Berghahn Books, 2018).

ANGELIE MULTANI is associate professor of Literature in the Department of Humanities & Social Sciences, IITD. She joined IIT Delhi in December 2003 after teaching in temporary positions at Delhi University and Jawaharlal Nehru University. She has published extensively on the plays of Mahesh Dattani. Her research interests are in Indian literature in English, contemporary fiction and fantasy writing.

ANNE DUPRAT is professor of comparative literature in the University of Picardie-Jules Verne and a translator. She directs the collection *Mediterranea Editions Bouchène* and co-directs with the Imago Mundi collection at the Presses of the University Paris-Sorbonne. Her research interests include the theory of fiction and European literature of the sixteenth and seventeenth centuries. She is the author of *Stories and knowledge. Scientific anecdotes and serendipity* with F. Ait-Touati and the forthcoming *Barbaric Theater*, with A. Teulade and F. Madelpuech.

CLAIRE BROLAN is a senior research fellow in The University of Queensland. She focuses on domestic and global health and development policy and planning challenges by applying a mix of interdisciplinary research techniques and analytic approaches.

DIVYA DWIVEDI is a philosopher based in the subcontinent. She is assistant professor in the Department of Humanities and Social Sciences, IITD. Her research areas include ontology of the literary, narratology, and critical philosophy of race. She is the co-author of *Gandhi and Philosophy: On Theological Anti-Politics* (Bloomsbury Academic, 2019) with Shaj Mohan and co-editor of *Narratology and Ideology* (Ohio State UP, 2018) with Richard Walsh and Henrik Neilsen.

EKTA SINGH is assistant professor in the School of Global Affairs Ambedkar University, Delhi.

ELIE DURING is associate professor of philosophy in the University of Paris Ouest – Nanterre. His research circles the philosophical reception of the theory of relativity and the notion of spacetime at the juncture of metaphysics, science, and aesthetics, where the durations of mind and matter appear to intersect. He is the author of *Bergson et Einstein: la querelle du temps*(PUF, forthcoming, 2018) and a forthcoming book on Physics and media co-written with Christina Vagt.

HUZAIFA OMAIR SIDDIQUIE is a PhD. scholar in the Centre for English Studies, JNU.

MEERA NANDA is a writer and philosopher based in the United Sates. She was visiting faculty of history and philosophy of science in Indian Institute of Science Education and Research, Mohali from 2010 to 15 May 2017. Her research focuses on the history and philosophy of science and religions. She is the author of *Science in Saffron: Skeptical Essays on History of Science* (Three Essays Collective, 2016)

MEERA S is a PhD scholar in the School of Social Sciences, at the National Institute of Advanced Studies, Bangalore.

MEGHA SANYAL is project scientific officer in the Homi Bhabha Centre for Science Education, working on the Philosophy of STEM Education. Her research Interests include Embodied Cognition, Philosophy of Cognitive Science and Phenomenology.

MOHIT ABROL is a PhD scholar in IIT Delhi. His research interest is the influence of Henri Bergson on T.S. Eliot.

NEHA SINGH is ad hoc faculty in Kamla Nehru College and a PhD student in IIT Delhi. Her research interests are Children's Literature, Cultural studies and digital humanities.

RAVI SEKHER CHAKRABORTY is a PhD scholar at IIT Delhi. His research interests include the reevaluation of formalism and effects of the digital.

RICHARD WALSH is reader in the Department of English and Related Literature at the University of York. His research as a narrative theorist ranges from literary and non-literary fictionality to the nature of narrative cognition as a fundamental of human sense-making. He has edited and introduced *Narratology and Ideology: Negotiating Context, Form and Theory in Postcolonial Narratives* (Ohio State University Press, 2018) with Divya Dwivedi and Henrik Neilsen and Narrating Complexity (Springer, 2018) with Susan Stepney.

SAMAR HUSAIN is assistant professor in the Department of Humanities and Social Sciences, IIT Delhi, India. His research interests are human sentence processing, natural language parsing, natural language modeling, and dependency grammars. He is the author of the upcoming articles "Locality effect in a head final language: Evidence from Hindi" with Himanshu Yadav and "Cross linguistic comparison of crossing dependencies using psycho linguistically motivated measures" with Vishakha Shukla, Himanshu Yadav and Ashwini Vaidya.

SHINOD N.K. is a post-doctoral fellow in the Indian Institute of Technology, Delhi. His research interests are in the History and Philosophy of Science. He is the author of "Why Thought Experiments do have a Life of Their Own: Defending the Autonomy of Thought Experimentation Method." (*Journal of Indian Council of Philosophical Research*, 2016)

SUDIPTO BASU is a PhD scholar in the School of Arts and Aesthetics, JNU.

SUBARNO CHATTARJI is associate professor, Department of English, University of Delhi. His research interests include violence studies, media and the 'war on terror,' the American and Vietnamese representations of the Vietnam war and nineteenth and twentieth century American fiction and poetry. He has recently co-authored Reconsidering English Studies in Indian Higher Education (Routledge, 2015) with Suman Gupta, Richard Allen, and Supriya Chaudhuri.

SUKANTA CHAUDHURI is professor emeritus in Jadavpur University, Kolkata. His research interests are European Renaissance, urban and textual studies, translation and digital

humanities. He has edited the third Arden edition of Shakespeare's *A Midsummer Night's Dream* (Bloomsbury, 2017) as well as *The Metaphysics of Text* (Cambridge, 2010)

SUMITA SHARMA is assistant professor in the Department of English Shyam Lal College as well as a PhD scholar at IIT, Delhi. Her research interests include Science Fiction, Complexity and Self-writing on the Internet.

SUMMET AGARWAL is assistant professor in the Department of Electrical Engineering. His research interests include Computational Linguistics, Complex Networks, Systems Biology, Evolution and Evolvability, Darwinian Literary Studies, Public Health Informatics, Pattern Recognition and Machine Learning and Cognitive Science. His publications include "On differentiation between vasogenic edema and non-enhancing tumor in high-grade glioma patients using a support vector machine classifier based upon pre and post-surgery MRI images." (European Journal of Radiology, 2018) with Anirban Sengupta, Pradeep K. Gupta, Sunita Ahlawat, Rana Patir, Rakesh K. Gupta, and Anup Singh and "Role of expectation and working memory constraints in Hindi comprehension: An eye tracking corpus analysis." (Journal of Eye Movement Research, 2017) with Arpit Agrawal, and Samar Husain.

SUSAN HARRIS is a PhD scholar at IIT Delhi.

ORGANIZING TEAM

DIVYA DWIVEDI, SANIL V, RAVINDER KAUR, MOHIT ABROL, RAVI CHAKRABORTY, NANDAN ROSARIO

SUPPORTED BY

INDIAN INSTITUTE OF TECHNOLOGY

INDIAN COUNCIL FOR SOCIAL SCIENCE RESEARCH

INSTITUT FRANÇAIS INDIA

INSTITUTE FRANCAISE EN INDE