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Mapping Digital Humanities in India

P. P. SNEHA

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The Centre for Internet and Society (CIS) is a non-profit organization based in India that undertakes interdisciplinary research on internet and digital technologies from policy and academic perspectives. The areas of focus include digital accessibility for persons with disabilities, access to knowledge, intellectual property rights, openness (including open data, free and open source software, open standards, open access, open educational resources, and open video), internet governance, telecommunication reform, digital privacy, and cyber-security. The academic research at CIS seeks to understand the reconfiguration of social processes and structures through the internet and digital media technologies, and vice versa.

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Foreword

What different forms do digital humanities (DH) research and expertise take around the world? My colleagues and I investigated this question for our report on *Building Expertise to Support Digital Scholarship: A Global Perspective*.* In some places, we struggled to find resources on local practices in DH, but fortunately in India we could draw upon the excellent work of P.P. Sneha and the Centre for Internet and Society. In a series of insightful blog posts, Sneha explored the implications of technology for humanities scholarship and surveyed digital humanities practices in India.

Now Sneha has brought this work together in "Mapping Digital Humanities in India." Rather than falling into naive boosterism or superficial critique, this report plumbs deep questions about humanistic knowledge in a digital age: What do we make of textuality in a digital environment? How might digital tools and platforms contribute to conflicts about authority? How does digital infrastructure affect how humanities research can be practiced? Sneha probes the complexities of these questions, drawing from theorists such as Benjamin, Derrida and Foucault as well as digital humanities scholars such as Franco Moretti and Patrik Svensson.

From this strong theoretical foundation, "Mapping Digital Humanities in India" explores specific challenges and possibilities for DH in India, synthesizing rich interviews with a range of Indian scholars. Sneha notes that digital humanities is in an "incipient stage" in India, given the persistence of the digital divide in much of the country, the association of the term with a specific history in the Anglo-American context, and concerns about the uncritical embrace of technology. The report highlights several Indian projects that demonstrate how technology can be used to create and disseminate humanistic knowledge. Creating online resources in Indic languages poses challenges, especially inputting languages and translating between them. To create an online variorum of Nobel prize-winning author Rabindranath Tagore's works, Bichitra had to develop a Bangla character set. Bichitra enables readers to collate texts at the level of the chapter/canto, paragraph/stanza or word. In the realm of film and video, Indiancine.ma (which archives Indian films from the pre-copyright period) and Pad.ma (which houses found and deposited audio, video, and allied materials) offer powerful annotation tools and open up the archive into a space for interpretation and collaboration.

As digital humanities scholars attempt to move past a limited, Anglo-American perspective, "Mapping Digital Humanities in India" provides a model for how we can understand local practices in DH and connect them to ongoing discussions about humanistic knowledge. Through this report, readers can navigate central issues in digital humanities, explore the Indian context, and critically examine culturally based assumptions about DH practices.

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* See Vivian Lewis, Lisa Spiro, Xuemao Wang, and Jon E. Cawthorne, *Building Expertise to Support Digital Scholarship: A Global Perspective*. CLIR, 2015. https://www.clir.org/pubs/reports/pub168

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Lastly, colleagues at CIS have helped greatly with comments and informal conversations. To everybody here, I am grateful for helping me explore, learn and engage better with this field.

P.P. Sneha

Executive Summary

In the short time span that the term 'digital humanities' (henceforth DH) has been around in the Indian academic landscape, it had generated much discussion and debate about the changes in humanities practice, scholarship and pedagogy that have come about with the digital turn. What are the spaces and roles of digital technologies in the humanities, and by extension in the arts, media, and creative practice today? How has it transformed objects and methods of study and practice in these spaces? What does it tell us about the relationship between the humanities and technology? Perhaps most importantly, what is our imagination of the 'digital' itself, and how does it shape our humanities practices?

These are but a few of the questions that this study on mapping key conversations and actors around the term DH tries to explore in some detail. While the study began as an attempt to understand the growing interest around the term itself in India, its scope has extended to explore what specific contexts and conditions are in place in India that give it critical purchase. Five universities now offer various programmes in DH in India - ranging from a Master's degree to certificate courses, and there have been several workshops, winter schools, seminars and one national level consultation over the last five years. Academic and applied practices focus on building of digital archives, film studies, game studies, textual studies, cultural heritage and critical making to name just a few. While these efforts have managed to create a growing interest in DH, there is still a lack of consensus on what exactly constitutes the field in India. Thus, questions around definition, ontology, and method remain pertinent, as does the need for recognition by the national academic bureaucracy.

Context is another important factor here - most global narratives of DH reiterate a predominantly Anglo-American narrative that draws from a history in the field of humanities computing, as well as a crisis in higher education, particularly in the humanities and liberal arts. The efforts to map different histories of DH in the last couple of years, seen in the emergence of fields such as postcolonial DH and feminist DH, then point to diverse locations, and more intersectional perspectives from which the discourse around the field is being shaped. This is an important opportunity to better contextualise the debates around the digital as well – where conditions and hierarchies of access and usage, transition from analogue to the digital, and the notion of 'digitality' itself need to be defined and understood better. In India, with initiatives such as the Digital India programme, and the increasing push for the adoption of digital technologies in every sphere from education to governance, and now a steady push towards a digital economy, there is already a tremendous amount of investment in the idea of the digital by a diverse group of stakeholders. These advancements, and the enthusiasm, must be read within the context of a rather chequered and uneven history of the growth of science and technology in India, the advent of the internet and adoption of ICT4D, and existence of digital divides at different levels. The changing higher education system in India, and criticism around a profit-driven model of education, along with the entry of a large number of private actors in the field in the form of MOOCs and other online platforms in the last few years also contribute to this growing interest in DH, as also much of its criticism. In fact, the global discourse on DH and its linkages with shifts in government funding has seen increasingly polarized positions, with many humanities scholars being uncertain about the political or critical stake of the field, and a concern about the its focus on certain kinds of methods and skill sets at the expense of more traditional ones.

In India, the discourse around DH has largely remained within an academic context so far, although emerging creative practices in art, design and media may have been asking questions of a similar nature for some time now. These include efforts to understand changes in objects of enquiry from analogue to digitised and born digital artifacts, and the need for new methods of work and study that are necessitated by these new digital objects. The process of 'digitisation' itself is one fraught with several challenges, and demands a closer look – what are tools, resources and skills available for digitisation or creation of new digital cultural artifacts, and the context that facilitates their creation and active use in humanities research and practice. The 'text' as the primary cultural artifact or object of enquiry in the humanities, has undergone several changes with digitisation. Working with digital texts that are fluid and networked, and most often in languages other than English bring forth several new questions that are not only technological but also conceptual. The emergence of new digital cultural archives and online repositories, owing to the (marginally) increased access to internet and digital technologies and the growth of a culture that facilitates collecting and sharing, has greatly expanded the scope of engagement with these questions. The archive in fact forms a significant part of the discourse around DH in India - the challenges and prospects offered by digital cultural artifacts are quite diverse, ranging from modes of documentation, preservation and curation to dissemination over online spaces, and there is a need to understand these in greater detail. Infrastructure emerges as an important political and conceptual question here – while an interest in technological advancement and innovation, and the growth of a culture of free and open access to knowledge to some extent has helped facilitate work in the humanities at large, the lack of access to funding, expertise, and of course adequate, and advanced physical and technological infrastructure , such as computational methods often limits the kind of work that can be done with digital artifacts.

The implications of these changes for the study and practice of humanities are several, particularly with respect to traditional methods of pedagogy and scholarship. The access to resources like Wikipedia and devices like the mobile phone have facilitated a move towards more distributed, non-hierarchical, and individualised models and practices of learning, which simultaneously are premised upon new kinds of centralisation, hierarchies, and aggregation of information. The need to develop new forms of digital pedagogy as well as creating more spaces for such conversations within and outside the academic context would be crucial here. This growth of digitally-engaged humanities practice raises pertinent questions about how exactly the "digital turn" is transforming the humanities, its practice and politics. DH being an interdisciplinary field also offers the possibilities to engage with creative, often alternative practices that exist at the margins of mainstream academia, thus trying to encourage collaborative work across different domains of expertise. The inherited separation of disciplines, or even humanities and technology as suggested by the term DH, may then be contentious here, as it creates the opportunity to explore a twinned history of humanities and technology.

While the field of DH in India continues to develop slowly but surely, and hopefully widely, as more institutions and individuals become engaged with DH and related works, these key questions around its history, methods, and scope will continue to remain pertinent over the next years. For us at the Centre for Internet and Society, studying DH at this historical juncture when the Indian state is rushing towards embracing the "digital" provides a critical lens to understand and engage with the reconfigurations in modes and practices of arts and humanities scholarship and pedagogy in particular, and digital economies of knowledge in general.

1 | Digital Humanities in India?

It has only been a couple of years since I began hearing the term Digital Humanities (henceforth, DH) being uttered quite prominently, though mostly in academic circles. For the uninitiated, it almost sounds like an oxymoron. After all, for most practical purposes the digital and humanities have always been seen almost as contradictory terms, existing in distinct silos. A few workshops and conferences, one national-level consultation, two winter schools and five new academic courses later the term still needs a definition in India. But even now, what is interesting is the emergence of pockets of work in India either claiming to be DH or even remotely related to it, and the interest in the term, either as one full of a seemingly diverse, innovative, and generative potential for interdisciplinary work in academia and practice, or as something that is a reinvention of old questions that have been the focus of humanistic enquiry for several decades now.

The enquiry for this mapping began with the term itself, as a 'found' name for which I needed to excavate some meaning, context and location in India at the present moment. An international conference on Digital Humanities organized at Presidency University, Kolkata in December 2012, [1] a consultation on Digital Humanities for Indian Higher Education held at Bangalore in July 2013 [2] and a short course in 'Digital Humanities and Cultural Informatics' [3] at Jadavpur University, Kolkata, were some of the early and prominent instances of the use of the term. I later learnt from one of the people interviewed for this study that DH was already discussed in academic workshops as early as 2010 [4]. The general interest in the term has steadily picked up in the last couple of years however, albeit in specific parts of the country, and it would be safe to say that it has been approached in markedly different ways by several institutions.

The source of the term itself is the history and body of literature around humanities computing in the UK and US, which essentially explores the use of computational methods in humanities research and practice. Roberto A. Busa (2004) describes it as "... precisely the automation of every possible analysis of human expression (therefore, it is exquisitely a "humanistic" activity), in the widest sense of the word, from music to the theater, from design and painting to phonetics, but whose nucleus remains the discourse of written texts". However, locating a similar history in India seems not only to be a difficult project, but largely a futile one. It seemed irrelevant to import a concept or discourse that in itself was (and still is to some extent) relatively unstable and undefined even in the Anglo-American context, and then try to locate it here. Instead, what I chose to do was to take a few steps back - firstly to outline a couple of questions/conflicts that seemed to be troubling about this concept to begin with:

1. Are 'digital' and 'humanities' really two contradictory terms that are being bridged together? Is this a reiteration of the 'two cultures' (Snow 1990) debate?
2. What are the changes in the object(s) of enquiry in humanities disciplines due to the advent of the internet and digital technologies?
3. What methods are to be used to study and work with digital objects? How are these affecting the traditional methods of the humanities?

4. Is DH a fringe academic phenomena, and can it be related to academic disciplines only? With several groups of practitioners engaging with questions and methods akin to DH outside universities, how do we define its boundaries?
5. What are the new skills and tools emerging with, and in turn defining, DH practices in India?

CONTEXT

An immediate global context for the growth of DH has been the steady debate around a 'crisis' of the disciplines, the humanities in particular, and how DH in a strange paradox, seemed to be both the phenomenon posing this question and offering an answer to it. Particularly in the Anglo-American context, while there has been a sustained decline in funding for the arts, especially post the global recession in the late 1990s, the Science, Technology, Engineering and Math (STEM) and other disciplines in natural sciences still seem to be on a steady footing. The 'crisis' here exists at several levels - budgetary cuts across universities for liberal arts and humanities programmes, a steep fall in gainful employment for graduates (whose numbers are much more than the jobs available in the market), the adjunct system that has become popular in the US, which has resulted in reduced full-time employment and poor compensation for faculty, and in general a lack of opportunities and resources for research in the arts and humanities. The problem however, of which these are only the symptoms, lies much deeper, at the heart of what is seen as the lack of interest due to the diminishing practical value of the humanities, which further makes them seem most dispensable in a moment of economic crisis. Martha Nussbaum calls this a 'silent crisis', spurred by the growth of a profit-driven model of education, which has led to an increased focus on science and technology programmes, and emphasized the fostering of certain specific skills in these domains much to the detriment of arts and humanities programmes at every level of formal education, thus also doing away with "cultivated capacities of critical thinking and reflection, which are crucial in keeping democracies alive and wide awake."(Nussbaum, 2010: 10)

Gary Gutting (2013) on the other hand sees this definition of crisis in terms of numbers itself as misleading, but proposes that this decline is also as a result of a cultural and economic system that is inhospitable to the humanities in general, and the 'cultural middle class' in particular. He writes:

> *Our economic system works well for those who find meaning in economic competition and the material rewards it brings. To a lesser but still significant extent, our system provides meaningful work in service professions (like health and social work) for those fulfilled by helping people in great need. But for those with humanistic and artistic life interests, our economic system has almost nothing to offer. Or rather, it has a great deal to offer but only for a privileged elite (the cultural parallel to our economic upper class) who have had the ability and luck to reach the highest levels of humanistic achievement. If you have (in Pierre Bourdieu's useful term) the "cultural capital" to gain a tenured professorship at a university, play regularly in a major symphony orchestra or write mega bestsellers, you can earn an excellent living doing what you love. Short of that, you must pursue your passion on the side.*

Paul Jay and Gerald Graff (2002) locate the problem within the notion of the humanities as being inherently averse to a market-driven, utilitarian form of education, which emphasises only credentials, thus rendering the field esoteric and lacking when it comes to solving problems in the 'real world'. Instead they favour the approach of humanities students developing diverse skill sets, in addition to traditional skills of their disciplines, and being open to engage with opportunities in the larger marketplace outside of the academy as well. As the essay states:

> *We believe it is time to stop the ritualized lamentation over the crisis in the humanities and get on with the task of making them relevant in the 21st century. Such lamentation only reveals the inability of many humanists to break free of a 19th-century vision of education that sees the humanities as an escape from the world of business and science. As Cathy Davidson has forcefully argued in her new book, Now You See It, this outmoded way of thinking about the humanities as a realm of high-minded cultivation and pleasure in which students contemplate the meaning of life is a relic of the industrial revolution with its crude dualism of lofty spiritual art vs. mechanized smoking factories, a way of thinking that will serve students poorly in meeting the challenges of the 21st century.*

While many of the traditional humanities scholars may still look at this as the result of a certain techno capitalistic impulse - wherein a new research regime based on knowledge creation to fulfil corporate interests emerges – it is prudent to examine how and why fields like the digital humanities have now emerged around the time of such a crisis, as they seemingly fit well within this nebulous space, and what are their implications for the humanities, education and research at large.

In the India, the context is a rather chequered one – while opinion about a notion of a 'crisis', as such, may be divided, the growth of the higher education system in India especially over the last few decades has seen several challenges, of access, diversity and quality among others, which have also informed the development of humanities and arts disciplines in a certain way. Further, a significant part of conversations around the internet and digital technologies in India have been located within the domain of the development of Information and Communication technologies for Development (ICT4D), in sectors ranging from education to governance. The introduction to the digital has been in multifarious ways for countries in the Global South, largely through rhetoric about its potential to address and even resolve social and economic problems, so much so that, as several people interviewed in this study also mentioned, now anything digital automatically translates to 'good' and 'beneficial'. Addressing the digital divide has been a mandate for all stakeholders, whether the state, policy-makers, private organisations, civil society organisations or academia. With around 300 million internet users and counting, India has the second largest internet user base in the world [5]. However, the conditions and quality of access to the internet and other digital technologies, and who is using these and for what purposes continue to remain a bone of contention. The ambitious Digital India initiative of the government is the latest in a slew of measures undertaken to address some of these concerns in the last several years, and it proposes to do so by tackling three key areas – digital infrastructure, governance and services on demand, and empowerment of citizens through increased digital literacy [6]. As such it seeks to resolve some of the challenges of last mile connectivity that have forever been an issue with many ICT4D initiatives, particularly with countries in the Global South. The advent of a techno-democracy or a model of governance that successfully

integrates technology within a framework of rights and social development seems to be the larger vision of these proposed initiatives.

The ICT-fication of education has been a major objective and challenge within this larger vision, specifically with respect to the problem of access, and more importantly *quality of access* which stands out as pertinent, again a problem attributed to the lack of last mile connectivity. In 2009, the MHRD launched the National Mission in Education and Information and Communication Technologies (NMEICT) programme [7], which along with the National Commission for Higher Education and Research (NCHER) Bill [8] and the recommendations of the Yashpal Committee report [9], was expected to address some long-standing concerns in making higher education more accessible and hospitable to students, particularly those from underprivileged backgrounds. Ashish Rajadhyaksha (2011) argues that the last-mile problem is more of a conceptual or cultural problem than merely a technological one. This is illustrated in the manner of implementation of several projects under the NMEICT, particularly in the imagination, as Rajadhyaksha says, of technology as neutral and therefore capable of addressing issues of democratisation within higher education.

Following the NMEICT, several initiatives such as the National Programme on Technology Enhanced Learning (NPTEL) [10] and the use of low-cost devices such as the Aakash tablets [11] were also field tested to get a better understanding of how digital technologies could be integrated seamlessly into classroom instruction. The Indira Gandhi National Open University (IGNOU) [12] and Information and Library Network (INFLIBNET) [13], and more recently the National Knowledge Network (NKN) [14] are some of the more established efforts in distance education and open courseware. More recently, the growth in popularity of Massive Open Online Courses (MOOCs) and similar online learning platforms have also channeled the way for similar indigenous efforts in India. The SWAYAM platform developed by the Ministry of Human Resource Development (MHRD) and All India Council for Technical Education (AICTE) with the help of Microsoft, is the latest endeavor in this space, and would be ultimately capable of hosting 2000 courses and 80000 hours of learning, covering school, under-graduate, post-graduate, engineering, law and other professional courses.[15] Digitisation initiatives were also launched on a large scale in the last decade, some notable ones being National Mission for Manuscripts [16], Digital Library of India [17], and National Library of India [18], among many others. There is also a growing number of closed/commercial archives, some examples being the South Asia Archive [19] and Asia Art Archive [20]. Digitisation, while being taken up in the interest of preservation and record, also brought with it a number of challenges, particularly with respect to the manner in which the projects were implemented. Whether with regard to preservation of the original material, problems with copyright or defining metadata standards, digitisation has never been an easy process. The Google Books library project is an example of this, where the project came under criticism for several copyright violations, errors produced due to conversion of scanned texts using Optical Character Recognition (OCR) software and incorrect or unavailable metadata. [21]

The move towards digitisation also provided the much needed impetus for archival practice to make a transition to the digital space, this has been an inevitable but rather fraught endeavour to begin with, as some of the observations made in the later chapters will illustrate. The emergence of independent, private online archives, often seen as a fallout of the hegemony of state-funded archives is an important development of this time. Another development is an influx of funding from government and private donors,

which has led to a lot of work in media and communication technologies getting concentrated in so-called 'alternative' spaces outside the university. The growth of these peripheral, 'in between' spaces has been an interesting phenomenon, particularly with respect to the possibilities offered for different kinds of research and other creative practices that are often unable to find a space within the confines of a university or other large, established knowledge institutions. Studying DH in India, or tracing a history of the field as such would therefore require a deeper exploration of some of the above factors.

In the last decade or so, DH has perhaps become one of the most highly funded areas globally in humanities research and practice. While this has seemingly helped to either save and/or reinvent some of the humanities programmes, a lot of people also view the field and the term with skepticism – as a threat to more traditional forms of humanities pedagogy and practice [22] and lacking in a focus on cultural criticism (Liu, 2012). The field has also attracted criticism for what is seen as an emphasis on 'building and making', often at the expense of interpretation and political critique, and the privileging of technical expertise over other forms of knowledge; some scholars also see this as a result of the emergence of the field in what they term a 'neoliberal takeover' of the university (Allington et al, 2016). Further, the predominant narratives of the field have also been contentious due to the exclusion of perspectives that take into account race, gender, class, sexuality and accessibility in the emerging global discourse around the term, thus urging important attempts towards alternate, more plural and intersectional [23] histories and approaches to theorizing and understanding DH. This is seen in the growth of fields such as postcolonial [24] and feminist DH [25] over the last few years. While these are some of the important emerging questions, whether such a context and history already exists in India is still a matter of question however, and hinges largely on how we understand the digital itself - as an object, concept or space. For that seems to be where the questions about the field, its emergence and its epistemological concerns lie.

This report, therefore, is somewhat like a scoping exercise to see what some present concerns are and what could be the possibilities of DH in India. The areas of focus are few – the notion of crisis and disciplinary challenges, the archive, infrastructures, new objects and methods of enquiry and so forth which form the crux of the debate in India. It also looks at changes that have come about, and are imminent with the 'digital turn', from the perspective of selected disciplines, and practices of knowledge-making. More importantly, it tries to extrapolate, from the common issues and conflicts traced across several conversations, larger questions of a conflict of authority that disciplines in the humanities have come to undergo, and whether the digital has amplified of tried to resolve the same. The conflict is tied to questions of ownership/ authorship and authenticity that emerge with new collaborative modes of knowledge production, and the politics of circulation. It is reflected in the shift from more traditional spaces of knowledge-making to newer methods, objects, figures and processes in the online world, which seem to at one level replace older ones. This perceived threat of irrelevance or obsolescence is one of the manifestations of this conflict of authority. The Wikipedia is one example of this conflict, wherein the authenticity and authority of its content and recognition as scholarship has been intensely debated owing to, among other things, the fact that it cannot be attributed to any single author. In the ways in which the digital now mediates such activities, what has become the space and understanding of the digital in our lives, in how we consume and produce information and knowledge, and increasingly become uneven stakeholders in a dynamic knowledge economy, are some of the questions explored here.

METHODOLOGY

With few 'digital humanists' (a term many DH scholars in India have consciously chosen to stay away from) and DH centres around, and the discourse being far from stable in India, the best way to explore this supposedly new phenomenon then seemed to be to understand some of the immediate problems and questions with the notion of the 'digital' itself. This approach was not just the result of constraints of the immediate context, but also turned out to be a productive methodological gesture, as it widened the scope of this mapping exercise to include several proto/perhaps-DH initiatives that have come up around the same time, or been in existence for a while and have been trying to work around similar questions. The mapping did not begin with an assumption of a field called DH as being extant in India, and therefore as an examination of its challenges and possibilities, but rather to understand how DH-like practices have evolved and converged at the moment under what appears to be like a place-holder term, and the implications of this for research and learning. Being located in India, it also provided a good vantage point to reflect on some of the literature and discourse around the term being produced in the Anglo-American context. The consultation on Digital Humanities for Indian Higher Education held in 2013 was helpful in bringing together a number of people and key questions of what was then understood as something of a nascent field. It is largely from the discussions at this consultation that this report approaches the term and what it may offer for humanities and related interdisciplinary research in India; somewhere it also hopes to serve as a point of departure. A major concern then was the lack of a proper definition of the field, and its instability, which continued to be a recurrent topic in my discussions with people as part of this exercise. However, the merits of embarking upon an exercise to 'define DH in India' were highly contentious, so the mapping took a more descriptive route, and did a discursive analysis of work in DH and allied fields and what people were saying about it in India. What I found were a range of views, some informed by practice and scholarship, others based on conjecture and some purely non-committal. As one of the people interviewed for this mapping pointed out, there is something provisional about DH, which, if I may add, also inhibits us from saying anything definitive about it, just yet.

Given that the lack of a definition of the field remained one of the main issues, I went into conducting the mapping with a working definition/assumption that DH 'is an interdisciplinary area of research, practice and pedagogy that looks at the interaction of digital tools, methods and spaces with core concerns of humanistic enquiry'. This definition was developed based on a review of existing literature in the Anglo-American context on DH, and deliberately made expansive enough to include within its fold, the different kinds of practices that had already chosen to adopt the term, and others which seemed to be inclined towards similar theoretical and practical concerns. Another useful definition, from the Digital Humanities Quarterly (2010) was the following:

> *Digital humanities is a diverse and still emerging field that encompasses the practice of humanities research in and through information technology, and the exploration of how the humanities may evolve through their engagement with technology, media, and computational methods.*

Deliberating on the interaction between humanities and technology, Susan Schreibman, in one the earliest books on DH describes the 'field' as follows:

> *The digital humanities, then, and their interdisciplinary core found in the field of humanities computing, have a long and dynamic history best illustrated by examination of the locations at which specific disciplinary practices intersect with computation.* (Schreibman et al 2004)

One of the popular and most quoted definitions, however, is an early one that appeared in the Digital Humanities Manifesto 2.0 (Schnapp and Presner, 2009). This describes DH as *an array of convergent practices*, and is also reproduced in the book *Digital Humanities* (Burdick et al 2012):

> *Digital Humanities refers to new modes of scholarship and institutional units for collaborative, transdisciplinary, and computationally engaged research, teaching, and publication. Digital Humanities is less a unified field than an array of convergent practices that explore a universe in which print is no longer the primary medium in which knowledge is produced and disseminated.* (Ibid.122)

The notion that DH is "less a unified field than an array of convergent practices" seems to be the most useful way to describe the observations and more so the conditions that led to this mapping exercise, which also seeks to outline some kind of a trajectory of practices that converge at this contemporary moment to engender new meanings of and around the digital, rather than produce a conceptual history of the term in the Indian context or even imagine an extant field of some sort. This notion of a convergence, as stated in the last definition, although not apparent or expressed by anyone in India, seems to be the best possible way to describe the manner in which certain practices and a discourse has grown around the intersection of humanities and digital technologies in India. This rather organic growth of DH projects, practices and coursework in the absence of a meta-theory that would drive its epistemological concerns is an important conceptual question for the field itself, and was a challenge for the study. Thus while the broader conversation around DH spans everything from instructional technology, new media and art practices, integrated science education to cultural analytics, the core concerns often remain the same, that of the intersection of previously separate domains of knowledge that are now coming together, and the crucial role played by the internet and digital technologies in bringing them together.

Further, four immediate experiences in engaging with digital technologies and questions of knowledge production in India shaped the intellectual concerns of this study. The first of these is the series of monographs produced as part of the 'Histories of Internets in India' project at the Researchers at Work (RAW) programme in CIS, during 2008-2011[26]. A key point foregrounded in these monographs was the critical need to approach the internet, as a plural technology, available in and actualised through different forms, practices, and experiences. The second one was a collaborative project on the quality of access to higher education in undergraduate educational institutions in India, undertaken by the Higher Education Innovation and Research Applications programme at the Centre for the Study of Culture and Society (HEIRA-CSCS), Bangalore [27]. The project was conducted in nine undergraduate institutions across three states in India, and included interaction with students and teachers through workshops and campus projects. The experience of working with students – who ranged from those who could barely use a computer to students proficient with the latest software, multimedia tools and internet applications – led to many insights about the teaching-learning environment, and prevalence of digital technologies and the internet in these spaces. The third one, is the consultation on Digital Humanities for Indian Higher Education

held in Bangalore, which provided an immediate set of questions and a network of people to begin the mapping exercise with. Lastly, as part of a collaborative initiative in DH, on mapping changes at the intersection of digital technologies, youth and higher education in India, a series of short-term research projects were commissioned by HEIRA-CSCS, Bangalore between November 2013 – February 2014; the learnings from these projects helped explore questions for further engagement with the field. [28]

In this study, the fieldwork consisted of in-depth and semi-structured interviews with key people involved in DH and DH-like initiatives in India, in humanities disciplines and allied areas such as media, archives, and higher education. The sample size being small, the conversations were by no means exhaustive, but they were insightful in terms of the present nature of practice and the questions that they further pointed towards. The interviews were largely open-ended conversations focussing on, where possible, questions about DH: its emergence, theory, practice and pedagogy, but emphasising the notion of the 'digital' and is diverse perception and formulations. With respondents who were not from an academic space or not involved with DH directly, the questions were more related to the nature of changes that the digital has brought about in their practice, specifically the shifts in content and method. The crisis of disciplines and the move away from more traditional concerns of humanistic enquiry were also discussed. Issues of access, exclusivity and the move towards collaborative spaces of knowledge production and the democratic potential of the internet and digital technologies also came up quite prominently as points of discussion.

The fieldwork tried to cover not just a range of people from different disciplines and areas of practice, but also institutions: Prof. Amlan Dasgupta, Prof. Sukanta Chaudhuri and Purbasha Auddy, (School of Cultural Texts and Records and Dept. of English), Dr. Moinak Biswas and Dr. Madhuja Mukherjee (Media lab and Dept. of Film Studies); Dr. Abhijit Roy (School of Communication and Culture) at Jadavpur University, Kolkata; Dr. Souvik Mukherjee (Dept. of English) and Dr. Milinda Banerjee (Dept. of History) at Presidency University, Kolkata; Abhijit Bhattacharya (Media Archives) at Centre for Studies in Social Sciences, Kolkata; Dr. Ravi Sundaram (the Sarai Programme) at Centre for the Study of Developing Societies, New Delhi; Dr. Indira Chowdhury and Dr. Padmini Ray-Murray (Centre for Public History) at Srishti Institute of Art, Design and Technology, Bangalore; Prof. Ashok Thorat at the Centre for Digital Humanities, Pune; Dr. C. S Lakshmi at the Sound and Picture Archives for Research on Women, Mumbai; Shaina Anand, Namita Malhotra, Lawrence Liang, Jan Gerber, Sebastian Lutgert and Ashish Rajadhyaksha, who have all worked with CAMP, Mumbai and are part of the team behind Indiancine.ma and Pad.ma; Vikram Vincent at the Indian Institute of Technology, Mumbai and S.V. Srinivas, Azim Premji University. The individuals and institutions mentioned here have been engaged with some of these concerns within their respective fields of research and practice. Four institutions - Jadavpur University, Presidency University, Centre for Digital Humanities and Srishti Institute of Art, Design and Technology– have actively adopted the term DH for some of the work they have been doing, whereas the remaining have been working with digital technologies as part of research, pedagogy, and creative practice. The interviews included discussions on some early key projects such as Bichitra, a digital variorum of Rabindranath Tagore's works at Jadavpur University, Kolkata and Pad.ma and Indiancine.ma two online archives on video and film, which have informed some of the important concerns that shape the DH discourse in India. Efforts in curriculum development and digital pedagogy undertaken at some of these institutions were also discussed. The report presents some part of these conversations

and in doing so provides a snapshot of the operational context of the term ‘DH’ in India as well. The attempt was to understand the nature of existing and possible institutional investment in the term, as well as digital technologies (beyond tools, platforms and processes) and their stake in taking these questions further. This report brings together revised versions of blog posts on the study published in a serial manner on the CIS website. Some of the more recent projects in DH and related areas also focus on new modes of digital scholarship, across diverse disciplines. These include: a) the Scottish cemetery project at Presidency University, Kolkata. [29], an online archive of narratives of people who were buried in the colonial cemetery in or before 1858 (the end of the British East India Company’s rule in India). Along with a comprehensive collection of images, stories and historical information on the cemetery and the Scottish heritage, the archive also includes tools to enable analysis of this data through flexible and comparative searches, the building of timelines and creating map locators b) Two Centuries of Indian Print [30], a pilot project by British Library, the School of Cultural Texts and Records (SCTR) of Jadavpur University, Srishti Institute of Art, Design and Technology, and the Library at SOAS University of London, working with the National Library of India, the National Mission on Libraries, and other institutions in India. The project aims to digitise 4,000 early printed Bengali books, amounting to more than 800,000 pages, and covering least 22 South Asian languages. The project will also explore how digital research methods and tools can be applied to this unique digitised collection, and will deliver digital skills workshops and training sessions at Indian institutions to support innovative research within South Asian studies. Apart from this, archival work at the SCTR, Jadavpur, as part of its Granth South Asia project with Sir Ratan Tata Trust and British library [31] has also included workshops, lecture sessions and training courses to disseminate skills in the field, and open up possibilities for new work and research. (These are some key projects that could not be covered in the study, due to constraints of time and resources.)

2 | Questions of Digital Humanities

The 'digital turn' has been one of the significant changes in fields of interdisciplinary research and scholarship in the last couple of decades. The advent of new digital technologies and growth of networked environments have led to a rethinking of the traditional processes of knowledge gathering and production, across an array of fields and disciplinary areas. DH has emerged as yet another manifestation of what in essence is this changing relationship between technologies and the human being or subject. The nature and processes of information, scholarship and learning, now produced or mediated by digital tools, methods or spaces have formed the crux of the DH discourse as it has emerged in different parts of the world so far. It has been variously called a phenomenon, field, discipline and a set of convergent practices – all of which are located at and/or try to understand the interaction between digital technologies and humanities practice and scholarship. DH in the Anglo-American context has seen several changes – from an early phase of vast archival initiatives and digitisation projects, to now exploring the role of big data and cultural analytics in literary criticism. Some of the early scholarship in the field illustrates the problems with defining and locating it within specific disciplinary formations, as the research objects, methods and locations of DH work cut across everything from the archive to the laboratory and social networking platforms. Largely interpreted as a way to explore the intersection of information technology and humanities, DH has grown to become an interdisciplinary field of research and practice today. However, DH is also clearly being posited as a site of contestation – what is perceived as doing away with or reinventing certain norms of traditional humanities research and scholarship. As a result it has largely been framed within the existing narrative of a crisis in the humanities, highlighting the more prominent role of technology which is now expected to resolve in some way questions of relevance and authority that seem to have become central to the continued existence and practice of the humanities in its conventional forms.

THE PROBLEM OF DEFINITION

The question of what is DH has been asked many times, and in different ways. Most scholars have differentiated between two waves or types of DH – the first is that of using computational tools to do traditional humanities research, while the second looks at the 'digital' itself as integral to humanistic enquiry [32]. However as is apparent in the existing discourse, the problem of definition still persists. As a field, method or practice, is it a found term that has now been appropriated in various forms and by different disciplines, or is it helping us reconfigure questions of the humanities by making available, through advancements in technology, a new digital object or a domain of enquiry that previously was unavailable to us? These and others will continue to remain questions *for* the digital humanities, but it would be important to first examine what would be the question/s *of* digital humanities. Dave Parry (2012) summarises to some extent these different contentions to a definition of the field when he suggests that "what is at stake here is not the object of study or even epistemology, but rather ontology. The digital changes what it means to be human, and by extension what it means to study the humanities."

Some speculation on the larger premise of the field, with specific reference to its emergence in India is what I hope to chart out in this study. This is not in itself an attempt at a definition, but sketching out a domain of enquiry by mapping the field with respect to work being done in the Indian context. In doing so these propositions will assume one or the other (if not all three) of these following suggested threads or modes of thought, which also inform larger concerns of the DH work at CIS:

1. The first is the inherited separation of technology and the humanities and therefore the existing tenuous relationship between the two fields. As is apparent in the nomenclature itself, there seems to be a bringing together of what seem to have been essentially two separate domains of knowledge. However, the humanities and technology have a rather chequered history together, which we can locate with the beginning of print culture. As Adrian Johns points out in the *Nature of the book*, "any printed book is, as a matter of fact, both the product of one complex set of social and technological processes and the beginning of another" (Johns 1998:3). The larger imagination of humanities as text-based disciplines can be located in a sense in the rise of printing, literacy and textual scholarship. While the book itself seems to have made a comfortable transition into the digital realm, the process of this transition, the channels of circulation and distribution of information as objects of study have been relegated to certain disciplinary concerns, thus obfuscating and making invisible this 'technologised history' of the humanities. Whether DH can be an attempt to uncover such a history and bridge these knowledge gaps would be a question here.
2. The distance between the practice and the subject. How does one identify with DH practice? While many people engage with what seem to be core DH concerns, they are not all 'digital humanists' or do not identify themselves by the term. While at one level the problem is still that of definition and taxonomy – what is or is not DH – at another level it is also about the nature of subjectivity produced in such practice – whether it has one of its own or is still entrenched in other disciplinary formations, as is the case with most DH research today. This is apparent in the emphasis on processes and tools in DH– where the practice or method seems to have emerged before the theoretical or epistemological framework. One may also connect this to the larger discourse on the emergence of the techno-social subject [25] as an identity meditated by digital and new media technologies, wherein technology is central to the practices that engender this subjectivity.
3. Tying back to the first question is also the notion of a conflict between the humanities and DH. This comes with the perception of DH being a version 2.0 of the traditional humanities, a result of the existing narrative of crisis and the need for the humanities disciplines to reinvent themselves to remain relevant in the present context, and one way to do this is by becoming amenable to the use of computing tools. DH has emerged as one way to mediate between the humanities and the changes that are imminent with digital technologies, but it may not or even need not take up the task of trying to establish a teleological connection between the two. The theoretical pursuits of both may be different but deeply related, and this is one manner of approaching DH as a field or domain of enquiry; the point of intersection or conflict would be where new questions emerge. This narrative is also located within a larger framing of DH in terms of addressing the concerns of the labour market, and the fear of the humanities being displaced or replaced as a result. Parry's objective of studying DH works with and tries to address this particular formulation of the field.

Locating these concerns in India, where the field of DH is still at an incipient stage comes with a multitude of questions. For one the digital divide still persists to a large extent in India, and is at different levels due to the complexity of linguistic and social conditions of technological advancement. It is difficult to locate a field that is so premised on technology in such a varied context. Secondly, the existing discourse on DH still draws upon, to a large extent, the given history of the term which renders it inaccessible to certain groups or classes of people in the global South. Another issue which is not specifically Indian but can be seen more explicitly in this context is the somewhat uncritical way in which technology itself is imagined. In most spaces, technology is still understood as either 'facilitating' something, either a specific kind of research enquiry or as a tool - a means to an end, and as being value or culture neutral. However, if we are to imagine the digital as a condition of being as Parry says, then technology too cannot be relegated to being a means to an end. Bruno Latour indicates the same when he says "Technology is everywhere, since the term applies to a regime of enunciation, or, to put it another way, to a mode of existence, a particular form of exploring existence, a particular form of the exploration of being – in the midst of many others." (Latour, 2002)

DH then in some sense takes us back to the notion of technology or more specifically the digital realm as being a discursive space, and a technosocial or cultural paradigm that generates new objects and methods of study. This has been the impetus of cyber culture and digital culture studies, but what separates DH from these fields is another way to arrive at some understanding of its ontological status. At a cursory glance, the shift from content to process, from information to data seems to be the key transition here, and the blurring of the boundaries between such absolute categories. More importantly however, does this point towards an epistemic shift; a rupture in the given understanding of certain knowledge formations or systems is also a pertinent question of DH. There are several questions therefore for DH - in terms of what it means and what it could do for our understanding of the humanities and technology. However the questions of DH still need to be made explicit. This mapping exercise will attempt to explore some of the above thoughts a little further. Through discussions with scholars and practitioners across diverse fields, we will attempt to map and generate different meanings of the 'digital' and DH. While we can expect this to definitely produce more questions, we also hope the process of thinking though these questions will lead to an understanding of the larger field as well.

THE PROBLEM OF THE DISCIPLINE

Much has been said and written about DH as an emergent field or domain of enquiry; the plethora of departments being set up all across the world, well mostly the Western world is testimony to the claimed innovative and generative potential of the field. However as outlined in the introduction, the problem of definition still persists and poses much difficulty in any attempts to engage with the field. While the predominant narrative seems to be in terms of defining what DH, or to take it a step back, what the 'digital' allows you to do, with respect to enabling or facilitating certain kinds of research and pedagogy, a pertinent question still is that of what it allows you to 'be'. DH has been alternatively called a method, practice and field of enquiry, but scholars and practitioners in many instances have stopped short of fully embracing it as a discipline. This is an interesting development given the rapid pace of its institutionalization - from being located in existing Humanities or Computational Sciences and Media Studies departments it has now claimed functional institutional spaces

of its own, with not just interdisciplinary research and teaching but also other creative and innovative knowledge-making practices. The field is slowly gaining credence in India as well, with several institutions pursuing research around core questions within the fold of DH.

So is the disciplinary lens inadequate to understand this phenomenon, or is it too early for a field still considered in some ways rather incipient. The growth of the academic discipline itself is something of a fraught endeavour; as debates around the scientific revolution and Enlightenment thought have established. To put it in a very simple manner, the story of academic disciplines is that of training in reason [33]. Andrew Cutrofello says "In academia, a discipline is defined by its methodological rigor and the clear boundaries of its field of inquiry. Methods or fields are criticized as being 'fuzzy' when they are suspected of lacking a discipline. In a more straightforwardly Foucauldian sense, the disciplinary power of academic disciplines can be located in their methods for producing docile bodies of different sorts" (1994, 116). The problem with defining DH may lie in it not conforming to precisely this notion of the academic discipline, and changing ideas of the function of critique when mediated by the digital, which is of primary concern for the humanities. DH has in many spaces also emerged as a manifestation of increasing interdisciplinarity and the blurring of boundaries between traditional disciplinary concerns. [34]

However a prevalent mode of understanding DH has been in terms of the disciplinary concerns it raises for the humanities themselves; this works with the assumption that it is in fact a newer, improved version or extension of the humanities. The present mapping exercise too began with the disciplinary lens, but instead of enquiring about what DH is, it tried to explore what the 'digital' has brought to, changed or appropriated in terms of existing disciplinary concerns within the humanities and more broadly spaces and process of knowledge-making and dissemination. This thought stems from the premise that if we have to posit the digital itself as a state of being or existence, then we need to understand this new techno-social paradigm much better. Prof. Amlan Dasgupta, at the School of Cultural Texts and Records at Jadavpur University in Kolkata sees this as useful way of going about the problem of trying to arrive at a definition of the field – one is to understand the history of the term, from its inherited definition in the Anglo-American context, and distinguish it from what he calls the current state of 'digitality' – where all cultural objects are being now being conceived of as 'digital' objects. In the Indian context, the question of digitality also becomes important from the perspective of technological obsolescence - where there is a great resistance to discontinuing or phasing out the use of certain kinds of technology; either for lack of access to better ones or simply because one finds other uses for it. Prof. Dasgupta interestingly terms this a 'culture of reuse', one example of this being the typewriter which for all practical purposes has been displaced by the computer, but still finds favour with several people in their everyday lives. The question of livelihood is still connected to some of these technologies, so much so that they are very much a part of channels of cultural production and circulation, and even when they cease to become useful they have value as cultural artifacts. We therefore inhabit at the same time, different worlds, that of the analogue and digital, or as he calls it 'a multi-layered technological sphere'. The notion of the 'digital' is also multi-layered, with some objects being 'weakly digital', and others being so in a more pronounced manner. The variedness of this space, and the complexities or 'degrees of use' of certain technologies or technological objects is what further determines the nature of this space and makes it all the more difficult to define. DH itself has seen several phases in the West, but has seen no such movement or gradual evolution in India, where these phases exist simultaneously, he says.

This further complicates the questions of access to technology or the 'digital divide' which have been and still are some of the primary approaches to understanding the pervasiveness of technology, particularly in the Global South. The need of the hour therefore is to be able to distinguish between this current state of digitality that we are in, and what is meant by the 'Digital Humanities'. It may after all be a set of methodologies rather than a subject or discipline in itself– the question is how it would help us understand the 'digital' itself much better, and more critically, and the new kinds of enquiries it may then facilitate about this space we now inhabit. This, Prof. Dasgupta feels would go a long way in arriving at some definition of the field.

One of the important points of departure, from the traditional humanities and later humanities computing as mentioned earlier, has been the blurring of boundaries between content, method and object/s of enquiry. The 'process' has become important, as illustrated by the iterative nature of most DH projects and the discourse itself which emphasises the 'making' and 'doing' aspects of the research as much as the content itself. Tool-building as a critical activity rather than as mere facilitation is an important part of the knowledge-making process in the field (Ramsay 2010). In conjunction with this, Dr. Moinak Biswas, at the Department of Film Studies at Jadavpur University, thinks that the biggest changes have been in the form of the collaborative nature of knowledge production, based on voluntarily sharing or creating new content through digital platforms and archives, and crucially the possibility of now imagining creative and analytical work as not separate practices, but located within a single space and time. He cites an example from film, where now with digital platforms and processes, 'image' making and critical practice can both be combined on one platform, like the online archive Indiancine.ma [35] or the Vectors journal [36] for example, to produce new layers of meaning around existing texts. The aspect of critique is important here, given that the consistent criticism about the field has been the ambiguity of its social undertaking; its critical or political standpoint or challenge to existing theoretical paradigms. Most of the interest around the term has been in very instrumental terms, as a facilitator or enabler of certain kinds of digital practice. While the move away from computational analysis as a technique to facilitate humanities research is apparent, the disciplinary concerns here still seem to be latched onto those of the traditional humanities. Questions about the epistemological concerns of DH itself therefore remain unanswered.

While reiterating some of these core questions within DH, Dr. Souvik Mukherjee at the Department of English, Presidency University and Dr. Padmini Ray Murray, at the Centre for Public History, Srishti School of Art, Design and Technology, speak of the problem of locating the field in India, where work is presently only being done in a few small pockets. The lack of a precise definition, or location within an established disciplinary context are some reasons why a lot of work that could come within the ambit of DH is not being acknowledged as such; conversely it also leads to the problem of projects on digitisation or studies of digital cultures/cyber cultures being easily conflated with DH. Related to this is the absence of self-claimed 'digital humanists', which makes it all the more difficult to identify the boundaries of their research and practice. More importantly, the lack of an indigenous framework to theorise around questions of the digital is also an obstacle to understanding what the field entails and the many possibilities it may offer in the Indian context. This they feel is a problem not just of DH, but in general for modes of knowledge production in the social sciences and humanities that have adopted Western theoretical constructs. One could also locate in some sense the present crisis in disciplines within this problem. Sundar Sarukkai and Gopal Guru explicate this issue further when

they talk about the absence of 'experience as an important category of the act of theorising' because of the privileging of ideas in Western constructs of experience (Guru and Sarukkai, 2012). This is also reflective of the bifurcation between theory and praxis in traditional social sciences or humanities epistemological frameworks which borrow heavily from the West. DH while still to arrive at a core disciplinary concern seems to point towards the problem of this very demarcation by addressing the aspect of practice as a very focal point of its discourse.

Dr. Indira Chowdhury, oral historian and director of the Centre for Public History, who is also a faculty member at the Srishti School of Art, Design and Technology, Bangalore sees this as a favourable way of understanding how the field as such has emerged and what its various possibilities could be in terms of different disciplinary perspectives. She is uncertain of its emergence as a response to a 'crisis' in the humanities as such. She recalls an instance of one of her students who went on to work on hypertext in Canada, several years ago, which for her seemed to be the first instance of something close to DH. The IT revolution in the early 2000s was a significant change, and there were several things that it enabled people to do, in terms of concordance, cross-referencing and getting around texts in certain ways. However, whether key questions in the humanities really changed, whether they were taken any further, is something yet to be explored because it is still such a new field, and one can only be speculative about it, she feels. It perhaps pushes for a new level of interdisciplinarity, and a different kind of collaborative space that the digital enables. What is significant and exciting for her as a historian, however, is that if history has to survive as a discipline, not only in schools but also in terms of public spaces and discourse, it should actively engage with the digital. This not only presents significant challenges, in how to represent the past in the digital space, (in short problems with method) but also opens up new possibilities, for example with oral history and the advent of digital sound. The definition of the field will also evolve, as people define it from different spaces of practice and research, which Dr. Chowdhury feels is crucial to keeping it open and accessible by all.

Even from diverse disciplinary perspectives, at present the understanding of DH is that it facilitates new modes of humanistic enquiry, or enables one to ask questions that could not be asked earlier. As Prof. Dasgupta reiterates, it is no longer possible to imagine humanities scholarship outside of the 'digital' as such, as that is the world we inhabit. However, while some of the key conceptual questions for the humanities may remain the same, it is the mode of questioning that has undergone a change – we need to re-learn questioning or question-making within this new digital sphere, which is in some sense also a critical and disciplinary challenge. While this does not resolve the problem of definition, it does provide a useful route into thinking of what would be questions of DH, particularly in the Indian context.

3 | Reading from a Distance

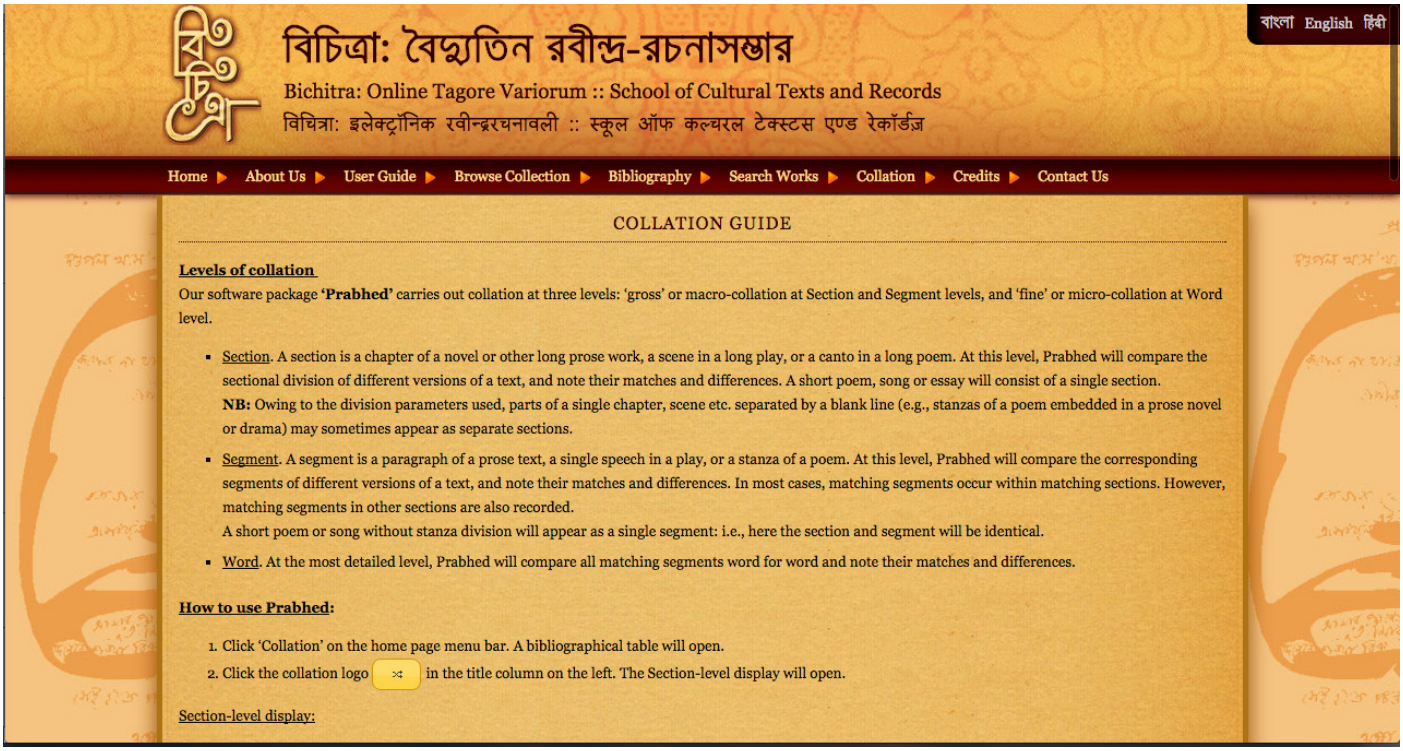
The concepts of text and textuality have been central to the discourse on language and culture, and therefore by extension to most of the humanities disciplines, which are often referred to as text-based disciplines. The advent of new digital and multimedia technologies and the internet has brought about definitive changes in the ways in which we see and interpret texts today, particularly as manifested in new practices of reading and writing facilitated by these tools and dynamic interfaces now available in the age of the digital. The 'text' as an object of enquiry is also central in much of the discussion and literature on DH given that many scholars, particularly in the West trace its antecedents to practices of textual criticism and scholarship. Everything from the early attempts in character and text encoding [37] to new forms and methods of digital literary curation, either on large online archives or in the form of social media such as Storify [38] or Scoop-it [39] have been part of the development of this discourse on the text. Significant among these is the emergence of processes such as text analysis, data mining, distant reading, and not-reading, all of which essentially refer to a process of reading by recognising patterns over a large corpus of texts, often with the help of a clustering algorithm [40]. The implications of this for literary scholarship are manifold, with many scholars seeing this as a point of 'crisis' for the traditional practices of reading and meaning-making such as close reading, or an attempt to introduce objectivity and a certain quantitative aspect, often construed as a form of scientism, into what is essentially a domain of interpretation (Wieseltier 2013). But an equal number of advocates of the process also see the use of these tools as enabling newer forms of literary scholarship by enhancing the ability to work with and across a wide range and number of texts.

The simultaneous emergence of new kinds of digital objects, and a plethora of them, and the supposed obscuring of traditional methods in the process is perhaps the immediate source of this perceived discomfort. There are different perspectives on the nature of changes this has led to in understanding a concept that is elementary to the humanities. Apart from the fact that digitisation makes a large corpus of texts now accessible, subject to certain conditions of access of course, it also makes texts '*massively addressable at different levels of scale*' as suggested by Michael Witmore (2012: 324-327, emphasis as in the original). According to him: "[A]ddressable here means that one can query a position within the text at a certain level of abstraction" (Ibid. 325). This could be at the level of character, words, lines etc that may then be related to other texts at the same level of abstraction. The idea that the text itself is an aggregation of such 'computational objects' is new, but as Witmore points out in his essay, it is the nature of this computational object that requires further explanation. In fact, as he concludes in the essay, "textuality is addressability and further … this is a condition, rather than a technology, action or event" (Ibid. 326). What this points towards is the rather flexible and somewhat ephemeral nature of the text itself, particularly the digital text, and the need to move out of a notion of textuality which has been shaped so far by the conventions of book culture, which look to ideal manifestations in provisional unities such as the book (Ibid. 327).

OF TEXTS AND HYPERTEXTUALITY

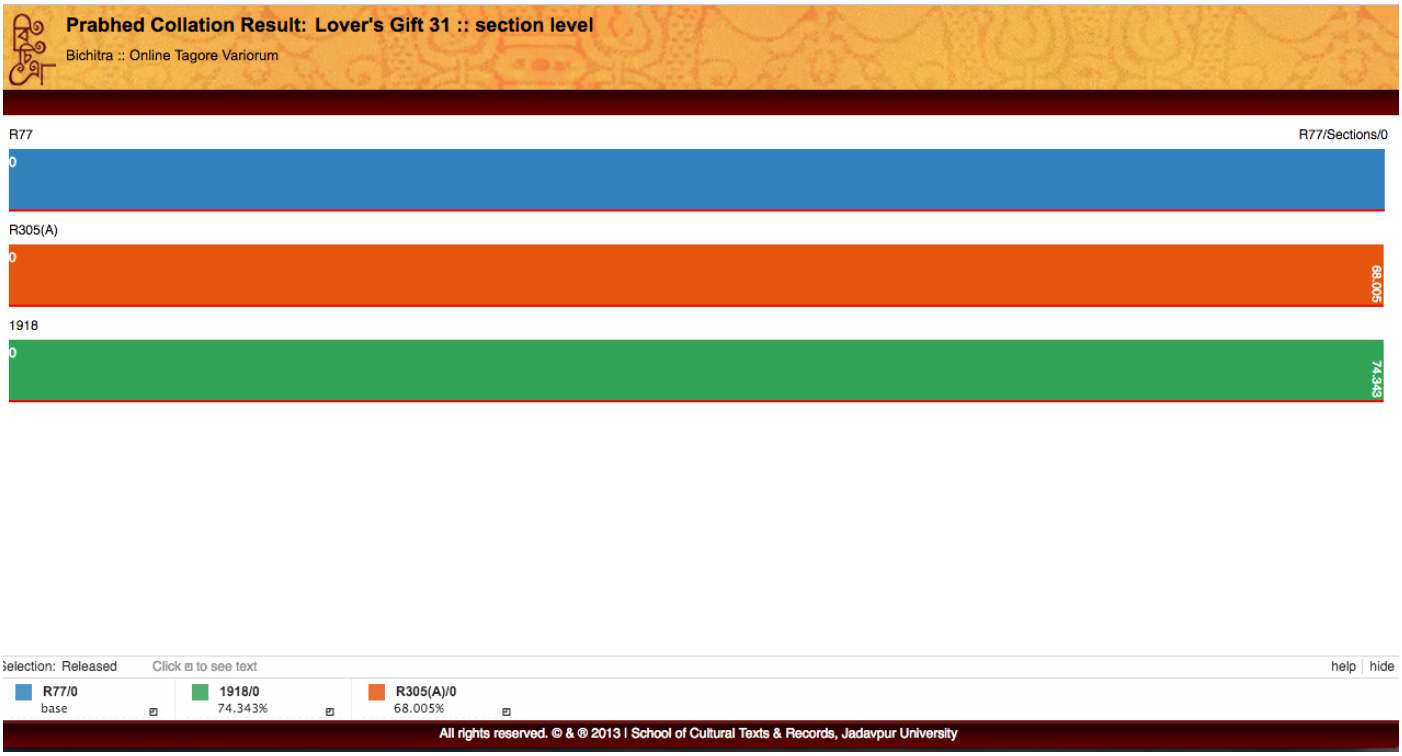
An example much closer home of such new forms of textual criticism is that of 'Bichitra' [41], an online variorum of Rabindranath Tagore's works developed by the School of Cultural Texts and Records at Jadavpur University. The traditional variorum in itself is a work of textual criticism, where all the editions of the work of an author are collated as a corpus to trace the changes and revisions made over a period of time. The Tagore variorum, while making available an exhaustive resource on the author's work, also offers a collation tool that helps trace such variations across different editions of works, but with much less effort otherwise needed in manually reading through these texts. Like paper variorum editions, this online archive too allows for study of a wider number and diversity of texts on a single author through cross-referencing and collation. Prof. Sukanta Chaudhuri, Professor Emeritus, Department of English and School of Cultural Texts and Records at Jadavpur University, Kolkata has been part of the process of setting up this variorum. According to him the most novel aspects of this platform, or as he calls it - 'integrated knowledge site' - are to do with these functions of cross-referencing and integration. The bibliography is a hyperlinked structure, which connects to all the different digital versions of a particular text (the most being 20 versions of a single poem). The notion of a bibliography has always evoked hypertextuality – the possibility to link and cross - reference texts, but with the advent of the digital, this possibility has been fully realized, as seen in the case of the hypertext [42]. For collation, the project team developed a unique software, titled 'Prabhed,' (meaning difference in Bengali) that helps to assemble text at three levels (a) chapter in a novel, act/scene in a drama, canto in a poem; (b) para in a novel or other prose, speech in drama, stanza in a poem; (c) individual words. For instance, you can choose a particular section of a book, poem or play - and compare its occurrences across different editions and versions of the work to note their matches and differences. If two paragraphs have been removed from one chapter, and put into another, that can be traced through the collation software. If a particular word has been omitted in a later edition, or if certain lines have been rearranged in a poem, these changes can be tracked [43] (See image on page 22 and 23). What makes the search engine 'integrated' is not simply that it can search through all of Tagore's works in one go, but that it links up with the bibliography and thereby with the actual text of the works. It is interesting to note here the different changes that the text undergoes to become available for study on a digital platform, where it is amenable to intense searching and querying of this kind. It is now possible to search across a large corpus of texts, for minute changes in words or sentences, and ask questions of these in terms of their usage, instances and contexts of their occurrence, thus facilitating a kind of enquiry previously never undertaken in textual studies.

The project however is not without its challenges, as Prof. Chaudhuri further outlines. Working with Indic scripts is a persistent problem for digital initiatives in India. In Bengali some work has been done to address this, in the form of a scientifically designed keyboard software called Avro, which stores all the conjunct letters preserving their separate characteristics [44]. Developing Optical Character Recognition (OCR) [45] for scanned material in Indian languages remains a crucial issue for most digitization and archival initiatives in India. Other issues include the problem of vowel markers appearing before the consonants, even if phonetically they follow and are keyed in afterwards. To get the font and keyboard software to recognize this is a big challenge. The third challenge, especially in the case of works printed from the nineteenth century to the middle of the twentieth century, is that there are vast differences

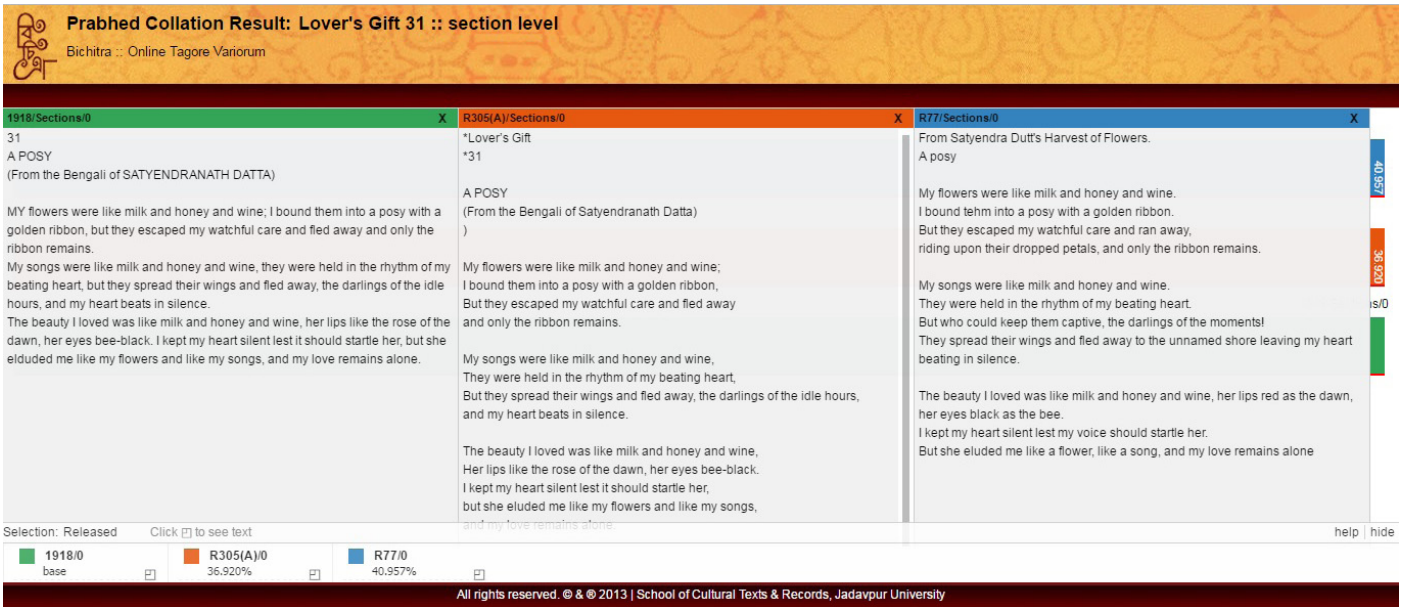


Guide to the Collation Tool 'Prabhed' on Bichitra: Online Tagore Variorum.
Link: http://bichitra.jdvu.ac.in/bichitra_collation_guide.php

Table of English Songs and Poems under the Collation Tool.
Link: http://bichitra.jdvu.ac.in/bibliography/english_poems_and_songs_table.php



Results of collation of Section 31 'A Posy' from 'Lovers Gift'.
Link: http://bichitra.jdvu.ac.in/content/collation/english/poems_and_songs/lgc/e_p_lgc_031/index.php



Collation of Section 31 ' A Posy' from various editions of 'Lovers Gift'.
Link: http://bichitra.jdvu.ac.in/content/collation/english/poems_and_songs/lgc/e_p_lgc_031/index.php

in spelling; the same word can be spelt in different ways, and as there is no lexicon, one may not do any kind of general search. There is also the issue of a high degree of inflection in the language. A word may have a suffix (or, *vibhakti*) attached to it to indicate the case: one for the subject of the sentence, another for the object, another for the possessive case and so on. These are multiplied by the different forms of the verbs. The development of a lexicon in Bengali would be one of the ways to resolve many of these issues. However, as most people can only see and interact with the digital interface of Bichitra, and not really understand the process behind it, or the amount of work involved in making the platform work the way it does, funding for research and development, maintenance and sustainability is difficult to obtain. Access to primary material continues to remain a big challenge; many people are concerned about ownership and privacy, especially with respect to rare works, and there is also worry about damage to original records during the process of digitization. Backroom file management, which includes both paper and digital files remains a big but largely invisible task on such a platform. The total number of files generated from Bichitra is tens of millions or hundreds of millions, and many of these are offline files which would not even go on to the website. Hence while uploading the files, the basic groundwork for a retrieval system for different files serving different functions had already been laid, including the creation of a bibliography, which was a huge exercise in itself. The process of making text available as hypertext is labor that is invisibilized, and is rarely or never available to the end user.

Prof. Chaudhuri also speaks of ways in which the notion of textuality has been rendered differently through the use of the internet and digital technologies. Digital or electronic text has helped theorize better the notion of a fluid text - the fact that a text is never complete, but only bound between the covers of a book at a given point of several processes that are technological as well as social. Also, as illustrated by hypertext, all texts intermesh with each other; we also don't follow a linear process of reading, but rather can enter or leave this text at any point, thus pointing out the variable, socialized nature of the text. These three major factors have implications for things like authoriality; if you believe in the fluidity and participatory nature of the text, obviously your concept of the author changes, he adds.

The notion of the text itself as an object of enquiry has undergone significant change in the last several decades. Various disciplines have for long engaged with the text - as a concept, method or discursive space - and its definitions have changed over time that have added new dimensions to ways of doing the humanities. With every turn in literary and cultural criticism in particular, the primacy of the written word as text has been challenged; what is understood as 'textual' in a very narrow sense has moved to the visual and other kinds of objects. The digital object presents a new kind of text that is difficult to grasp - the neat segregations of form, content and process seem to blur here, and there is a need to unravel these layers to understand its textuality. As Dr. Madhuja Mukherjee, with the Department of Film Studies, at Jadavpur University points out, with the opening up of the digital field, there are more possibilities to record, upload and circulate, as a result of which the very object of study has changed; the text as an object therefore has become very unstable, more so than it already is. Film is an example, where often DVDs of old films no longer exist, so one approaches the 'text' through other objects such as posters or found footage. Such texts also available through several online archives now offer possibilities of building layers of meaning through annotations and referencing. Another example she cites is of the Indian Memory project [46], where objects such as family photographs become available for study as texts

for historiography or ethnographic work. She points out that this is not a new phenomenon, as the disciplines of literary and cultural studies, critical theory and history have explored and provided a base for these questions, but there is definitely a new found interest now due to the increasing prevalence of digital methods and spaces.

Shaina Anand, artist and filmmaker, who set up the artists' studio and collective CAMP in Mumbai, further espouses this thought when she talks about the new possibilities of textual analysis of film that are now available, particularly in terms of temporal control, first with the DVD, then the internet and now with online archival platforms like Indiancine.ma and Pad.ma [47]. The first is an online archive of Indian film from the pre-copyright era (so effectively before 1955), while the second is an archive of found and archival footage, images, sound clips and unfinished films. Both platforms allow the user to search through an array of material, view/listen to them, download or embed them as links. They make available to users not just an online database for storage and retrieval but also a space to work with a range of materials in multiple video and audio formats and themes through annotations and referencing. The annotation tool is perhaps the most innovative aspect of these platforms, wherein a user can pause, isolate a section of a sequence and annotate it using a range of options and filters. The annotations are textual, in the form of comments, commentary and marginalia (in the case of Pad.ma) and can also link to other paraphernalia around the film object, such as posters, images, advertisements and other literature. Users can also contextualize material by adding transcripts, descriptions, events, keywords, and even locating the events in the video on a map. These have brought to the fore several questions on relevance, accessibility and ownership, as in the case of raw footage from films, and opened up possibilities for such materials to be re-contextualized by the reader in different ways. This layering of annotations around the film object also creates a new research object, or text that then necessitates new methods of studying it as well. As opposed to the earlier practice of the researcher/critic having to watch the film first and then comment or analyse it, and relying on memory to generate the scholarship, it is now possible to pause, analyse or read and come back to the film and annotate the text in several ways. What does this do to the film text - the process of documenting the form is new, not cinema as a form itself – is a question that comes up quite prominently here. The computational aspect also is important here, given the vast amount of footage that is now available, which then requires better lexical indexing to compute and manage large data sets. This has been a constant endeavour with Pad.ma and Indiancine.ma as well.

As in the case of film, what becomes prominent here is the move to a digital text of some sort. One such example of a digital text perhaps is the hypertext. George Landow in his book on hypertext draws upon both Barthes and Foucault's conceptualisation of textuality in terms of nodes, links, networks, web and path, which has been posited as the 'ideal text' by Barthes (Landow 2006: 2). Landow's analysis emphasises the multilinearity of the text, in terms of its lack of a centre, and therefore the reader being able to organise the text according to his own organising principle - possibilities that hypertext now offers which the printed book could not. While hypertext illustrates the possibilities of multilinearity of a text that can be realised in the digital, it may still be linear in terms of embodying certain ideological notions which shape its ultimate form. Hypertext, while in a pragmatic sense being the text of the digital is still at the end of a process of signification or meaning-making, often defined within the parameters set by print culture. As such it is only the narrative, and not the form itself that is multi-linear in hypertext fiction.

TEXTUAL CRITICISM IN THE DIGITAL

But to return to what has been one of the fundamental notions of textual criticism, the 'text' is manifested through practices of reading and writing (Barthes 1977). So what have been the implications of digital technologies for these processes which have now become technologised, and by extension for our understanding of the text? While processes such as distant reading and not-reading demonstrate precisely the variability of meaning-making processes and the fluid nature of textuality, they also seem to question the premise of the method and form of criticism itself. Franco Moretti, in his book *Graphs, Maps and Trees* talks about the possibilities accorded by clustering algorithms and pattern recognition as a means to wade through corpora, thus attempting to create what he calls an 'abstract model of literary history' (Moretti 2005: 1). He describes this approach as "within the old territory of literary history, a new object of study." He further says, "Distant reading, I have once called this type of approach, where distance is however not an obstacle, but a *specific kind of knowledge*: fewer elements, hence a sharper sense of their overall interconnection. Shapes, relations, structures. Forms. Models" (Ibid: 1, emphasis as in original). The emphasis for Moretti therefore is on the method of reading or meaning-making. There seem to be two questions that emerge from this perceived shift - one is the availability of the data and tools that can 'facilitate' this kind of reading, and the second is a change in the nature of the object of enquiry itself, so much so that close reading or textual analysis is not engaging or adequate any longer and calls for other methods of reading.

As is apparent in the development of new kinds of tools and resources to facilitate reading, there is a problem of abundance that follows once the problem of access has been addressed to some extent. Clustering algorithms have been used to generate and process data in different contexts, apart from their usage in statistical data analysis. The role of data is pertinent here; and particularly that of big data. But the understanding of big data is still shrouded within the conventions of computational practice, so much so that its social and cultural aspects are only slowly being explored now, particularly in the context of reading practices. Big data as not just a reference to volume but also its other aspects of data such as velocity, scope, and granularity among others, which significantly increases the ambit of what the term covers, with implications for new epistemologies and modes of research (Kitchin 2014). But if one were to treat data as text, as is an eventual possibility with literary criticism that uses computational methods, what becomes of the critical ability to decode the text – and does this further change the nature of the text itself as a discursive object, and the practice of reading and textual criticism as a result. Reading data as text then also presupposes a different kind of reader, one that is no longer the human subject. This would be a significant move in understanding how the processes of textuality also change to address new modes of content generation, and how much the contours of such textuality reflect the changes in the discursive practices that construct it. Most of the debate however has been framed within a narrative of loss - of criticality and a particular method of making meaning of the world. Close reading as a method too came with its own set of problems - which can be seen as part of a larger critique of the Formalists and later New Criticism, specifically in terms of its focus on the text. As such, this further contributes to canonising a certain kind of text and thereby a certain form of cultural and literary production (Wilkens

2012). Distant reading as a method, though also seen as an attempt to address this problem by working with corpora as opposed to select texts, still poses the same issues in terms of its approach, particularly as the text still serves as the primary and authoritative object of study. The emphasis therefore comes back to reading as a critical and discursive practice. The objects and tools are new; the skills to use them need to be developed. However, as much of the literature and processes demonstrate, the critical skills essentially remain the same, but now function at a meta-level of abstraction. Kathleen Fitzpatrick in her book on the rise of electronic publishing and planned technological obsolescence dwells on the manner in which much of our reading practice is still located in print or specifically book culture; the conflict arises with the shift to a digital process and interface, in terms of trying to replicate the experience of reading on paper (Fitzpatrik 2011:89-120). Add to this problem of abundance of data, and processes like curation, annotation, referencing, visualisation, abstraction etc. acquire increased valence as methods of creatively reading or making meaning of content (Ibid.). More importantly, it also points towards a change and diversity in the disciplinary method. Where close reading was once the only method by which a text became completely accessible to the reader, it is now possible to approach it through a set of processes, thus urging us to rethink the method of enquiry itself.

Whether as object, method or practice, the notion of textuality and the practice of reading have undergone significant changes in the digital context, but whether this is a new domain of enquiry is a question we may still need to ask. Matthew G. Kirschenbaum in his essay on re-making reading (quoted earlier in this chapter) suggests that perhaps the function of these clustering algorithms, apart from serving to supplant or reiterate what we already know is to also 'provoke' new ideas or questions (Kirschenbaum 2007: 3). The conflict produced between close and distant reading, and the shift from print to digital interfaces would therefore emerge as a space for new questions around the given notion of text and textuality. But if one were to extend that thought, it may be pertinent to ask if DH can now provide us with a vibrant field that will help produce a better and more nuanced understanding of the notion of the text itself as an object of enquiry. This would require one to work with and in some sense against the body of meaning already generated around the text, but in essence that very conflict may be where the epistemological questions about the field are located. The digital text, owing to the possibilities of 'massive addressability,' mentioned earlier is now more fluid and socialized. The renewed focus on the textual is most apparent in this manner of imagining the text, using the metaphor of a highly interlinked, networked and shared text. It also puts forth important questions then of how we understand technology a certain way, especially in the context of language and representation as an important factor of understanding new textual objects. Is technology a tool for textual analysis, or is it inherent to our understanding of the nature of the text? Is the development of these methods of enquiry shaped by certain disciplinary requirements, and do they also challenge or create new conflicts for traditional methods of enquiry? The growth in the study of different media objects, such as video and cinema, and the advent of areas such as media studies, oral history and media archaeologies has further prompted concerns regarding the study of the digital object in these disciplines, and a rethinking of how we understand the notion of the text.

4 The Infrastructure Turn in the Humanities

In an article in the Digital Humanities Quarterly describing the emergence of the term cyberinfrastructure, Patrik Svensson speaks of an 'infrastructure turn' in the humanities, pointing towards a seemingly new found interest and investment in resources and tools for humanities research, pedagogy and publication in many universities and other knowledge institutions (Svensson 2011). Though the term has not been significantly used otherwise, it is interesting to note the implications of such a statement in the context of other such important 'turns' in the history of ideas, such as the linguistic or cultural turn. Particularly in the global debates around digital humanities, which are largely Anglo-American, infrastructure is an important and inherent component of any thinking around this area, as it derives many of its theoretical and practical concerns from a history of humanities computing. A lot of early work in DH was done in the area of digital archives and knowledge repositories, such as The Walt Whitman Archive, Rossetti and Blake archives (Gold and Groom 2011, Drucker 2011), where digitization and optimization of search functions were important developments in terms of imagining and opening up the archive. From there to seemingly complex projects on data mapping, visualization, distant reading and cultural analytics, which require parsing through a huge corpora of humanities data, the growth of infrastructure has been a key aspect of these developments, although this many not be emphasized in the early literature about the field. The use of computational methods and the move towards the use of big data in the humanities has been an important change in terms of objects of enquiry and methodology, and infrastructure is an essential condition of both these changes.

Like with other disciplines the nature of infrastructure and resources available to the humanities – in the form of galleries, archives, libraries, museums and now online repositories, language laboratories, and bibliographic, writing and editing tools and software to name a few – have also in some manner influenced the nature or scope of questions that could be asked of an object or text. It is therefore useful to explore the influence of infrastructure at a very conceptual level, in terms of what new ways of enquiry have been made possible with digital technologies and the internet. Now with new tools that can parse many pages of text at a go, or an algorithm that can derive patterns from a data set of images, video or other interactive media, the scope of the enquiry seems to have increased exponentially, as much literature around DH suggests (Berry 2011). Indeed this point is also a bone of contention for many traditional humanities scholars, as it not only seems to be a technologically deterministic notion, but also one that takes away from more conventional methods of humanities research, which are based on close reading and interpretation of texts. In the Indian context however, these possibilities still seem distant owing to several gaps in terms of requirements of infrastructure and resources. In many institutions, the lack of basic infrastructure in the form of libraries, classroom teaching-learning resources and access to the internet and other digital tools for the humanities continues to remain a problem. Existing institutional infrastructure is often inadequate, and mostly outdated.

This conflict over whether new tools and resources for the humanities is taking away or adding to humanities research is better understood in the light of

how the concept of infrastructure has been understood, and specifically in the context of communication and research. Brian Larkin describes infrastructures as "institutionalized networks that facilitate the flow of goods in a wider cultural as well as physical sense". He talks about both technical (such as transport, telecommunications, urban planning, energy and water) and 'soft' infrastructure such as the knowledge of a language, or cultural style and religious learnings. He therefore defines infrastructure as "this totality of both technical and cultural systems that create institutionalized structures whereby goods of all sorts circulate, connecting and binding people into collectivities." (Larkin, 2008: 5-6) This definition opens out the understanding of the term a little more, for it brings within its ambit different kinds of goods – such as knowledge, and proposes that infrastructure has the power to bind people within collectivities, thus emphasizing both its limitations as well as potentialities. (Ibid)

The notion of infrastructure as not being neutral to culture is further emphasized when Larkin talks about its mediating capacities, brought about by a layering of new technologies over old ones. "Infrastructures...mediate and shape the nature of economic and cultural flows and the fabric of urban life. One powerful articulation of this mediation is the monumental presence of infrastructures themselves" (Ibid.: 6). Thus the understanding of infrastructures as merely a means of the execution of ideas is one of the obstacles in terms of imagining them as more central to the work of the humanities. Often, the notion of infrastructure has been understood in terms of the institutional infrastructure in place, and not in terms of the smaller networks, tools or resources that build it, which are often located at the level of individuals. Ownership is a key aspect of the problem here, because the ownership of such infrastructure is largely with the state or large corporate entities, and not something within the ambit of small and private institutions or even individuals, and this often mandates the manner of their use. Indeed in the case of DH, there are certain kinds of technologies and resources that cannot be replicated easily at all (for instance, using computational methods to work with large relational databases in the humanities) as such it is something that needs investment from the state and large knowledge institutions such as the university. As pointed out in the earlier chapter, the challenges of working with digital objects or texts are different from those of analogue objects, and require different and diverse tools, resources and skill-sets. Another problem, as rightly identified by Svensson is that the imagination of research infrastructures has been primarily in terms of the needs of the natural sciences, as a result of which resources, tools and materials for the humanities often end up being inadequate, in terms of financial and intellectual investment. Thus not only is there a challenge in terms of the availability of infrastructure, but also with respect to the optimum utilization of what is available.

Some of the practitioners and scholars interviewed as part of this mapping have also repeatedly brought up a number of concerns about (or the lack of) infrastructure they have had to use, modify and develop as part of their projects and research. Dr. Indira Chowdhury, historian and Founder-Director of the Centre for Public History (CPH) at the Srishti School of Art, Design and Technology, Bangalore finds it rather ironic that a city like Bangalore, with so much infrastructure at its disposal has such little thinking in the humanities. There are of course several reasons for this, she says, and in many places infrastructure development is restricted for certain reasons, like for example in Kashmir, where the use of internet and mobile phones is regulated strictly due to security concerns. The key question of course is to have more of a dialogue between places to ensure that they are not functioning in isolation. She also

emphasizes that the problems are at a more basic level, like with transcription for example [48]. The advent of the digital has brought with it several new possibilities, but she also talks about the many misconceptions that seem to be prevalent with regard to the use of these new technologies, particularly in terms of preservation and storage capacity. The question of format is of great importance and a determining factor in much of research that mobilizes digital technologies. As part of her work on archiving oral histories, she has often had to emphasize that there are specific formats for a digital oral archive. As she says, "You should not switch to say MP3 just because it's cheaper, more convenient and a lighter file. I often have people arguing that I just bought a recorder, it gives me a clear recording [in the MP3 format] etc. If you were to archive that file you would find that within a few years you begin to lose data on that file. The digital archive has also made people think a lot more about what they are preserving, and in what format. These are things you then teach yourself; you do not archive in certain formats, or rely on an archive of MP3 files, because every time you copy them onto something it would have lost a little bit of its description. So these are things that make the historian more oriented, you think a lot more about what you are doing."

She therefore warns against these presumptions that a digital archive will resolve completely problems of space and preservation, as a change in format can easily render your data inaccessible and essentially useless. The idea of 'loss of data' and lack of space is something easily missed, as there a notion of the digital being infinite space; but that too comes at a cost. As Jonathan Sterne (2013) explains in his work on the MP3 as a cultural artifact, it is a format that works through compression and elimination of excess sound, which eventually greatly affects the quality of the sound object itself. The notion of the digital rendering a certain quality of sound, and by implication generating a 'better' digital artifact itself, is therefore highly debatable.

There are other considerations to bear in mind as well. As Padmini Ray Murray, another faculty member at the CPH points out, the context of such work in the Global South is very different, and lack of good infrastructure is definitely one of the major problems. There are issues of bandwidth, problems such as surveillance, and issues with regulation of internet access, now the issue of network neutrality and so on (which may impose restrictions on the development and use of certain kinds of technologies) all of which have implications for possible digital humanities work and specifically work on digital archives. A significant challenge she sees is that we don't have mechanisms to translate between/ from Indian languages. She says that: "It would be amazing to have an archive metadata tool that can work with different Indian languages which at the moment is an impossibility. This is where a place like Bangalore comes into the picture. We need to pull on resources that are being pioneered in places like the IITs, or institutions here working with natural language processing...technologies that we cannot in a humanities context create, but pull those in to use them for humanities research. But the questions that we are asking are necessarily quite different, from what we have in the West."

The problem with Indian languages brings out the problems that are specific to the Global South and therefore the infrastructure needs of humanities research work. Padmini mentions Bichitra, the online variorum of the works of Rabindranath Tagore developed by the School of Cultural Texts and Records at Jadavpur University as an effective illustration of the challenges faced by researchers working in languages other than English. She explains "The very level of creating the code for Bichitra was different, because it had to be done from scratch. Finding a set of reliable Bangla characters is difficult because the

ligatures get mixed up, so they created a character set from scratch to create Bichitra, and for Prabhed [the collation software] which works within it." The problem of a lack of standardization for Indic language inputs is therefore an immediate practical concern for archival work in different languages in India [49]

Indiancine.ma, an online archive of Indian film, has similarly been experimenting with different ways of reading and annotating film text, with a focus right now on films that are out of copyright. It uses an open-source platform named Pandor/a [50] for media archives, which helps to organise and manage large, decentralized collections of video, to collaboratively create metadata and time-based annotations, and to archive as a desktop-class web application. The editing tool enables a user to pause, cut and annotate a particular scene or sequence in the film according to a time code, thus creating enormous new possibilities in terms of how we engage with the film text at several levels. The different ways of organising content through different filters also helps map content in unique ways and read them. According to Jan Gerber and Sebastian Lutgert, who are part of the team that developed the archive and its predecessor Pad.ma, Indiancine.ma is a work in progress, and it will always be, so as to allow new opportunities to present themselves with every change in the software and tools being used. They are particular about the archive being open to a variety of users and uses – that is, it is not only a tool or space for publication for humanities researchers, but is also a software project, a resource for a film fan club, and many other things as it is open to interpretation. It is meant for people to build together and have conversations across domains and disciplines. In their work with people from both the humanities and sciences, they do see a void or gap between domains, and reiterate that it is very difficult for people to have a conversation across their disciplinary moorings. Infrastructure development has also become divided across these lines, and suffers from a kind of tunnel vision which often prevents it from being developed in response to the needs of the communities it is meant to address. As Sebastian recollects the experience of creating Pad.ma, a similar online video archive using the same platform, Pandor/a, he speaks of collaborating with people from a non-technology background, at the artists collective CAMP in Mumbai [51], and how the lack of a hierarchy between technologists and non-technologists is essential in making these projects better. A lot of the early software projects in India suffered due to this distance between people from technology and non-technology backgrounds, and the lack of a common language for them to communicate. Both Sebastian and Jan themselves come with training and experience in diverse areas, ranging from philosophy and visual arts to software development, and believe that their contribution to this archive is more conceptual than technological. They also see the Free and Open Source Software (FOSS) culture [52], then a rather incipient movement in India when they had just begun work on these projects, as one that can foster more conversations and collaborative work in technology and research in India. When they had started out of course, it was very difficult to convince people to use free and open source software, or even get filmmakers to release their footage for an open access platform like Pad.ma. CAMP was one of the few spaces then that had this open source culture, and it encouraged people to collaborate extensively, across areas of expertise. As Sebastian says "You deal with a relatively complex informatics system, but you are fully aware that you can modify and change things, and deal with them in a transparent way, which is great." Both claim that nobody owns Pad.ma or Indiancine.ma, but everybody looks after it in a way, because they all use it differently depending on their interests, and this nurtures and builds the platform in different ways. The availability of this somewhat outside/alternate

space for collaboration, and working within the open source context has been instrumental in the growth of these two online open access archives.

The computational aspects of Pad.ma and Indiancine.ma, and even Bichitra to some extent may be something to look forward to for researchers interested in exploring the possibilities of such research with these platforms. Given that both are essentially large corpora of material, introducing new algorithmic tools to work with them is not a distant possibility, something that has also been the core of a lot of DH work in the Anglo-American context. Jan and Sebastian have tried this already with one of their earlier projects, 0xdb [53], which is another online archive of cinema, by running a color recognition algorithm on it. There is an instance of face detection and speech recognition software that could be run on this platform, with interesting results. The existing filters on Indiacine.ma also make it possible to search for images or sequences based on colour and object recognition. For instance, an interesting experiment is to search for 'telephone' in the archive, which pulls up images containing telephones from across the entire corpus, outlining an interesting trajectory of the use of the instrument. While helpful in terms of querying and searching over a large corpus, they also emphasize the need to be able to make sense of it in a meaningful way. As Jan says "Most of this software is developed really as a means of control, in the area of surveillance etc., and not for exploring; it is more of a content identifying tool rather than to discover things. Clustering or referencing credits are other possibilities, but it is more statistical analysis of the footage; are they really adding anything qualitative to cinema studies is still an open question". Given this disjuncture in what these tools are developed for and how they are finally used, a point of concern is whether the research questions are also driven by the possibilities and limitations of the software itself. While that remains a broader question, Sebastian feels that more than a software, this is a new digital eco-system itself, and using these platforms in different ways, in fact even beyond what they were imagined for, will drive the technology in new directions. The limitation of computational tools as he sees now is really the speed, and given the expenses involved, they may not be feasible to implement and expect results anytime soon.

Both the above platforms demonstrate a certain ability to read texts both closely, as well as from a distance through the use of algorithmic tools, thus demonstrating the possibilities of analysis afforded by the infrastructure it has been built with. More importantly, they also highlight the limits of such tools and resources due to several challenges posed by the material itself. In the case of Bichitra, the problems of developing a code for Bengali characters has put forth a number of technological challenges; a pointer towards one among many problems for archiving materials in Indian languages. Indiancine.ma and Pad.ma are more symptomatic of the context in which new technologies can develop today given the support and space for collaboration and conversations across domains of expertise. The problems of format and technological obsolescence brought up by scholars at CPH is an important one; while colluding with proprietary software is inevitable in some cases, as suggested by the practitioners and researchers behind these platforms, keeping back-ups of material and being able to migrate out of a digital platform at any given point is also extremely essential. Such flexibility of material, and immense interoperability – across domains, formats and social-cultural contexts including language is something that researchers in DH, or for that matter in any field that actively engages with the internet and digital technologies would look for in the infrastructure that they build for research, scholarship, pedagogy and creative practice. Some basic challenges of building good and often shared digital infrastructure for DH, and indeed humanities work at

large, such as funding, expertise, labour, and networking across institutions interested in similar concerns are pertinent, and need to be addressed. Infrastructure continues to remain a critical aspect of knowledge production and dissemination, and it is imperative now more than ever, that it is addressed at the conceptual level of any research and creative intervention involving digital technologies and knowledge production.

5 | Living in the Archival Moment

In a rather delightful essay titled 'Unpacking my Library', Walter Benjamin (1968: 59-67) dwells upon the many nuances of the art of collecting (books in this particular case), on everything from the sometimes impulsive acquisition to the processes of careful selection and classification which go into creating a library. "Ownership is the most intimate relationship one can have with objects" (67) he says, and this becomes important given the many ways in which we can acquire books today, as well as the problems of copyright, authorship and authority over meaning and knowledge that have become a bone of contention in the digital age. The collector defines the nature of the object here, because he lives in and through them. While describing the personal process that is collecting, Benjamin is also aware that it may not be a process that will last as it is - a foreboding of the age when the impulse to collect, hoard and categorise has only grown tremendously due to increased access to books owing to the internet, but also where the figure of the collector seems to have been slowly effaced, thus presenting a 'chaos of memories' (60) in unarranged collections spread over several hard disks instead of book shelves. The figure of the collector, and the idea of 'ownership' emerge as an important trope in understanding the notion of order, or rather disorder of the art of collecting in the digital space.

This figure of the collector and practice of collecting are important to our understanding of a central concept in DH - the archive - particularly as it occupies a predominant space in the imagination of the field in India, and processes of knowledge production and the history of disciplines in general. The influx of digital technologies into the archival space in the last decade has been an impetus for the large scale digitisation of material, but it has also thrown up several challenges for traditional archival practice, including the preservation of analogue material, the problems of categorising and interpreting large volumes of data, and the gradual disappearance or re-definition of the traditional figure of the collector – a concern echoed across several spaces extending from private online archival efforts to large collaborative knowledge repositories like the Wikipedia. With the questions that DH seems to have posed to traditional notions of authorship or subject expertise, the 'digital humanist', when we imagine such a person, can be seen as a reinvention of this figure of the collector - a curator of materials and traces, here of course, digital traces.

The concept of the archive has been important to knowledge production and particularly the development of academic disciplines; whether driven by concerns of the state or the impulses of the market, there have been different ways of defining and understanding the archive, not only as a documentary record of history, but as a metaphor for collective memory and remembrance which includes technology in its very imagination. One of the most elaborate formulations of the archive has been in the work of Jacques Derrida, where apart from proposing the death and preservation drives as primary to the archival impulse, he also highlights the process of archivisation, or the technical process of archive-building that shapes history and memory (1995). Michel Foucault in his concept of the archive looks at it as "a system of discursivity which establishes the possibility of what can be

said," [54] thus pointing to the archive as a space not just of preservation but also production, with an impact on the process of knowledge creation. There is today a consensus, at least in its academic understanding that archives cannot be relegated to being self-contained linear spaces of objective historical record, but that archival practice itself has political implications in terms of how collective memory and history, or as indicated by Foucault, histories are preserved and retold through a process of careful selection. Disciplines themselves may therefore be seen as archives of knowledge, and one may stretch this analogy to say that they may also appear as self-contained spaces with restrictions on entry for different ways of remembering and reading. More importantly, the question of what constitutes the archive and what objects or materials may be archived reflects a larger debate about problems with the definition of disciplines and shifting disciplinary boundaries [55]. With the shift to the digital archive, new questions about access, sharing and collaboration have come about, as illustrated by the number of new archival spaces that have emerged, and growth of expansive archives such at the Walt Whitman, Rossetti and Blake archives in the West (Drucker 2011). However, as is apparent, the conditions of access to such archives and their interpretation have not been problematised enough, if at all, particularly with respect to how they contribute to generating new kinds of knowledge or scholarship. Further, there has also been some significant discussion on the terms used to describe such digital collections or large scale text-based scholarship -such as edition, database, archives, or more recently, thematic research collections, and the implications they have on their access and further use in research and practice. (Price, 2009)

While DH debates in the West have focussed quite significantly on archives and the possibilities that digital collections have now opened up for research and creative practice involving archival material, in the Indian context it is the 'incompleteness of the archive' that still seems to be a bone of contention, according to some of the scholars and practitioners interviewed as part of this study. They see archive creation as one of the key questions of DH as it has emerged in India, and the possibilities and challenges that this brings to the fore (particularly in terms of access to rare materials and extending these questions to regional languages) as something that the field will need to contend with at some point. The role of digital technologies in fostering this activity of archive-building is stressed in these debates. In a monograph titled Archives and Access produced as part of a CIS-RAW series on histories of the internet, Aparna Balachandran and Rochelle Pinto trace a material history of archival practice in India, specifically looking at conflicts and debates surrounding state and colonial archives, and the politics of access, preservation and digitisation (2011). The monograph also points towards in some way the move of the archive from being solely the prerogative of the state to the now within the reach of the individual, engendered by increased access to technology, and the 'publicness' that the visual nature of the internet fosters. However they also talk of the possibility of continuing forms of state or market control over the archive precisely through the internet and digital technologies, with the nature of individual access and use again being mediated through digitisation. Abhijeet Bhattacharya, Documentation Officer with the archives at the Centre for Studies in Social Sciences, Kolkata who was also part of the Archives and Access project, and has been part of some early conversations on DH in India, speaks about this change [56]. He says that even twenty years ago, it was difficult to define the archive, as it was considered the prerogative of the state, and this has defined the nature of archival practice and management as well for a long time. From there it has slowly transformed into a practice that encompasses various methods of digitisation and has become increasingly personal. While digitisation may have resolved some issues of preserving

content and the problems of physically accessing archives to a large extent, it may not always be the best option, as the archival or analogue material needs to be in good condition so as to make for good digitised copies, thus emphasising the need for more effective methods and better training in preservation practices. Also, as he points out, digitisation may be able to capture and preserve the content of an artifact, but not its form, which is equally important. He therefore rues the fact that even with technological advancements, there is still a lack of interest in archival practice, and often institutional mandates determine the archival agenda, which may not always be in the interest of generating more research and scholarship around material. That is unfortunate, he adds, as it is the only way to keep the archive alive.

The growth of private collections, which create new kinds of intellectual and nostalgic spaces, has been an important shift here, with their focus on archiving the personal and the everyday, he says, though in many instances such material may not be available for public use or consumption. While on the subject of private collections and personal narratives, Dr. C S Lakshmi, writer and academic who is director of the Mumbai-based Sound and Picture Archives for Research on Women (SPARROW) [57], has particular concerns about digitalisation making large amounts of information available for consumption online, especially with respect to women. While digitisation is an effective tool for preservation and offers several possibilities for documentation, unmediated access is problematic and often a breach of privacy. There is so much information out there that the digital sphere makes available, sometimes this excessive communication also contributes to certain silences and obscures or makes invisible people and their stories. So, very often it's not a question of just making information available to people. What are you making available, how much are you making available and to whom, for what purpose - these are all important questions that contour the notion of access and need to be addressed, according to Dr. Lakshmi. Curation therefore emerges as an important process. The publicness or hyper-visibility that the visual nature of the internet and digital technologies accords to the archive is seen tied to a narrative of loss here, and against the rhetoric of preservation which is still in many spaces deemed to be the primary function and imagination of the archive. What this sets up is also a conflict between the possibilities of open access and sharing of material, and concerns of privacy, and the need to find a space where both these seemingly contradictory ends meet.

The increased availability of space for data accumulation due to digital technologies contributes to a 'problem of excess', and that is where curation and building new kinds of tools come in as a critical and creative exercise. Dr. Amlan Dasgupta reiterates this opinion. He talks about the internet as fostering an 'age of altruism', where the proliferation of technological gadgets has brought about a culture of voluntarily sharing materials online. This of course challenges notions of authority and brings forth the problems of the unarranged library which Benjamin's essay also points towards, but the archive can be used as a metaphor to understand how notions of authorship and authority are being challenged as is apparent in the DH discourse. The theory-practice divide is also something that ails this particular domain like many others; not only is there an inadequate understanding of how to access and use the archive on the part of students and researchers alike, but there is a lack of standardisation of the practice of archive management and the science itself, in terms of metadata, problems of ownership and copyright, and most importantly inadequate infrastructure, training and expertise on preservation of analogue materials. While it may not be within the ambit of DH to address all of these questions, the renewed interest in archival practice and the diversification of

its modes is something is that would continue to be an integral aspect of its practice. In fact what digitisation has also led to is diversity in the modes of documentation itself, and the larger process of archiving, which has important implications for the kinds of questions one may ask within certain disciplinary formations, history being an important example. The nature of material in the archive is never quite the same, so is the manner of working with and interpreting them. Dr. Indira Chowdhury, who has been engaged with archival practice herself, and is now working on setting up oral history archives through the Centre for Public History, speaks of the changes that digital technologies have produced in studying oral history, specifically in terms of recording and interpretation of interviews. The mode of documentation, particularly the digital, adds a new layer to the manner in which the voice, sounds or even silence is recorded or interpreted. She refers to Alessandro Portelli's work on oral history, which talks about the nuances of the sound, such as tone, volume and speed of speaking which are all bearers of meaning and can tell you so much about what the person is trying to say, but can never be fully translated into the written word.(2006, 32-42) Although there are still some basic but crucial obstacles such as with transcription, the digital space may allow for building tools that help with more nuanced interpretation of recorded material, and large volumes of it; a possibility that CPH is looking into at the moment. There are several institutions in India who want to set up their archives, most of their materials include many hours of interviews, with many people at a time and transcription is a significant problem, because it takes time and there is still no software to aid or completely automate this process effectively. One of the approaches of DH may be to address these knowledge gaps through critical tool-building, in terms of how one may work with different ways of reading and interpreting material using digital tools.

The digital archive is one space where many of these questions about the process of archive-creation and the separation between preservation and production that is often made in the existing discourse come into conflict, thus inflating the definition of the term much more. New technologies of publishing, the proliferation of electronic databases and growth of networks that in turn encourage production and the increasing amount of born-digital materials then present new questions for the concept of the archive and scholarship. With the advent of the internet, access to certain kinds of archival material has been made possible, often in a curated and regulated manner, thus opening up the archival space itself in many ways. As pointed out earlier, while concerns of privacy, access and accessibility remain, the growth of online archives has also introduced new questions about dissemination, circulation, sharing and use; and change in archival objects and the practice itself, often tracing back the important relationship between the archive and advancements in technology.

The role of technology has been significant in the development of the concept of the archive; in fact the archive, in its very nature would be a technological object, or a space where one can trace a history of the disciplines in relation to technology. The introduction of the digital has added yet another dimension to this question. Dr. Ravi Sundaram, Fellow at the Centre for the Study of Developing Societies and one of the co-initiators of the Sarai programme at the Centre for the Study of Developing Societies (CSDS) [58], speaks of how the advent of the digital has brought about several shifts in the imagination of the archive, which he sees as two distinct phases. Sarai was one of the early models of a concept driven, networked archive, based on a culture of 'mailing lists' that built conversations around topics which in themselves constituted the archive. The shifts came with Web 2.0 with which archiving the everyday became a possibility, given the access to inexpensive gadgets and the pervasiveness

of social media. While the model of the networked, curated and public archive still has valence today, a significant next step would be to see how one can extend these questions to thinking differently about the archive, by developing new protocols for entering, sharing and circulation of material, and producing new knowledge or concepts around these ideas. This would be crucial in terms of generating research and scholarship around the archive itself as a concept, and realising the full potential of network-generated information. Another pertinent question is that of information and technology infrastructure, which is a political question as well. The investment on infrastructure for the archive is determined by different kinds of interests and will play an important role in how archival efforts will ultimately develop. As Dr. Sundaram reiterates, the point to note is that new archival efforts are not only general repositories, but critical interventions in themselves. They foster new kinds of visibilities. The Pad.ma archive, for example, works with existing footage and reinvents or adds new layers of meaning to it through annotations and citations. This also opens up possibilities for new kinds of questions to be asked about existing material. Private archival efforts, many initiated by individuals are also becoming more niche and specific, driven by a specific research agenda, public interest in conservation or as critical and creative interventions in a particular area. Some examples of this are the Sound and Picture Archives for Research on Women (SPARROW), Pad.ma and Indiancine.ma , the Indian Memory Project, and Osianama [59]. In some of these examples, the archive may be used as more of a metaphor rather than a description or classificatory term, because of the layers of meaning that they generate around an existing object or 'trace'.

They are also reflective of a different milieu that came about with the digital turn in India. Shaina Anand, who is also part of the team behind Pad.ma and Indiancine.ma, speaks of the various factors that contributed to the setting up these two online archival spaces. As artists for them the larger concern was the ever-changing electronic media or technological landscape, as seen in some of their earlier projects such as rustle tv [60], which involved creating content around media ecologies and intellectual property in a sort of pro-piracy, and access to knowledge framework. The focus for them was the ecology or the landscape, and within that the sharp point was where there were irregularities and inequalities and there was a need to redistribute things in a certain way. Pad.ma grew out of a larger idea of understanding this changing milieu around the early 2000s, where the digital had already become pervasive – filmmakers were editing on a laptop or desktop computer, they had access to the internet and DIY tools, resources were cheaper and more accessible as the internet was opening up a world of possibilities. Therefore, as the team realised, if there was to be an archive of the contemporary, it had to be digital or visual, or video specifically, and located online. This was also the time when the independent filmmaker had become a prominent figure and the challenges and advantages of sharing unused and raw footage became quite apparent with a platform like Pad.ma. The archive was created as something contemporary, non-state and non-canonical, with a wide range of stakeholders and contributors ranging across NGOs, activists, independent filmmakers to individuals with an interest in film and video. There were however several difficulties as well, chiefly in getting people to share material, issues of privacy, and a resistance to the use of this platform as a pedagogic and academic resource, which over the years have come down with people becoming more open to using material on the platform as primary texts, and the development of more tools for editing and annotations. Indiancine.ma that way is more of a traditional form of film studies, but with more possibilities now for working with the film text, she adds.

However, while entering the digital space may have enabled more sharing and dissemination of material, how much of these efforts also make their way into larger civil society and policy debates, scholarship and pedagogy is still a crucial question. Pad.ma and Indiancine.ma have been used by students, in media and film in particular but the efforts remain niche and restricted to certain disciplines only. Some part of this comes from a resistance to the film or a certain kind of text as academic, and therefore scholarly or relevant to a larger cross-section of research. This also stems from a predominant imagination of the archive as a static, linear repository. As Ashish Rajadhyaksha, film and cultural studies scholar, who was also part of the team that created Pad.ma and Indiancine.ma, points out, the distinction between the archive as a repository space and an interpretive space is one that needs to be made clearly, and archives are clearly a form of the later. In fact the idea of the digital as a permanent medium is false, and it should not be the solution to problems of storage and preservation. Further, in a lot of expansive archives, whether digital or physical, it is seen that only up to five percent of the material is used, and more often than not it is the same five percent! This is because most people do know about the existence of certain kinds of material which are buried deep within the archive, and therefore do not access it. The emphasis of archival practice, and particularly in the time of the digital archive where space is not seen as a constraint, yet, should be to enliven the archive to ensure that material from the 'dead space of the archive' is made more searchable and accessible for use.

Curation then comes back again as an important aspect of the archive, even in the time of the digital. Indira Chowdhury sees this as one of the main shifts from the traditional archive, where the curator or the archivist performed the role of a custodian or gatekeeper who grants restricted access to the archive only to researchers or scholars. Now with the advent of the internet and shift to the digital, it's more about collaboration, and adding to the archive, and this has encouraged a diversity of users, and uses of the archive. This comes with its own problems however, such as with metadata standards for instance, and particularly questions of format which become important from the perspective of technological obsolescence (as discussed in the earlier chapter). The digital archive has made practitioners think about what they are archiving, for whom and what purpose, and in what formats, but these questions also go back to the traditional archive, and in fact are dependent on how we thought about and defined the archive itself then, and now how we imagine the virtual archive. These are as she says, questions that may be routed through technology, but not necessarily about technology. Also, even with the traditional archive, making material accessible and usable was a concern, and this is where the archivist or custodian played an important role. She speaks about using pre-digital archives, where there are handwritten descriptions of material, all meticulously preserved, indexed and cross-referenced, and you know what material to look for because the archivist knew what was in the archive and how to find it. She speaks of her own experience of setting up the archives at the Tata Institute of Fundamental Research, Mumbai, which was not digital then, but has been digitised now, and even though she has not been associated with them for a while now she still gets the occasional email requesting help to find something in the archive, because she knows the material. A lot of the new digital archives therefore, despite their huge collections which are also searchable, need archivists and assistants who oversee the organisation of material, because those cross-references and connections have just not been made (often it is not humanly possible because of the sheer volume of data), which is really what the historians will look for, and that is the challenge here.

Padmini Ray Murray also sees this as a problem of not imagining the archive as a database, but as this legacy where content is being held together under this one overarching frame. She finds that there is a metanarrative that is created at the level of the database, because of the context in which the archive becomes a database – the historical / institutional questions, and what is being used to create the archive. A point of divergence however could be that it's easier to lie with the archive, because with the database there is the empirical identifier, so the truth claim is better. This is something that Dr. Chowdhury agrees upon as well, as she finds that because archives have the potential of being multilayered, and are therefore complex, verification is difficult; it's only another scholar who will check the materials referenced or used by one – and the interpretation would change, and this had implications for the way the archive generates scholarship. Another difference is pulling data from the archive in a way that it allows the making of computational hypotheses about other possibilities, which is the heart of DH – such as topic modelling and algorithmic shortcuts to crunch through data to posit some hypothetical claims. She feels that in India at the moment we are not doing in enough with the archive as database, which also restricts its many possibilities. Even in terms of access to the archive, which the digital archive is supposed to make easier, there are certain conditions, such as copyright, privacy and even different kinds of Creative Commons licenses for open source content. It also depends on what Dr. Ray Murray describes as the 'flavour of the archive', something particularly relevant to a lot of new private archival spaces like the Indian Memory Project, or Indiancine.ma or Pad.ma, which are focussed on 'building the archive', as opposed to working with an existing archive of material. As such these are somewhat ephemeral archives, always in the making, and where the digital intersects clearly with the archival space is in terms of finding an audience for it; the internet creates these niche spaces of interest, so you find that people want to access such spaces, and do it differently from the traditional archive, as the varied nature and functionalities of these two examples demonstrate.

What the long discussion seems to illustrate then is the gradual shift of the archive to become something of a metaphor, as the way the archive has been previously imagined, and its functions have changed with the advent of the internet. As Wolfgang Ernst asks:

> *Does the archive become metaphorical in multimedia space? This is a plea for archiving the term archive itself for the description of multimedia storage processes. Digital archaeology, though, is not a case for future generations but has to be performed in the present already. In the age of digitalizability, that is, when we have the option of storing all kinds of information, a paradoxical phenomenon appears: cyberspace has no memory.*
> (Ernst 2013: 138)

What Ernst suggests is that the Internet forms a different kind of multimedia archive, or anarchive, or is a phantasm, which differs from the printed or state archives because "the archive is a given, well-defined lot; the Internet, on the contrary, is a collection not just of unforeseen texts but of sound and images as well, an *anarchive* of sensory data for which no genuine archival culture has been developed so far in the occident" (139). The internet, in documenting the discontinuities and 'disorder' of the history of multimedia forms thus gives rise to a new memory culture, and this is important to the process of understanding how new archival spaces are being created, and theorised.

Archive-building has an impact on how knowledge is produced, organised and disseminated, and this is a crucial aspect of meaning-making practices.

Related to this is another issue in terms of the amount of data that is available in the archives due to the sheer amount of material that it can now hold, which demands new protocols of access and collaboration, and the role of curation in making such data relevant and comprehensible. The problem of excess mentioned by many of the scholars and practitioners would be relevant to the question of big data; accessing or interpreting such large volumes of information would require critical tools and new kinds of architecture. These shifts also relocate the figure of the collector from traditional practices to new ways of visualising collections and the art of collecting itself, all of which are now beyond the scope of the human subject. As illustrated by practices such as distant reading, it is now humanly difficult to read, and process such large volumes of data that the digital archive now makes available to us. What this then throws up as questions for archival practice, and DH of course, is the new modes by which knowledge is produced through access to such corpora – for instance the impact such changes have on history, its reading and writing, the growth of public history and the role of the internet archive in fostering its growth. On a much broader level, it also points towards the implications of this shift for pedagogy and scholarship in the humanities in the digital age, questions which will be discussed in the next chapter.

6 New Modes and Sites of Humanities Practice

From a brief exploration of the availability and challenges of new objects and methods of research in the digital context, we have come to or rather returned to the problem of location or contextualising DH, and whether it may be called a field or discipline in itself, in India. As the previous sections may have illustrated, most of the prominent initiatives around DH in India have largely been within the university context, or have at least focused around the university as the centre of the processes of knowledge production, and emphasise a move away from more traditional ways of doing humanities, and at a larger level the more established and disciplinary modes of knowledge formation. In the context of pedagogy, DH seems to be developing in a very specific role, which is that of training in a certain set of skills and topics, which existing disciplines have so far not been able to provide or even accommodate. These include tools for working with digitisation processes, digital archives, and the use of computational methods in the study of cultural artifacts. Thus processes such as topic modelling and data visualisation, and fields like cultural analytics become increasingly prominent in discussions about DH. The university or more specifically the traditional classroom offers a particular kind of teaching-learning experience which may not always have within its ambit the necessary resources or strategies to foster new methods of knowledge production, and a lot of DH work has been posited as trying to plug knowledge gaps in precisely this area.

Wikipedia and internet-based sources of information are entering classrooms with the proliferation of gadgets and tools, and with this there is a tendency towards adopting a more open, participatory and customised model of learning based on collaboration. DH has been characterised by many as a space, or method that intervenes in the traditional 'hierarchies of expertise' (Davidson and Goldberg, 2010) – not only in terms of people, but also spaces, methods and objects of learning - to present a significant 'alternative' that is now slowly becoming more mainstream. A rather direct example of this in the global discourse on DH is the growth of a number of 'alt- academics' [61]: people with training in the humanities who now inhabit what earlier seemed to be a rather nebulous space between academics and an array of practices in computing, art and community development among many others. But it is the in-between, or the liminal space that holds the potential for new kinds of knowledge to be generated. The connotations of this notion however are many and problematic, as seen particularly in the emphasis on new kinds of skills or competences that are now required to inhabit such a space, as also the narrative of loss of certain critical skills that are part of the disciplinary method and the resistance from certain quarters within the university to acknowledge such a trend. Conversely, it is also reflective of how certain kinds of skills in writing, reading, visualisation and curation have now become essential and therefore visible. While the DH discourse in India has developed mostly within the university space, given its multidisciplinary interests and methods, it is often seen as bearing potential in terms of working outside the academic norm. Through an examination of changes in teaching-learning methods, and creative and critical practices that come about with the adoption of the digital, it may be useful to explore whether it indeed opens up such alternate modes of humanities

practice and how it informs the way we do DH in India; as practitioners, researchers, students, teachers or the lay person. The growth of the internet and digital tools and technologies has led to many changes in teaching-learning practices, and engendered new methods and forms of humanities practice, all of which may now be found within the university or academic space. It is therefore imperative to examine these new modes of research and practice, to arrive a better understanding of the changes in and possibilities available for humanities work after the digital. The notion of the 'alternate' is also an important concern here, and the emergence of these new modes of humanities practice help unpack and understand this term better.

TECHNOLOGY IN THE CLASSROOM

This state of being within and to a certain extent outside of a certain predominant discourse is a peculiar one with several possibilities, and DH, owing to its interdisciplinary content and methods, seems to be a suitable space to foster new and alternate knowledge-making practices. India is also still a multi-layered technological space very much in a moment of transition, and the debates remain largely confined to the English and History departments and to some extent library and archival spaces. Outside of the university circle however, there are a number of initiatives, such as online archival efforts, media, art and design practices and research, where one may see DH–related work being done. What remains an important part of the discourse in the context of the university is the access to and a more substantial and critical engagement with technology in the classroom.

The use of technology in education has grown by leaps and bounds in the last decade or so in India, as evidenced by the number of initiatives taken to introduce ICTs in the classroom [62]. However, the digital divide still persists, as a result of which many initiatives come with problems of their own, the most important being the lack of connections among practice, content and pedagogy [63]. Vikram Vincent, a doctoral scholar in the Interdisciplinary Program in Educational Technology, Indian Institute of Technology, Mumbai, attributes this to a problem of understanding technology itself and what it can do for learning. He looks at technology as an extension of the human body and not something alien to it. Over the course of his research, he has found that the prevalent attitude to the use of technology in the classroom, particularly in early ICTs in education projects, has been more techno-centric rather than learner-centric, which is not the most effective approach [64]. Technology has always been around in some form or the other, from drawing on walls to the blackboard to now the smart board; it has always been in the classroom. How you choose to use it determines the outcomes, and one needs to ensure that the learning environment evolves with the new technology that is introduced, because it does not happen automatically but over a period of time.

The Wikipedia India Education programme pilot project, implemented in Pune in 2011 is an example of the number of challenges that the introduction of a new technology in the classroom brought forth, in terms of skills, content and pedagogy [65]. The need to focus on the educational component of the technology, the improvement of skills of the learner in writing, research and communication, rather than on the tool itself has been an important learning from the programme, even as it continues in a different university today. As Vincent adds further, the problem arises with looking at technology as a disruptive element or merely a tool to aid learning, which prevents institutions from envisioning a more holistic model of learning that takes some amount

of time and effort. This also requires the appropriate stimulus and other conditions such as training of teachers, access to resources and training in certain required skills, addressing barriers of language and so forth, which is a feature of some programmes, such as ' IT @ school' in Kerala which have seen a measure of success [66]. Vincent further mentions examples of programmes he has been part of, some of them under the MHRD-NMEICT initiative which focussed on the teaching-learning process rather than the technology itself, key to which is building teacher capacity to use new and already available resources better [67]. These would be crucial steps to take before envisioning a model of teaching-learning that is premised largely on digital technologies and the internet.

While educational technology is a separate field in itself which looks at better interactions between teaching-learning practices and technology [68], it does form part of the context, or landscape in India within which DH would perhaps develop as a discipline, practice or a pedagogic approach.

Another predominant discourse that informs some of these debates is that of Information Communication Technologies for Development (ICT4D) which is often used as a rather broad, catch-all term, and has been variously defined and used by different groups and stakeholders across domains (Saith et al, 2008). ICT4D is premised largely around the question of access, and seeks to bridge the digital divide in terms of knowledge, resources, people and infrastructure, among other things. This has also been an intensely debated term, given its social and political implications, particularly in the manner in which it informs a larger discourse on development, technology and globalisation in the global South.(Sundaram, 2005) It is important to understand whether DH has been posited as making an intervention into these prevailing systems of knowledge – so that the mode of understanding both technology and the humanities, and the interaction between the two domains (assuming that they are separate) undergoes a significant change. What then goes into promoting more institutional stability for DH, in other words, in teaching and learning it – will be a question to contend with in the years to come, as more universities take to incubating research around digital technologies and related components and incorporating this into the existing curricula.

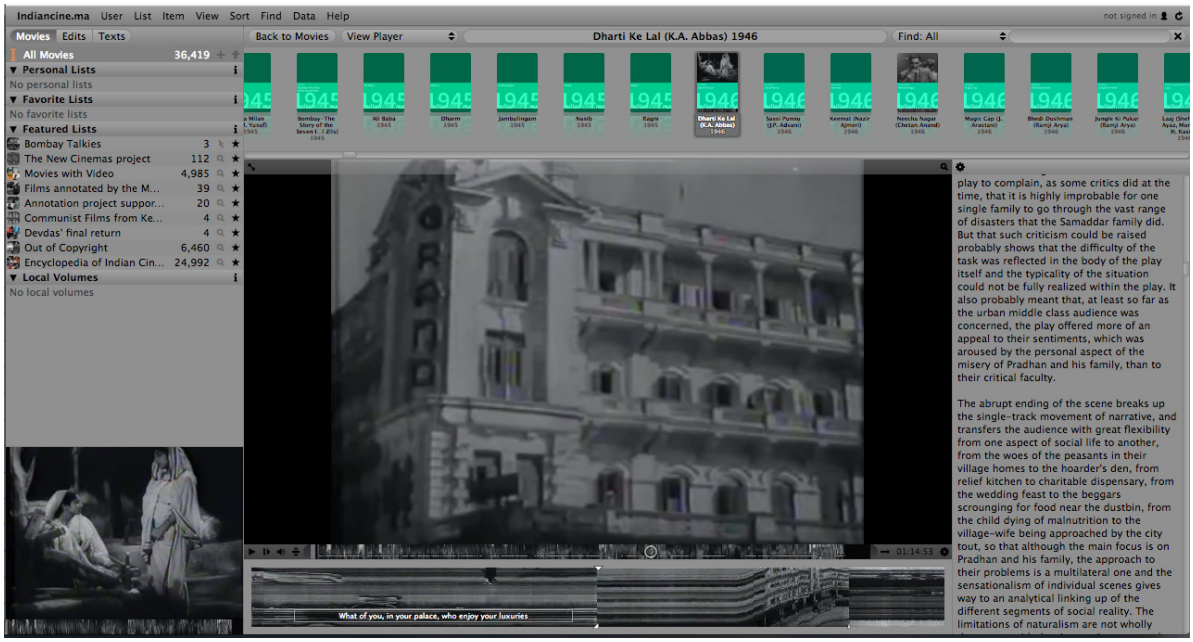
TOWARDS A DIGITAL PEDAGOGY

Dr. Abhijit Roy, Assistant Professor at the Department of Media, Communication and Culture, Jadavpur University is positive about the changes he sees in pedagogy and research with the advent of digital technologies. According to him, while a media or film studies department would be close to the concerns of DH, and use some form of digital technology such as video clips or blogs as part of coursework, it is particularly important to see what change it has brought about in traditional humanities disciplines like History and languages. While some of these changes are elementary, such as the use of digital technologies in classroom teaching and learning exercises, it is in the practice of research that he sees a vast change now. Many researchers, many of his students also, have found this a useful part of the research process, through the use of blogs and social media and the possibilities to publish and engage in discussions with other researchers through platforms and tools like Academia or Scalar [69]. It not only makes the process more transparent, but also encourages an ethos of constant sharing, dissemination and a network of usage and storage online. This has transformed the way research and pedagogy can be imagined now, and opened up several possibilities for teaching-learning practices.

The growth of online archives has also opened up possibilities for new modes of humanities research and creative practice. As Ashish Rajadhyaksha says, the unique aspect of an archive like Indiancine.ma is that it creates a new kind of research object which is structured though these different layers of meaning, in the form of annotations. An example he refers to is the Hindi film Dharti Ke Lal (1946), which has a few street scenes shot surreptitiously in Kolkata when the city was under military occupation, which are distinct due to the presence of American GIs and British Tommies. These scenes can now be searched for and found on the archive. The director, K. A. Abbas, wrote of this experience later in his autobiography; this narrative can now be made available beside the film text in the archive, along with excerpts from other writing on the film, as well as literature on events from that period, notably the Bengal Famine (See image on page 46). This way, various kinds of data --texts, images, writing, tagging, and annotations – is mobilized around the film object. This allows for another level of engagement with the film, at an intensity that was not possible before, and it can be done now because of digital technology. It opens up new ways of studying the film text, in terms of analyzing scenes by frame or colour, or using tools such as object recognition, processes that even students of film are not accustomed to. It also indicates the manner in which methods of studying film and other texts also would need to now respond to changes in technology.

It is in realising this potential for new research and pedagogical models that universities have slowly begun to adopt digital technologies, but the institutional efforts at building curricula specifically around DH-related concerns have been few, with the prominent ones in India being the courses at Jadavpur University and Presidency University in Kolkata, and more recently Srishti School of Arts, Design and Technology in Bangalore. The change is recent, as several researchers have pointed out. There have always been concerns about privacy and regulation of content, whether on a university archive or its network. The enthusiasm towards ‘anything digital is good’ is relatively new, and comes from a larger (and sometimes rather utopian) development discourse focussed around modernity and technology. Curricularisation comes with its own issues too, and they stem largely from the fact that one is still unable to understand fully the nature of the digital and its facets - we also inhabit a time when there is a transition from analogue to digital, and both modes exist simultaneously - but the rate of change is faster with the digital than with other domains of knowledge, so much so that the curricula developed may often seem provisional or arcane, which makes it doubly challenging to demonstrate its various facets in practice, particularly in the classroom. A useful distinction would be between DH being brought in as a problem-solving approach to address the extant issues of the humanities, thus also seen as a threat to the disciplines themselves, and to see if it has its own epistemological concerns which may be related to but also distinct from the humanities - in short to help us ask new questions, or provide new ways of asking old ones.

The development of courses on DH in three universities in India, and the manner in which the field has been ‘curricularised’ so to say, would be an indication of its specific academic concerns in the Indian context, and the disciplinary challenges and questions that it may open up for the teaching-learning process. Expectedly, the three long term courses presently offered mobilise a set of resources and expertise that the schools have built over the course of many years. In doing so they also foray into areas that existing humanities courses at the university may not have explored enough, within their own disciplinary framework. For example the course on Digital Humanities and Cultural Informatics at Jadavpur University [70] comprises of components on software studies and digital music preservation, building on work done at



Scenes from Dharti Ke Lal (1946) on Indiancine.ma, along with annotations.
Link: https://indiancine.ma/EIC/player/ANK

Detail of scene, showing soldiers in the streets of Kolkata.
Link: https://indiancine.ma/EIC/player/ANK

Abbas refers to the three shots in this sequence as the only ones they were able to illegally take in Calcutta:

Originally, we planned to do the entire outdoor shooting on Calcutta's pavements, and to stage the massive hunger march with the help of the Kisan Sabhas of the province. We even went to Calcutta with our camera equipment and some of our artists, hoping to call the others when necessary. The city, however, was still under military occupation, and we had to retreat. We could only surreptitiously take two shots-one showing the hero (the younger son (played by Anwar Mirza) plying a rickshaw - and a shot of one of Chowringhee's palatial hotels and the dustbins in front of it with some scrounging urchins around it, and with American GI's and British Tommies strolling by. A few minutes later we were hauled up by the military police and, pretending not to have taken any shot yet, we escaped with a warning that no shooting would be permitted anywhere in the city or the province without prior submitting of the script and the plan of the shooting to the civil and military authorities. -

K.A. Abbas, 'I am Not an Island', pg 270-271.

Annotation to the scene, from director KA Abbas' autobiography 'I Am Not An Island' (1977).

the large archives at the School of Cultural Texts and Records. Similarly, the course at Presidency University [71] has components on storytelling in digital media through video games, while the course at Srishti Institute of Art, Design and Technology [72] has a focus on design practice and critical making amongst other interests. More recently, the University of Pune [73], and the English and Foreign Languages University, Hyderabad [74] have also offered certificate courses in DH. The Indian Institutes of Technology at Indore [75] and Hyderabad [76] have also engaged with some questions about DH and cultural informatics in some form, either through modules in existing courses or short seminars. The Centre for Digital Humanities in Pune [77] has organized two annual Winter Schools in DH, with participation from several researchers both in India and abroad; the centre also conducts short workshops and talks in the field. Prof. Ashok Thorat, Founder-Director of the CDH, notes that while many universities and colleges are interested in developing courses in DH or related topics, there is a lack of clarity in the structure because humanities and technology are often offered as two separate components which do not speak to each other; in many cases the use of technology is more dominant which is a cause for concern for some many humanities departments. As a result, while universities themselves are interested in offering a course, often there is resistance from individual humanities departments, for several reasons ranging from lack of expertise, to concerns about the course being too 'technological'. There is a need therefore to understand what exactly the role of technology is here, and for more hands on engagement with digital tools and platforms. The winter schools have also been a good learning experience in this respect he finds, as it has helped connect with a wider community of researchers interested in DH, and learn more about work that has similar concerns, even if people do not use the term itself. These pedagogic efforts therefore follow a decidedly interdisciplinary framework, which no doubt interesting, also makes curriculum development and course assessment a challenge.

What this also illustrates is the perceptions about the digital that exist within academia, where in most cases, anything related to technology is usually seen as beneficial to education by policymakers and university administration, but at the level of implementation there may be several challenges. While the 'digital' aspect of 'DH' forms a significant part of these explorations, the manner in which it is being studied is an important point of focus – whether as a condition, space, concept or object, rather than a set of tools and methods that facilitate the enquiry of the humanities. Digitisation significantly alters the cultural artifact, and there is a need to understand and theorise this digital object better. As Padmini Ray Murray points out, "the digital is one way to mediate the material object, particularly those that are not textual, since that kind of experiential access can only be provided by the digital, especially in the case of archival objects." A critical understanding of the digital needs to therefore be a key aspect of such an enquiry in DH, and in efforts towards building digital pedagogy.

ALTERNATE SPACES OF HUMANITIES PRACTICE

While these are the developments within academia or the university space, there are a number of spaces outside this circle that have also been asking similar questions, and producing new kinds of scholarship and research around these ideas. The Indiancine.ma and Pad.ma archives have not only served as a rich repository of material on film and video, used by scholars and film enthusiasts alike, but also as a pedagogic tool in spaces like the Media Lab at Jadavpur University. Through an innovative fellowship programme,

Pad.ma has supported research and film making using the archive as a platform. An interesting example here would be a documentary film on power plants in Chhattisgarh made by Sunil Kumar. Available as a film treatment/script on Pad.ma, Kumar's work is based on research in mainly two districts of Chhattisgarh, where he met and spoke with people, collected documents and shot several hours of video, which he then published in the form of 80 footage series on Pad.ma [78]. There are several other examples on Pad.ma, such as the video-art project on the Radia tapes, and the work on "perfume arts" in Bangalore [79]. The Sound and Picture Archives for Research on Women (SPARROW) through its workshops on oral and visual history has tried to engage with the more pedagogic aspects of the archive [80]. While the possibilities are many, the uptake of such platforms in universities has been slow, due to issues that range from lack of internet connectivity to a discomfort or unfamiliarity with the internet and other forms of technology. This eventually relegates initiatives like these to the space of an alternate, extracurricular or outlier, even though they seem to be asking the same questions as the mainstream institutions and doing similar work.

What this also refers to is the space for new modes of knowledge production that an increased interaction with digital and internet technologies now engenders or even brings to the fore in already existing practices. With these however, also come the questions about the legitimacy of these forms and methods of knowledge production, as seen in the rather polarised positions around DH in its global discourse. The Wikipedia is one example of this, and illustrates some of the core concerns of and about DH as it calls into question notions about authorship, expertise and established models of pedagogy and learning. Lawrence Liang (2011) describes this as a larger conflict over the authority of knowledge, the origins of which he locates in the history of the book, and specifically in the print revolution and pre-print cultures of the 15th -18th centuries. He likens the debate over Wikipedia's credibility, or more broadly over technologies of collaborative knowledge production ushered in by the Internet to similar phenomena seen before in early print culture and how it contributed to the construction and articulation of the idea of authority itself. He says:

> *The authority of knowledge is often spoken of in a value-neutral and ahistorical manner. It would therefore be useful to situate authority in history, where it is not seen to be an inherent quality but a transitive one [6] located in specific technological changes. For instance, there is often an unstated assumption about the stability of the book as an object of knowledge, but the technology of print originally raised a host of questions about authority. In the same way, the domain of digital collaborative knowledge production raises a set of questions and concerns today, such as the difference between the expert and the amateur, as well as between forms of production: digital versus paper and collaborative versus singular author modes of knowledge production. Can we impose the same questions that emerged over the centuries in the case of print to a technology that is barely ten years old? [52]*

He further goes on to elaborate that the question of the authority of knowledge should ideally be located within a larger 'knowledge apparatus', comprising of certain technologies and practices, (in this case that of reading, writing, editing, compilation, classification and creative appropriations among others) which help inflate the definitions of authority and knowledge even more.

The above argument throws into sharp relief the notion of the 'alternate'– often posited as the outlier or a vantage point, or even as being in resistance to a certain dominant discourse or body of knowledge. While resistance itself is discursive; the 'alternate' has also always existed in various forms, such as the pre-print cultures illustrated in the argument above, and particularly in India where several kinds of prominent practices and occupations are but alternatives - from alternative medicine to education - to the already established or mainstream system in place. As mentioned earlier, these practices may just be increasingly visible and acknowledged now. The attempts to subsume these alternate practices under a unifying term such as DH, which began as and may perhaps have been relegated to the status of a sub-culture for long, within academia then seem to be one way of trying to circumvent the authority of knowledge question.

HUMANITIES AND TECHNOLOGY: A TWINNED HISTORY

Another factor in this reduced visibility of the alternate and now re-emergence is the invisible 'technologised' history of the humanities, which prompts us to rethink the separation between the humanities and technology as mutually exclusive domains. Therefore by extension then, the term DH itself may be a misnomer or yet another creative re-appropriation of various knowledge practices already in existence. David Berry (2011) in his essay on the computational turn speaks of possibilities that computationality, and specifically new software and code offer in terms of unifying multiple kinds of knowledge in the university. He says that:

> *In trying to understand the digital humanities our first step might be to problematize computationality, so that we are able to think critically about how knowledge in the 21st century is transformed into information through computational techniques, particularly within software. It is interesting that at a time when the idea of the university is itself under serious rethinking and renegotiation, digital technologies are transforming our ability to use and understand information outside of these traditional knowledge structures. This is connected to wider challenges to the traditional narratives that served as unifying ideas for the university and, with their decline, has led to difficulty in justifying and legitimating the postmodern university vis-à-vis government funding. (5)*

Berry therefore indicates that this turn towards computationality is the result of an emerging need to demonstrate the relevance of the university structure to processes of knowledge production, therefore reiterating the 'crisis' argument. The notion of the postmodern university has been examined in detail by Bill Readings, who Berry quotes in his paper. Readings (1997) is skeptical of the term postmodern, preferring instead the idea of a post historical university, which is divested from the notion of the nation-state and further culture as a unifying idea, and is moving towards a notion of excellence that he sees as techno-bureaucratic, a result of several factors including globalisation and the fact that processes of knowledge production and institutionalisation are no longer centred around a liberal subject. If the demonstrated project of the university has changed, the emergence of such new discourse, and specifically concepts and terms such as the 'alt – academy' has relevance to how one may now imagine new spaces, objects, processes and figures of knowledge itself.

The significance of the university system to knowledge production has been a recurring point of much debate and discussion in India. Although not

explicitly stated as a crisis in humanities by the people interviewed, there are problems of content, pedagogy, infrastructure, and vision that continue to plague higher education at large [81], and very often technological fixes are seen as a solution to these, in some part due to the imagination of a techno-democracy as described in the introduction to this report. As Berry points out then, computationality is a promise, or possibility to do things differently, which is then also inherently assumed to be a way of doing things better. The computational possibilities of DH still need to be explored, but how much of these contribute qualitatively to addressing or even furthering certain disciplinary concerns, still remains an open question. As Jan and Sebastian point out from their experience of working on Indiancine.ma and Pad.ma, the computational aspects of the archives are still to be developed, as there are still restrictions in terms of speed and feasibility (see chapter on infrastructure [82]; the kind of new questions it produces for cinema studies at large will remain a contention. Further, as Padmini Ray Murray observes, drawing on archival material, or data to develop new computational hypotheses would be a direction to work towards, as not much work has been done in this respect in India (See chapter on archives [83]. The challenges with computationality then demand, as Berry argues, a more critical exploration of the term itself, and in fact can be extended to a critical analysis of the state of digitality more broadly.

FINAL NOTES

The problems with the crisis in the humanities and the contribution of technology to these changes could be located to this change in what has traditionally been seen as the space of culture and reason, which has now moved on to something else, a notion of excellence in Readings' example, thereby changing the questions at the centre as well. This is perhaps the underlying challenge to the ontological and epistemological stake in the field. At best then DH may be seen as the result of a set of changes in the last couple of decades, the advancements in technology being at the forefront of them, whereby certain new and alternative modes of humanities practice have been brought to the foreground, but have also challenged the manner in which we asked questions before to a certain extent. As the field gains institutional stability, it remains to be seen what the new areas of enquiry that emerge shall then be in the years to come. Some of the questions or points or focus that open up are as follows:

1. The role of extra-institutional/non-academic or alternate spaces in humanities practice, and in producing and creating new kinds of knowledge.
2. The increased visibility of new objects and methods within informal and marginal spaces of knowledge production. This demands different, and often innovative methods of enquiry, and whether they alter disciplinary modes of humanities practice and research.
3. The notion of a moving away from established modes of humanities practice, research and scholarship (therefore the question of a 'crisis') which would open up a larger debate around the authority of knowledge.
4. The ontological and epistemological stake of DH, in short the kinds of new questions it enables us to ask.

As important and visible as the idea of the alternate is in DH, it also presents the mainstream itself as fractured space that imbibes several contradictions of the practices in question, which cannot be confined to these watertight silos of formal/informal, academic or creative. In fact, as one of the scholars who

reviewed a part of the study pointed out, it may be useful to examine if DH is in itself an attempt to shore up these alternate or marginal practices within the university or mainstream academic discourse. Nevertheless, the mainstream spaces remain crucial for widening and deepening creative digital practice and research in arts and humanities disciplines, and will be the spaces to watch to understand the development of a substantive DH discourse in India.

7 | Digital Humanities in India

This exercise in mapping 'digital humanities' in India has brought to the fore several learnings and challenges, especially in trying to locate the domain of enquiry even as our understanding of what constitutes new objects, methods and forms of research and pedagogy constantly undergo change and redefinition. As some of the people interviewed in the course of this study remarked, DH, with its interdisciplinary approach and porous boundaries is like a moving target that becomes increasingly difficult to define as it is constantly evolving into something new, which then adds another dimension to what is already understood about the field. This is not to say that there is a consensus on what is DH, globally or in India, but just to emphasise that the object or domain of enquiry is not fixed, or demarcated clearly.

Even as I wrap up this study, some of the key questions or problems of definition, ontology and method remain with us, as the 'field' – if there is such a thing – is incipient in India, as with other parts of the world. What it does for us immediately is throw open several questions about how we understand the idea of the 'digital', and what may be new areas of enquiry for the humanities at large, post the advent of the digital. This study therefore is not interested in the question of whether there is a field called DH in India, but rather in what questions are raised by and for DH and DH-like projects by a range of practices and scholarship in the humanities post the digital.

We began with the understanding that DH is a new space of interdisciplinary research, scholarship and practice with several possibilities for thinking about the nature of the intersection of the humanities and technology. The term was a little more than a found term of sorts, in the context of this study, which since then has taken on various meanings and undergone some form of creative re-appropriation. The history of the term in the context of "humanities computing" in the Anglo-American context has helped in locating and identifying the field globally within the ambit of certain kinds of practices and scholarship in the contemporary moment, even as it has come in for criticism for its lack of diversity in scope and context. There have also been several efforts to encourage alternate and intersectional approaches to theorizing and understanding DH, as seen in the growth of fields such as postcolonial DH and feminist DH. In India, tracing such a narrative may be a relatively complex endeavour, given that the discourse around DH, or engagements with humanities-after-digital and/or with digital-through-humanities come out of a very chequered history of humanities and technology. As most of the literature around DH even globally has pointed out, the problem with arriving at a definition is ontological, more than epistemological. The conditions of its emergence and existence are yet to be completely understood, although if one is to take into account the larger history of science and technology studies or the more recent cyberculture and digital culture studies, these 'epistemic shifts' have been in the making for some time now. In India particularly, where a clear picture of the 'field' as such is still to emerge in the form of a theorisation of its key concerns, it is only through a practice-mapping that one may locate what are at best certain discursive shifts in the way we understand content, structures and methods in the humanities, within the context of the digital. These changes may be visible across only a few domains – particularly in the multi-layered technological landscape in India, and lack a wider consensus in terms of whether they really constitute a larger epistemic shift or new direction of thought. The first couple of sections in this report tried to lay out ways of

understanding the current state of 'digitality' that India is in, and the lack of an indigenous framework to theorise or understand it better. The layered technological and media landscape that we inhabit today, where both the analogue and digital co-exist serving various purposes, and access and usage are still contentious points of debate, provides an interesting and dynamic context to understand what are new practices of humanities research and scholarship today.

The fundamental premise of the nature of the digital and its relation to the human subject still lacks adequate exploration which would be required to define the contours of the field. The inherited separation of humanities and technology further makes this a complex space to negotiate, when the term may now actually indicate the need to decode the rather tenuous relationship between the two supposedly separate domains. If one may locate the question even earlier, the separation of the natural and social sciences lies above this segregation of disciplines, and needs further exploration. There is a need therefore to understand the growth of a 'technologised' history of humanities to examine whether this almost forced coming together of two historically separated domains may in itself be something novel, or create new and qualitatively different kinds of practices for humanities. Even so, the disciplinary contexts of the usage of the term DH in India open up certain questions of ontology and method more broadly for humanities research and practice in the digital space. These include changes in the nature of cultural artifacts brought about by digitisation, in a landscape where the analogue and digital co-exist but also are in a state of transition from the first to the second. One example is the digitisation of objects like film posters, lobby cards and other paraphernalia around a film text, which although analogue objects, can now be layered onto a digital film object in online archives like Indiancine.ma, thus also changing the object or opening it up for more questions. The digital object or image, is a new object of study that also demands a different kind of analysis. The change in the nature of the archival object and the challenges to archival practice are some of the related questions stemming from this context. As mentioned by Dr. Indira Chowdhury in the chapter on archival practice, oral history archives and the practice of creating and maintaining them is fraught with many challenges because of a change in the archival object itself. A digital audio file has its own protocols of storage, retrieval and use, given the problems of format and technological obsolescence. Further the classification of such files, and its copies in different formats, and their preservation also demands changes in archival practice. This points to some of the larger challenges that have emerged for archival practice in India today, which include – storage and preservation of materials, cross-referencing and meta-data standards, conditions and structures of access, roles and forms of curation, re-usage of archival materials in research and pedagogy, and the constraints to digitization of archival materials, particularly in terms of rare materials and those in Indian languages. The challenges of working with materials in Indian languages (see section on Data as Text) are several, and will form one of the significant areas of work in DH.

The question of methodology comes in as the next most important aspect here, as the method of DH is yet to be clearly defined. The proliferation of new disciplines and conflict over methodology is not new; the Gulbenkian Commission report published in 1996 titled 'Open the Social Sciences' documents some of these and other concerns with the growth and segregation of disciplines, and the debates it generated both internally, seen in the rise of cultural studies, and in the natural sciences as complexity studies as well (Wallerstein et al 1996). At present DH seems to be a combination and creative

appropriation of methodologies drawn from different disciplines and creative practices. The change in the methodology of the humanities and social sciences itself as no longer remaining discipline-specific has been a contributory factor to the evolving methodology of DH as well. This has raised several methodological questions, as outlined by some of the people interviewed in the study. The foremost is the challenge in rethinking the notion of the text as a digitally mediated object, and the blurring of boundaries between film, audio and print and archival materials as they are transformed into digital objects. The existing methods of reading these texts then are inadequate. An example is the Bichitra variorum at Jadavpur University, or online archives like Indiancine.ma or Pad.ma, where you need new tools to navigate the vast corpus of material on these platforms, and to work with them. The notion of text and textual analysis also demands some rethinking in the light of new terms such as 'distant reading' that have come up in the DH discourse. Bichitra and Pad.ma or Indiancine.ma would facilitate some form of such 'distant reading' as they involve a method of reading the print or film text using a large number of texts, something possible only with a computer, but also with other kinds of ancillary material, like marginalia, errata, posters, pamphlets and lobby cards of a film. This brings up not just new ways of contextualizing the digital object, but also asking questions of it in terms of its material aspects. Collaborative online archives, while creating a new analytical and creative space for work using different kinds of film and film-related material, also pose questions of authorship and privacy. The lack of better transcription tools and other methods to work with sound in the digital space, has posed significant methodological challenges in oral history work as well, as outlined in earlier sections of this report.

The use of computational methods for humanities research is one of the important shifts that forms part of the growth of DH in India, although there is very little work being done in this area in academic spaces except in a few institutions. The Tagore variorum and the online film archives Indiacine.ma and Pad.ma are two examples in this study that have done some work with computational tools and a large corpus of material. The collation guide in Bichitra, and the use of different tools and filters in the film archives like Pad.ma and Indiancine.ma have been able to add another dimension to the analysis of humanities texts, but whether they help ask any qualitatively new questions still remains open to debate. The other spaces studied as part of this report, such as work on digitisation and archives at the School of Cultural Texts and Records, the Centre for Public History, or SPARROW, or media art work at CAMP, have been more engaged with exploring what the digital turn has meant for certain forms of humanities research. Some of the more recent courses offered in DH, such as the master's programme at Srishti School of Art Design and Technology, and the certificate course at the University of Pune, do engage with some form of building or 'material making', by offering workshops and some practical sessions, as well as including topics like data mining, and textual computing. As such the skills and infrastructure needed to work with large data sets and new technologised processes of interpretation and visualisation still remain outside the ambit of the mainstream humanities. Through an exploration of allied fields such as media, archival practice, design and education technology, the study tries to locate how certain practices in these areas inform what we understand of DH today.

The archive, academia and now to some extent design have become the sites for most of the discussions around DH in India, primarily because of the nature of institutions and people who have engaged with the question so far. Archival practice has seen a vast change with the onset of digitisation, and the growth

of more public and collaborative archival spaces will also bring forth new questions and concepts around the nature of the archive and its imagination as a dynamic space of knowledge production. The Centre for Public History at the Srishti School of Art, Design and Technology focuses on some of these questions, by trying to build more collaborative, online and public archival spaces, and involving in the process a rather diverse group of practitioners and researchers. The objective is also to make not only archives, but history, and oral histories as a discipline more accessible, and dynamic. The notion of the archive as a metaphor, and the possibility of looking at the archive as a database are some new questions which would inform the growth of DH in India. The growth of an open, distributive and collaborative archive, such as Indiancine.ma and Pad.ma also asks questions about the changes in film as an archival object, in its transition to the digital space. The availability of the film text for study, and the layering of different kinds of ancillary material around the film, such as posters, advertisements, literature and errata, opens up possibilities of reading the film text differently. At a more abstract level, the nature of the text as an unstable object itself, now increasingly being mediated and negotiated in different ways through digital spaces, tools and methods would be one way of locating an object of enquiry in DH and tracing its connection to the humanities, which are essentially still seen as 'text-based disciplines'.

What has been a definite shift is the emphasis on process which has become an important point of enquiry, and one of the many axes around which DH is constructed. The rethinking of existing processes of knowledge production, including traditional methods of teaching-learning, and the emergence of new tools and methods such as visualisation, data mapping, distant reading and design-thinking at a larger level would be some of the interesting prospects of enquiry in the field. Though there is little conversation in the above areas in DH in India, and some work in other fields like the natural sciences, media and communication, its seems to not be part of the larger discourse developing around DH yet. The collation tool developed for the Tagore variorum, or the editing and annotation tools used in Indiancine.ma and Pad.ma are some examples of the tools and methods presently used in what could be DH or DH-like work in India. The method of DH is however, necessarily collaborative and distributed at the same time, as evidenced by its practice in these various areas and disciplines. A lot of the work done on both these platforms has been through collaboration among people across diverse domains of expertise, in the arts and humanities and technological fields. As the description of the variorum suggests, it needed the expertise of people from Computer Science, Library and Information Sciences, English and Bengali departments to set up such a platform. The method of using or working with Indiancine.ma and Pad.ma is necessarily collaborative and distributed, because everything from the primary film material to the annotations and editing is in some way user-generated, as the archive itself is open to different groups of people ranging from the film enthusiast to the film studies scholar.

The complex and somewhere problematic history of science and technology in India and the growth of the IT sector also forms part of this context, and will inform the manner in which DH grows as a concept, area of enquiry or even as a discipline. DH is yet another manifestation of changes that we have seen in the existing objects, processes, spaces and figures of learning, particularly the open, collaborative and participatory nature of knowledge production and dissemination that has come about with the advent of internet and digital technologies. More importantly, they also point towards the larger changes in what were earlier considered unifying notions for the university, and the

humanities as disciplines founded on the ideas of reason and culture. The idea proposed by Bill Readings that the university is no longer concerned with the production of a radical or liberal subject is also an important one, as it points to a further question of the nature of the subject produced, and who the process of knowledge production is to be aimed at (Readings 1997). If one may extend this argument to DH, the subject of this new discourse around the digital is also now rather unclear.

One could explore the notion of the 'digital humanist,' or in a more abstract manner the digital subject as one example of this lack of clarity, which is also why it has been a topic of much concern for several scholars, DH and otherwise. As Prof. Amlan Dasgupta says, it is difficult to identify such a category of scholars, although a person who is able to situate his work in the digital space with the same kind of ease and confidence that people of a different generation could do in manuscripts and books would perhaps fit this description, and he is sure that such a person may be found. For example someone who knows Shakespeare well and can write a programme, and he is sure a day will come when this is a possibility. It is a familiarity in which the inherent distance between these two pursuits becomes lesser – DH is located in that moment - a composite of these two approaches rather than the difference. While many scholars concur with this explanation, others find the term itself a little misleading – humanities scholars do not call themselves 'humanists'. Also, by virtue of being a digital subject, anybody engaged with some form of digital practice is already a digital humanist of some sort. The problem also is in the rather unclear nature of the practice, all of which is not unanimously identified as DH, as a result of which not many scholars would want to identify with the term. This poses another question about the skills required of a humanities scholar in the near future, will she have to learn how to code etc. Additionally there is also a concern, as pointed out by some scholars, about the loss of criticality as a result of a relying on algorithms to work with a corpus of texts, among other things.

However, many of these alternate or liminal spaces have always existed; they are perhaps becoming more visible and acknowledged now. This is also indicative of the larger changes in the landscape of work in the humanities, whether creative, academic or pedagogic. With the advent of the internet and new digital technologies, the nature of cultural artifacts has also been altered significantly, thus demanding a new mode of enquiry and analysis, which often goes beyond interpretation and representation. How these digital objects are constituted, are they ever complete or finished, such as the text in the variorum or the film in the archive which continue to take on layer upon layer of annotation to generate a plethora of meanings, are related questions. They pose a challenge to the existing methods of the humanities, and along with the distributed, collaborative, and networked structures of practice and research that the internet has engendered, they have opened up several possibilities for the humanities. DH, with its emphasis on interdisciplinarity and different kinds of knowledge drawn from a diverse set of practices definitely opens up space for a new mode of questioning; whether all of these different modes of questioning can coalesce as a new discipline or interdisciplinary field in itself will remain to be seen.

More importantly, it also indicates the changes taking place in the university system in India, which is trying to address multiple anxieties at a larger political and the every-day administrative levels, reflected in problems with quality, equity and access to education (Misra and Singh 2015; Academics for Creative Reforms 2015). The digital turn has been one of the sources of concern, as it has pushed for the need to rethink the role of technology, particularly internet,

in teaching and learning practices, both within and outside the classroom. The internet, and the different challenges posed by it in terms of methods, objects and contexts of learning, has contributed greatly to the emergence of some of the digital practices discussed in this study, which also take some of the questions they pose about knowledge production, pedagogy or scholarship outside the ambit of the classroom or university space. The emergence of DH can be seen as a coming together of these anxieties in some manner, and is perhaps indicative of a distinct ontological basis for such a discipline or area of study in India. This is not to conflate the discourse with the narrative of a 'crisis' in the university (something that exists in the Anglo-American context of DH) but rather to highlight the changes that it is undergoing, where the internet and digital technologies continue to play a crucial role. In the absence of a history or established traditions for the growth of disciplines like media studies, software/internet studies or digital cultural studies in India, apart from the work done by research programmes like the Sarai programme at CSDS, it is imperative to ask if the emergence of DH is then a push to trace such a history, to understand better its ontological and political stake, and more importantly to explore what the 'digital' means not just for the humanities, but for the larger processes of knowledge production today.

Notes

[1] See: http://presiuniv.ac.in/web/events_english.php

[2] This one-day event was organized by the Higher Education Innovation and Research Applications (HEIRA) programme at the Centre for the Study of Culture and Society, in collaboration with the Access to Knowledge (A2K) Programme at the Centre for Internet and Society, and other institutions. See: http://cis-india.org/digital-natives/digital-humanities-for-indian-higher-education.

[3] See: https://sctrdhci.wordpress.com/

[4] See: http://www.tezu.ernet.in/notices/ResearchMethodology.pdf.

[5] See Telecom Regulatory Authority of India, "The Indian Telecom Services Performance Indicators October - December, 2015 and "India's Internet Users to Double to 730 million by 2020 leaving US far behind". Economic Times. August 16, 2016

[6] See: http://www.digitalindia.gov.in/.

[7] See: http://www.nmeict.ac.in/.

[8] See http://www.prsindia.org/uploads/media/Higher%20education/Legislative%20Brief%20-%20Higher%20Education%20and%20Research%20Bill.pdf.

[9] See: http://mhrd.gov.in/sites/upload_files/mhrd/files/document-reports/YPC-Report.pdf

[10] See: http://nptel.ac.in/

[11] See: http://gadgets.ndtv.com/tablets/news/government-for-providing-aakash-tablet-at-rs-1500-329578.

[12] See: http://www.ignou.ac.in/.

[13] See: http://www.inflibnet.ac.in/.

[14] See: http://nkn.in/.

[15] See: https://swayam.gov.in/About

[16] See: http://www.namami.org/.

[17] See: http://www.dli.ernet.in/.

[18] See: http://www.nationallibrary.gov.in/.

[19] See: http://www.southasiaarchive.com/.

[20] See: http://www.aaa.org.hk/.

[21] See: Corinna Baksik, "Fair Use or Exploitation? The Google Book Search Controversy", Project Muse, 2006, and Geoffrey Nunberg, "Google's Book Search: A Disaster for Scholars" August 31, 2009.

[22] For more on this see Stanley Fish, "Mind Your 'Ps' and 'Bs': The Digital Humanities and Interpretation. New York Times, January 23, 2012; Stephen Marche, "Literature is Not Data", LA Review of Books, October 28, 2012 and Adam Kirsch, "Technology Is Taking Over English Departments", May 2, 2014.

[23] See Roopika Risam, "Beyond the Margins: Intersectionality and the Digital Humanities" Digital Humanities Quarterly, 2015.

[24] See: http://dhpoco.org/

[25] See Jacqueline Wernimont, "Whence Feminism? Assessing Feminist Interventions in Digital Literary Archives, Digital Humanities Quarterly, 2013.

[26] See: http://cis-india.org/raw/histories-of-the-internet

[27] See: http://cis-india.org/digital-natives/pathways/blog/higher-education

[28] See: http://cis-india.org/raw/digital-humanities/digital-humanities-in-india-mapping-changes-at-intersection-of-youth-technology-higher-education

[29] See: http://scotscemeteryarchivekolkata.com/

[30] See: https://www.bl.uk/projects/two-centuries-of-indian-print

[31] See: http://granthsouthasia.in/collection/sctr.html

[32] For a more detailed overview of the different phases of DH, see Patrik Svensson, "Landscape of Digital Humanities." *Digital Humanities Quarterly*. 4 (2010)

[33] For more on the nature of the technosocial subject, see Nishant Shah, "The Technosocial Subject: Cities, Cyborgs and Cyberspace" (PhD diss., Manipal University, 2013

[34] This is rather simple abstraction of ideas about discipline and reason as they have stemmed from Enlightenment thought. For a more elaborate understanding see Kant, *Conflict of the Faculties* (1978) and Foucault, *Discipline and Punish* (1975)

[35] See: http://indiancine.ma/

[36] See: http://vectors.usc.edu/journal/index.php.

[37] "The Text Encoding Initiative (TEI) is a consortium which collectively develops and maintains a standard for the representation of texts in digital form. Its chief deliverable is a set of Guidelines which specify encoding methods for machine-readable texts, chiefly in the humanities, social sciences and linguistics. Since 1994, the TEI Guidelines have been widely used by libraries, museums, publishers, and individual scholars to present texts for online research, teaching, and preservation." See: http://www.tei-c.org/index.xml.

[38] See: https://storify.com/

[39] See: http://www.scoop.it/

[40] For more on text mining see Lisa Guernsey, 'Digging for Nuggets of Wisdom,' The New York Times, October 16, 2003. For more on data mining, distant reading, and the changing nature of reading practices see Matthew Kirschenbaum in 'The Remaking of Reading,' (2007)

[41] See: http://bichitra.jdvu.ac.in/.

[42] A term coined by Theodor H. Nelson, which he describes as "a series of text chunks connected by links which offer the reader different pathways." As quoted in George Landow, Hypertext: The Convergence of Contemporary Critical Theory and Technology (Baltimore: John Hopkins University Press, 1992) 2-12.

[43] Bichitra, 'Collation Guide,' accessed on September 17, 2015, http://bichitra.jdvu.ac.in/bichitra_collation_guide.php.

[44] Omicron Lab, accessed September 17, 2015. https://www.omicronlab.com/avro-keyboard.html.

[45] See: Sami Lais, "Optical Character Recognition" Computerworld. July 29, 2002. http://www.computerworld.com/article/2577868/app-development/optical-character-recognition.html?page=2

[46] See: http://www.indianmemoryproject.com/

[47] See: http://indiancine.ma/ and http://pad.ma/

[48] See section on Archives for more on this

[49] See the section on Reading from a Distance – Data as Text for more on this. Also see Tejaswini Niranjana, "Indian Languages in Indian Higher Education". Economic and Political Weekly. vol xlviII (12). March 23, 2012.

[50] See: https://pan.do/ra

[51] See: http://studio.camp/

[52] See: http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/free-and-open-source-software-foss/

[53] See: https://0xdb.org/

[54] Michel Foucault quoted in Manoff (2004: 18).

[55] Ibid.

[56] A session on 'Digital Humanities and the State of the Archives in South Asia' was conducted by Prof. Abhijit Bhattacharya and his team as part of a workshop on research methodology in Women's Studies, held at Tezpur University from April 6-7, 2010. See http://www.tezu.ernet.in/notices/ResearchMethodology.pdf

[57] See: http://www.sparrowonline.org/.

[58] See: http://sarai.net/.

[59] See: http://osianama.com/.

[60] See: http://chitrakarkhana.net/rustletv.htm

[61] For more on this see: Bethany, Nowviskie. Ed. Alternative Academic Careers for Humanities Scholars, 2011.

[62] The largest and most ambitious has been the Ministry of Human Resources and Development's National Mission in Education through ICT programme (NMEICT), started in 2009. See: http://mhrd.gov.in/technology-enabled-learning-0 Last accessed December 23, 2015.

[63] To stay with the example of the NMEICT, an evaluation of the programme pointed out several challenges to technology-enabled learning, namely in the areas of connectivity, content, and pedagogy. See http://www.sakshat.ac.in/Document/NMEICT_Evaluation_Report.pdf. Last accessed December 23, 2015.

[64] For more see this position paper by the NCERT on education technology in India: http://www.ncert.nic.in/new_ncert/ncert/rightside/links/pdf/focus_group/educational_technology.pdf. Last accessed December 23, 2015.

[65] See an evaluation report on the programme by Tory Read: http://oceanwork.com/portfolio/wikipedia-education-program-reputation-management/. Last accessed December 23, 2015.

[66] See: http://education.kerala.gov.in/index.php?option=com_content&view=article&id=51&Itemid=59. Last accessed December 23, 2015.

[67] For more on these projects see: http://www.et.iitb.ac.in/sanket/?p=87. Last accessed December 23, 2015.

[68] See: Michael J Spector. *Fundamentals of Educational Technology: Integrative Approaches and Interdisciplinary Perspectives* (New York: Routledge, 2015); and Toru Iiyoshi and M.S. Vijay Kumar. (Eds.) *Opening up Education*. (Massachusetts: MIT Press, 2008)

[69] See: https://www.academia.edu/ and http://scalar.usc.edu/scalar/. Accessed December 23, 2015.

[70] See: https://sctrdhci.wordpress.com/. Accessed December 12, 2015.

[71] See: http://dhgenedpresi.blogspot.in/2014/01/welcome-to-digital-humanities-presidency.html. Accessed December 12, 2015.

[72] See: http://srishti.ac.in/programs/pg-program-ma-in-digital-humanities. Last accessed December 12, 2015.

[73] See: http://unipune.ac.in/Syllabi_PDF/revised-2015/arts/Certificate-Course-in-DH-12-06-15.pdf

[74] See: http://www.efluniversity.ac.in/Digital-Humanities.html

[75] See: https://www.youtube.com/watch?v=6KhART6aqNM

[76] See: https://www.iiit.ac.in/academics/postgraduate/phd/eh/

[77] See: http://www.cdhpune.com/

[78] See: http://pad.ma/texts/sunil_kumar:Future_Power_Plants_in_Chhattisgarh:_a_Documentary_Film_Treatment_%2F_Script. Last accessed December 12, 2015

[79] See: http://pad.ma/texts Last accessed December 12, 2015.

[80] See: http://www.sparrowonline.org/.

[81] See the report of 'The Committee to Advise on Renovation and Rejuvenation of Higher Education: by the Ministry of Human Resources and Development: http://mhrd.gov.in/sites/upload_files/mhrd/files/document-reports/YPC-Report.pdf; and Kum Kum Roy, "Decoding 'New Education Policy," *Economic and Political Weekly*, Vol. 50, Issue No. 19, May 09, 2015,

[82] See: http://cis-india.org/raw/the-infrastructure-turn-in-the-humanities.

[83] See: http://cis-india.org/raw/living-in-the-archival-moment.

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