Survey of Digitised Materials in Bengali

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Introduction

Bengali, an eastern Indo-Aryan language with around 230 million total speakers is one of the most spoken languages in the world. Bengali language boasts of a rich literary and cultural heritage too. Bengal has also played a pivotal role in the development of the print industry in India. It was in Kolkata that the very first newspaper of India, Bengal Gazette was published in the year of 1780. The history of printing in Bengali dates back to 1778 when the pioneering effort of Charles Wilkins led to the first metal typecasts in Bengali.Bengali publication on a large scale started from 1800 when Fort William College needed books in Bengali as teaching material for newly arrived company officials from England and the Baptist Mission at Serampore was determined to spread Christianity in the local language.In 1818,the first Bengali monthly periodical *Digdarsan,* edited by John Marshman, was published from the Serampore Baptist Mission Press, and in the following year appeared the first Bengali weekly, *SamacarDarpan*. It was the first newspaper to be printed in an Indian language. At present a large collection of printed Bengali materials in the form of books, journals, newspapers, magazines, pamphlets etc. are scattered in various public libraries, institutions, and private collection. (For more elaboration see: *The survey report on printed Bengali language material in different institutional and private collections in West Bengal and Bangladesh* Prepared by Abhijit Bhattacharya, Centre for Studies in Social Sciences, Calcutta.)

Digitisation of such vast cultural resources is the need of the hour. Vast pool of knowledge available in the physical forms of manuscripts, rare books, out-of-print books and archival materials can be digitised and shared to a networked community using an online platform. Innovative research into language and culture occurs all over the world and digitisation offers many opportunities to enable scholars to engage with original language documents (especially rare or old documents) to aid this research and gain cultural understanding. Researchers would engage in documenting and unearthing endangered and hidden cultural resources in vernacular languages. It will be a really pioneering act if it is possible to bring together on a single digital platform the scattered corpus of Bengali printed books, from the earliest use of Bengali type in Halhed's Bengali grammar of 1778 to recent outputs in Bengali.

Objective

This project is an attempt to undertake an extensive survey and prepare a report on printed digitised materials in Bengali across selected domains/fields of knowledge (Arts & Culture, Education, Politics /Economy).It will also attempt to explore possible methods of facilitating the use of these materials in higher education, and the problems therein. The main objective of this exercise shall be to generate data on recent efforts in digitization of material in the regional languages (Here Bengali), in order to provide more resource inputs for higher education.

Methodology

- Comprehensive study of digitised materials at School of Cultural Texts and Records, Jadavpur University and Centre for the Study of Social Sciences (CSSS), Kolkata. These institutions are selected as they have ongoing digitization initiatives and these are the pioneering institutions in Bengal to introduce digital preservation of cultural materials.

- A survey of available online archives/ digital repositories available in public domain [like West Bengal Public Library Network, Society for Natural Language Technology Research (SNLTR),

Digital Library of India, E-Gyankosh of Indira Gandhi National Open University(IGNOU), Rare Bengali Book section in Internet Archive, Digital South Asia Library etc.]

- Conducted interviews of selected resource persons who have taken personal initiatives for digitisation from Jadavpur University and Visva Bharati University.

- Engaged in open discussion with students and research scholars from Bengali department of Jadavpur University, Visva Bharati University and a few suburban colleges. Also, few Students from History, Economics and Political Science departments took part in the discussions. The discussion mainly concentrated on the use of Bengali digitised materials in higher education. For the same purpose teachers of these departments were interviewed.

- Observed various Bengali blogs, scholarly magazines with ISSN No.

- A Survey of few online Private collections (Like Mukul Dey Collection).

Learnings/ Observations

Learnings/ observations are divided in to three parts--- a) Institution, b) online archives, repositories, websites and blogs, c) Bengali Digital Resources in Higher Education.

<u>InstitutionsSchool of Cultural Texts and Records, Jadavpur University</u>
<u>(http://www.jaduniv.edu.in/view_department.php?deptid=135)</u>

The school was established in 2003 as an inter-disciplinary school. "The School has a broad and open-ended agenda of documenting, processing and studying the textual basis (both verbal and audio-visual) of human society and cultural life in the widest sense." (From the official website of the SCTR, Jadavpur University)

The School has well-equipped project rooms with appropriate hardware and software support, as well as scanning, recording, filming and projecting equipments.The School has already finished three major digitization projects under the Endangered Archives Programme of the British Library (http://eap.bl.uk). The school is also collaborating with Indira Gandhi National Centre for the Arts. UGC and Sir Ratan Tata trust are helping to carry forward the digitisation efforts undertaken by the School.

The School is engaged in preserving unpublished manuscripts of renowned Bengali authors. These papers exist in the forms of diaries, notebooks or even bits and pieces of loose sheets of paper. The School has one of the most extensive collections (digital and physical) of modern Bengali literary manuscripts, including the work of Sudhindranath Datta, Buddhadeva Bose, Shakti Chattopadhyay, Badal Sircar, Jyotirmoyee Devi, Arun Kumar Sarkar and Sanjay Bhattacharya, and the correspondence of Sagarmoy Ghosh, the long-time editor of *Desh* magazine. It also holds some of the screenplays of Tapan Sinha and Dinen Gupta.

The School has digitized 3286 titles of books (ranging from 19th century to present day) and 78 titles of periodicals (ranging from 1902-1936). Digitisation has been done by in-house staff. They consider the rarity of the printed materials, national heritage and physical condition of the book as selection criteria for digitisation and produce digital images in several formats like TIFF, JPG and PDF file formats and prepare metadata following Dublin Core. Researches may look at these digitised materials by visiting School of Cultural Texts and Records.

The Endangered Archives projects include an extensive digitised collection of popular 'street literature' and early Bengali drama. The School also has digitised texts in Sylhet-Nagri script, which is currently a dead script.

The School has digitised Street literature marketed through entirely different channels for a different readership; through the small bookshops, through hawkers on roads, buses and trains, and at village haats (temporary markets).The digitised collection of street literature (EAP-127) contains material covering various areas such as:

- Religion
- Folk culture,
- Local history,
- Popular literature
- Pornography and erotica
- Instruction on traditional rural pursuits such as agriculture and animal farming
- Instruction on technical occupations such as repairing machinery and appliances
- Citizen's rights,
- Law, government procedure,
- Public hygiene and social reform
- Guidance for household chores
- Teaching English
- Lyrics of popular songs in Bengali

A large number of cinema booklets and theatre booklets are also a part of this collection. Some rare and unusual type of materials is to be found in this collection:

a) Islamic kissa books b) Oriya books written in Bengali script, from Nihar Press, Kanthi (Contai).

These books are of unique sociological interest for culture studies, illustrating a changing society, culture and economy of Bengal at popular level. They illustrate a significant sector of Bengali print history and book trade and special developments of the Bengali language. In total 2,980 titles have been digitised comprising 96,973 images. All the digitised texts are organised after the name of the donors.

A wide collection of rare and unique texts on Bengali drama held by a private collector, Dr Devajit Bandyopadhyay was digitized as a project (EAP-261). Many of the texts are made unique by virtue of the signatures, marginalia, or other manuscript insertions. The collection covers the 19th and early 20th century's texts of:

- Formal Bengali drama on Western models
- Texts of jatra or traditional Bengali folk theatre,
- Books of songs from plays with notations
- Journals/ periodicals
- Autobiography of theater personalities

For the researchers of Bengali drama, these documents are invaluable. In total 249 titles have been digitised and listed, some of them multi-volume, making a total of 385 volumes and a total of 112,174 images.

SCTR has a rare collection of texts in Sylhet-Nagri script. The script evolved between the fourteenth and the seventeenth century as a simple alternative to the standard Bengali script and widely used in north-

eastern Bengal. EAP-071 managed to locate and digitise 103 texts, organised after the name of the donor. The texts can be broadly split into five subject categories:

- Metaphysical and spiritual
- Islamic rituals and code of conduct, including lives of the Prophet and saints
- Love songs and love stories
- Social issues within Muslim society
- Commentaries on natural disasters and social calamities

Bichitra Project--'Bichitra' is an online collection of Rabindranath Tagore's entire corpus of writings. This is a revolutionary digitisation project carried out by School of Cultural Texts and Records. 'Bichitra' provides a complete online resource of Tagore's works in both English and Bengali with its chief components including digital images of all available manuscripts and all important printed versions totaling 47,520 pages of manuscripts and 91,637 pages of printed books and journals. There are also a search engine to locate words and phrases in Rabindranath's works, a collation engine to compare different versions of a work at three levels: chapter (in a long prose work) or act/scene (in a play); paragraph (in prose) or stanza (in verse) and an electronic bibliography of all authoritative manuscript and print versions of each work.

Centre for Studies in Social Sciences, Kolkata (http://www.cssscal.org/index.html)

This Centre has played an important role in research in social sciences in India since its inception in 1973. In the year 1993 the Centre undertook a programme of preserving textual and visual documents in microfilm format from public libraries and archives as well as from private collections and brought these together in a single and unique archive on colonial Eastern India, mainly on history of society and culture of the region.

Under the Endangered Archives Programme of the British Library, the Centre has digitised printed books and periodicals from eight public libraries (published before 1950) in the districts of Howrah, Hooghly, North and South 24 Parganas, all located in semi-urban and rural areas within the proximity of Calcutta. The project copied 3,116 books from five libraries, consisting of 732,889 images and about 14 terabytes of digital data.

In 2008 the CSSSC and Savifa (University of Heidelberg) initiated a collaborative programme which intends to make available the collection of CSSSC online. The early printed literature in Bengali from 1800-1950 accumulated under Hitesranjana Sanyal Memorial Archive and the Urban History Documentation Archive (http://www.savifa.uni-hd.de/thematicportals/urban_history.html) have been uploaded under this collaboration. This digital archive comprises Bengali periodicals and rare Bengali books from Eastern India printed from the inception of printing and till 1950s and advertisement and commercial arts in Bengali from 1800 to 1950.

After initial maintenance of documents in microfilms, the centre started digitising documents to facilitate easier access, wider dissemination and better preservation of the master–negatives. Though microfilming was their initial way of preservation but the image was not upto the mark and it was 1bit film .The companies which provided microfilm like Akfa and Fuji were closed by 2003.Only Kodak continued the business. All these factors forced them to start digitization.

These are the projects undertaken by the Centre under the Endangered Archive Programme:

EAP188: Rescuing text: retrieval and documentation of printed books and periodicals published prior to 1950 from public institutions in Eastern India.

EAP262: Retrieval of two major and endangered Bengali newspapers: *Jugantar*(1937-1980) and *Amrita Bazar Patrika*(1872-1890;1892-1905;1911;1919) from colonial and post–colonial Bengal. *Amrita bazaar patrika* is available online through World Newspaper Archive Collection.

EAP643: Shantipur and its neighbourhood: Text and images of early modern Bengal in public and private collections. This is a pilot project to document available non-copyrighted and endangered literature from private collections and public institutions in the district of Nadia, Shantipur, the old cultural hub in pre-colonial Bengal has started for future digitization purpose. Nadia district was the birthplace of Shri Chaitanyadeva, founder of the Vaishnav religion. A large amount of documents on Vaishnavism, biographies and family histories of Vaishnavaite leaders, printed literature on caste and identities then available. Researchers can also trace the history of Sanskrit learning, various small tols (Place of Sanskrit learning) and destruction of such indigenous tradition through colonial advancement.

The centre thinks that poor storage conditions make the fragile printed books endangered and hence the priority for digitisation is based on more vulnerable libraries and digitising non-fiction documents first. Following Indian Copyright Law, 1956, they mostly digitise and give open access to printed materials before 1956.

A detailed list of Hitesranjana Sanyal Memorial Archive (Available online):

Early Bengali periodicals and newspapers

- Abodhbandhu
- Adhuna
- Adrsta
- Agragati
- Ahankara
- Aitihasik Citra
- Ajnatabasa
- Akhara
- Alinda
- Al Muslim
- Alocana
- AlokaAsara
- Anagha
- Anarya
- AnaryaSahitya/AnaryaSahityaNabaparyaya
- Anbartha
- Andhayuga
- Anjali
- AnkaBhabana
- Antahpura
- Antaripa
- Anubhaba and Anubhabana baparyaya
- Anubiksana
- Anuraga
- Anusandhana
- Anusilana
- Anusilana (BandhabSamiti)
- Anusilana o purohita
- Anyadina
- Anyarakama
- Aranya
- Arati
- Arbacina
- Aryadharma Pracaraka
- Arya-prabara
- AryakayasthaPratibha
- Arunodaya
- Aryadarshan
- AsthiMajja
- Atandrapatha
- Atbara
- Atithi
- A-Ye Ajagara
- Baisakhi
- Bamabodhini Patrika
- Bandhaba / BandhabaNabaparyaya
- Bangabani
- Bangalaksmi
- Bangamahila
- Bangadarsana

- Bangasri
- Basana
- Basantaka
- Bedabyasa
- Begam
- BetaraJagat
- BharataBhrtya
- Bharatabarsa
- Bharata-mahila
- Bharati
- Bhisak-darpana
- Bhramar
- Bibha
- Bibhaba
- Bibidharthasamgraha
- Bicitra
- Bijali
- Bijnanadarpana
- Binapani
- Birbhumi / BirbhumiNabaparyaya
- BisnupriyaPatrika
- Calcutta Police Journal
- Caturanga
- Chatraphedaresanabuletina
- Chittarangini
- Chitta
- Choltana
- Cikitsa-sammilani
- Cikitsaka
- Cikitsaka o samalocaka
- Citradarsana
- Citrali
- CuncuraBartabaha
- DaridraRanjana
- Darsaka
- Dasi
- Ganabarta
- Gana o galpa
- Ganasakti
- GarhasthyaBijnana
- Government Gazette
- Grhastha
- Grhasthali
- Grhasthamangal
- HalisaharaPatrika
- Hanafi
- HarabolaBhanda
- Hindu-patrika
- Jagajjyotih
- Jahnabi – MasikaPatrika
- Jahnabi – MasikaPatrika o samalocani
- Janayuddha
- Janmabhumi
- Jayasri
- Jibanu
- Jnanankura / Jnanankura o Pratibimba
- Jyotiringana
- Kabita
- KancraparaPrakasika
- Karmayogin
- Karnadhara
- Kayasthapatrika / Kayasthapatr
ikanabaparyaya
- KayasthaSamaj
- KhadyaUtpadana
- KhrstiyaBandhaba
- Kishalaya
- KlaibStrit
- KrsiSampada
- Krsi-Tattva
- Krsak
- Madhyastha
- Mahajanabandu
- Mahila
- Malanca
- Manasi
- Mandira
- Manjila
- Marmabani
- MasikaBasumati
- MasikaPrakasika
- Matamata
- Mohammadi
- Moslema
- Mujaheda
- Mukti
- Nababarsiki
- Nababidhana
- Nabajibana
- Nabasakti
- Nabayuga
- Nabyabharat
- Narayana
- Nirmalya
- Nirupamapuraskara
- PaksikSamalocaka
- Pallibasi
- Palli-sri
- Pancapuspa
- Pantha

- Paricarika
- ParicarikaNabaparyaya
- Paricaya
- Parikatha
- Party Cithi
- Pascimbangapradesika
- Patrika
- Paygama
- Prabarttaka
- Prabasi
- Pracara
- Pracaraka
- Pradipa
- Prakriti
- Prayasa
- Punya
- Purbabasa
- Purbbasa
- Purnima
- RabibarerLathi
- Rahasyasandarbha
- Ramadhanu
- Rangmashal
- SabujaPatra
- SacitraSisira
- Sadhana
- Sadharani
- Sahitya
- Sahityakalpadruma
- Sahityaratnabhandara
- Sahityasamhita
- Sakha
- Samacaracandrika
- Samacaradarpana
- Samadarsi
- Samakalina
- Samalocani
- Samasamayika
- Sambada
- SambadaPrabhakara
- Sambadapurnacandroday
- Sambadabhaskara
- Sancayana
- Sandesa / SandesaNabaparyaya
- SanibareraCithi
- Saogata
- Saptahikasangathana
- Saptahikasaogata
- Silpapuspanjali
- Siksa-samacara
- Silpa o sahitya
- Sisu
- Somaprakasa
- Sucinta
- Sundaram
- Suprabhata
- Svadesa
- Svadhinata
- Svasthya
- SvasthyaSamacara
- Taohida
- TamolukaPatrika
- TarunaraSbapna
- TattvabodhiniPatrika
- Udayana
- Ugraksatriya
- Unmocana
- Utsaha
- Uttara
- Yamuna

Early Bengali Books (1800-1850)

- Bandyopadhyaya, Bhabanicarana (1823) *KalikataKamalalaya.*
- Basu, Rama Rama (1802) *Lipi Mala.*
- Marshman, John Clark (1840) *Bharatabarseraitihasa.*
- Pandita, Naryana (1830) *Hitopadesa.*

Early Bengali Books (1851-1900)

- [Andersen, Hans Christian] (1857) *Marametaarthatmatsya nariraupakhyana.*
- [Anon.], (1863) *Jayabatiraupakhyana.*
- [Anon.], (1863) *Jayabatiraupakhyana.*
- [Anon.], (1878) *Kamini o mrnmayi.*
- [Anon.], (1858) *Mahammaderajibanacari tra o mahammadiyarajyerapurabrtta.*
- [Anon.], (1886) *Rajalaksmi-adarsana.*
- [Anon.], (1890) *Sunitiraprema.*
- [Anon.], (1873) *Tarabati.*
- Balmiki, (1854) *Balmiki-Ramayana :adikanda.*
- Bandyopadhyaya, Yogendranatha (1886) *Atmotsargabapra tahsmaraniya-caritamala.*
- Bandyopadhyaya, Krsnadhana (1865) *Cineraitihasa.*
- Bandyopadhyaya, Candrasekhara (1883) *Gangadhara-Sarmmaoraphejatadharirarojanamaca.*
- Bandyopadhyaya, Kunjabehari (1871) *KabitaKusumabali.*
- Bandyopadhyaya, Rangalala (1879) *Kancikaberi, utkala-desiyabira-rasatmakaakhyana-bisesa.*
- Bandyopadhyaya, Rangalala (1871) *Padminiupakhyana. Rajasthaniyaitihasabisesa.*
- Bandyopadhyaya, Nabinacandra (1851) *Sarabali.*
- Basu, Dinesacarana (1876) *Kabikahini.*
- Basu, Manomohana (1891) *Sati Nataka.*
- Basu, Phakiracanda (1871) *Ujiraputra.*
- Bhababhuti, (1859) *MalatiMadhaba.*
- Bhattacarya, Krsnakamala (1862) *Bicitrabirya.*
- Bhattacaryya, Nandakumara (1863) *Jnanasaudaminiar thatbalasiksapayoginipustika.*
- Bidyabagisa, Muktarama (1854) *Sabdanbudhi.*
- Bidyapati, (1898) *Bidyapati: bangiyapadabali.*
- Bidyasagara, Isvaracandra (1852) *Jibanacarita.*

- UNSPECIFIED, Hrsg. (1858) *Manoranjanaitihasa: arthatbalakadigerajnanadayaka o nitisiksakaupakhyana.*
- UNSPECIFIED, Hrsg. (1880) *Caritastaka: prathamabhaga.*
- Chattopadhyay, Bankimchandra (1888) *Lokarahasya.*
- Caudhuri, Tarinicarana (1862) *Manabhanjana.*
- Dasi, Sodasibala (1884) *Puspapunja.*
- Datta, Kedaranatha (1880) *Kalyanakalpataru.*
- Debi, Nabina Kali (1878) *Kirana Mala.*
- Debi, R.(1895) *Bhaba-bikasa.*
- Ghataka, Kalimaya (1885) *Sarbabani.*
- Ghosa, Ambikacarana (1868) *Bikramapureraitih asa: (pracina o adhunikabibarana).*
- Ghosa, Asvini Kumara (1869) *Debarabinda: nitigarbhakarunarasoddipakaadhbutaup adhyana.*
- Ghosa, Haracandra (1875) *Sapatnisaro: yatharthaghatanamulakaupakhyana.*
- Ghosa, Suryakumara (1880) *Abakasaranjana: gadyapadyamaya.*
- Goopto ,Issurchunder (1860) *Hita-Prabhakara.*
- Gupta, AmbikaCarana (1884) *Samsara sangini.*
- Gupta, Isvaracandra (1885) *Kabitasangraha: sambadaprabhakarahaitesamgrhita.*
- Gupta, Rajnikanta (1891) *Bhismacarita.*
- Kalidasa,(1870) *AbhijnanaSakuntalanat aka.*
- Kalidasa, (1868) *Bikramorbbasinataka.*
- Lethbridge, Ebenezer (1875) *Bangalarabhugola o itihasa.*
- Macaulay, Thomas Babington (1852) *Lard Klaib.*
- Maitreya, Aksayakumara (1883) *Samara Simha.*

- Mitra, Bipinabihari (1879) *KalikatasthaSobhabajara-nibasi Maharaja NabakrsnaDebaBahadurereajibana-carita.*
- Mitra, Dinabandhu (1873) *Kamalekamini: nataka.*
- Mitra, Kanailala (1883) *Smrtipata o kamalekamini.*
- Mitra, Katyayanicarana (1874) *Purusa-prabodhini.*
- Mitra, Upendracandra (1879) *Nana Saheba. Ba Brtisagaurabarabibharatagagane.*
- Modaka, Yadabacandra (1870) *Stripurusetirthayatra.*
- Mullens, Hannah Catherine (1867) *Bisvasabijaya.*
- Nandi, Sitanatha (1884) *Bangagrha.*
- Niyogi, Gaurinatha (1872) *Asa-maricika.*
- Parasaramuni, (1862) *Krsisamgrahah.*
- Rayacaudhuri, Parbatisankara (1877) *Adisura o Ballalasena: Ambasthajatiyanrpatidigeraaitihasikabibarana.*
- Raya Caudhuri, Bhubanamohana (1863) *Chandahkusuma.*
- Raya, Dvarakanatha (1863) *Prakrta-sukha. Arthatprakrta-sukhaki, ebamtallabheraupaya-sadhakaamitraksarakabya.*
- Raya, Gajapati, Hrsg. (1872) *Aitihasikanabanyasa: angakhanda.*
- Raya, Kali Prasanna (1883) *Laghucaritamanjari.*
- Raya, Sibanatha (1855) *Bidhababibahanisedhabyabastha.*
  Early Bengali Books (1901-1950)
- Adhya, Biharilala (1903) *Adbhutadurgotsababasamaja-kalanka: madanamanjarinataka o kailasakusumagitinatya.*
- Basu, N pendrakumāra (1946) *Kaibakathakanekane.*
- Basu, N pendrakumāra (1953) *Yaubanerayadupuri.*
- UNSPECIFIED, Hrsg. (1871) *Saksat-darpana.*
- Senagupta, Kaliprasanna (1868) *Baisayikabyabahara.*
- Sena, Nabinacandra (1877) *Palasirayuddha.*
- Sena, Ramadasa (1867) *Kabitalahari.*
- Siromani, Bharatacandra (1867) *DattakaSiromanih : BharatavarsiyahindusamajapracalitaDattakamimamsa, Dattakacandrika, Dattakanirnaya, Dattakatilaka, Dattakadarpana, Dattakakaumudi, Dattakadidhiti, Dattakasiddhantamanjarinamakasuprasiddhadattakagrahanavyavasthapakagranthastakanikhilasarasamgrahah.*
- Siromani, Raja Ballabha (1864) *Griserapurabrtta: pracinakalahaiteRomanadigeraadhikara paryyanta.*
- Sudraka, (1871) *Basantasena.*
- Tarkacuramani, Yogindranatha (1879) *Kananakatha.*
- Thakura, NatendraNatha (1878) *Indubala.*
- Visakhadatta, (1871) *Mudraraksasanataka.*

- Bhattacarya, Ramakali (1918) *Adbhutaupanyasa.*
- Bidyapati, (1904) *Purusa-Pariksa.*
- Dasi, Sakuntala (1903) *Kanaka o Nalini.*
- Gupta, Dvarikanatha (1922) *Hemaprabha.*
- Mukhopadhyaya, Bhubanacandra (1904) *Bangarahasya (nutananaksa).*
- Nyayaratna, Ramagati (1922) *Bangalabyakarana.*
- Sarakara, Biharilala (1907) *Imrejerajaya: ba "Arakata-abarodha" o "Palasi".*

Online Archives, Repositories, Websites, Blogs

National Library, Kolkata (http://www.nationallibrary.gov.in)

The National Library has the enormous collection of books, journals, manuscripts and documents that have piled up since its inception as Calcutta Public Library in 1836. In its digitization project titled "Down Memory Lane", some 3.2 million pages were digitised at National Library. The third phase of digitisation of select materials has started in October 2011 and it will cover almost 2 million pages. Almost all Bengali books before 1914 have been digitized. Almost 4,53,503 pages(1653 Bengali books published upto 1900) have been digitized and uploaded in the local server for readers' use.

West Bengal Public Library Network (http://www.wbpublibnet.gov.in)

This digital Repository is an important effort of making available digitized books in an indic language like Bengali online. It was established using popular content management software (CMS), DSpace. It provides access to more than 10,000 digitized rare books of which 80% are in Bengali. This repository provides open access web portals to facilitate web-based visitors make use of these unique collections. This repository was created by 'Heritage Preservation Unit' of West Bengal State Central Library with a technical collaboration with C-DAC Kolkata. C-DAC has digitized significant number of rare books, available with State Central Library and its associated libraries. Books are available in PDF format and freely downloadable. This repository also provides access to digitized government publications and gazettes. A partial set of metadata is available in Bengali. The texts are categorized under following themes:

- Generalities [964 titles]

- Philosophy & Psychology [423 titles]

- Religion [739 titles]

- Social Sciences [969 titles]

- Language [90 titles]

- Natural Sciences & Mathematics [397 titles]

- Engineering [791 titles]

- Arts [73 titles]

- Literature and Rhetoric [3511 titles]

- Geography, Travel and History [1787 titles]

Digital Library of India (DLI) (http://www.dli.ernet.in)

It is the biggest national digital library initiative in India. The DLI project was initiated in 2002, with motivations from the Universal Digital Library project. The digitisation of materials for this initiative is carried out in a number of organizations spread all over India, including 20 mega scanning centers. A large number of Bengali books are available here. In DLI portals, Indian language full-text contents are available in TIFF image format only. The user has to download free software to view digitised books online. Research team of DLI project has tried to develop OCR technologies for Indic languages on experimental basis using corpora of scanned images of Indian language documents. C-DAC, one of DLI project partners, has recently launched Chitrankan OCR software for Devanagari and Bengali scripts. DLI does not provide metadata in Indian languages like Bengali. Metadata for Indian language books is entered in transliterated form. It has almost 25117 books with 7865589 pages in Bengali.

Internet Archive (https://archive.org)

Internet archive is a non-profit digital library which has a mission of "universal access to all knowledge". It provides a platform for uploading digital materials. The initiative was taken in 1996 and Internet Archive is a member of International Internet Preservation Consortium. Some rare Bengali books are available here:

- Abadhut, *UddharanpurerGhat* (a Bengali novel)
- [Anon.] *Nader Nimai*
- Bandopadhyay,Bibhutibhushan *ChanderPahar*
- Bandyopadhyay ,Rakhaldas *BanglarItihas Part 1*
- Bandyopadhyay,Rakhaldas *BanglarItihas Part*
- Chattopadhyay, Pramod Kumar *Himaloy Pare Kailash O ManasSarobar* (A travelogue)
- Chattopadhyay,Promodkumar *PrankumarerSmiriticharan* (autobiography)
- Chanda, Rani *Alapchari Rabindranath*
- Chanda, Rani *Gurudeb*(A book on Tagore)
- Choudhury,RadhanathDutta *BibahaRahasya*
- Dey,Panchkari *JibanmritaRahasya* (An adventure novel)
- Dhar,Dhirendralal *Amar DesherRupkatha*(Fairy tales for children)

- Guha,Rajanikanta *MegasthenesEr Bharat Bibaran*
- Kabiratna ,Shyamacharan *MahanirbanTanra*
- Mitra ,Bimal *SahebBibiGolam*(A popular novel)
- Mukhopadhyay,Harisadhan *KalikataSekaler O Ekaler*
- Raha, Sudhindranath *BanglarBoma* (DetectiveNatok)
- Roy, Dinendra Kumar *JalMohanta* (A novel)
- Roy,Hemendra Kumar *AdhunikRobinhood*(About detectives and criminals)
- Roy,Hemendra Kumar *Amrita Dwip*(Adventure novel)
- Sen, BhaiGirishchandra trans. *Koran Sharif*
- Sen,Dineshchandraed.*GobindaDaserKa rcha*
- Sen, Surendranath *Prachin Bangla PatraSankalan*
- Sripantha, *Thagi*
- Tagore,Abanindranath *Apon Katha*

- (Autobiographical book)
- Tagore,Abanindranath *Gharoya*(An autobiographical book)
- Tagore,Satyendranath *Amar Balyakatha O Amar BombaiProbas*

- Tagore, Satyendranath *BombaiChitra*(A memoir)

Digital Library of South Asia (http://dsal.uchicago.edu)

'The Digital South Asia Library provides digital materials for reference and research on South Asia to scholars, public officials, business leaders, and other users. This program builds upon a two-year pilot project funded by the Association of Research Libraries' Global Resources Program with support from the Andrew W. Mellon Foundation. Participants in the Digital South Asia Library include leading U.S. universities, the Center for Research Libraries, the South Asia Microform Project, the Committee on South Asian Libraries and Documentation, the Association for Asian Studies, the Library of Congress, the Asia Society, the British Library, the University of Oxford, the University of Cambridge, MOZHI in India, the Sundarayya Vignana Kendram in India, Madan Puraskar Pustakalaya in Nepal, and other institutions in South Asia.' (From the official website of Digital Library of South Asia). Small numbers of educational Bengali texts including Bengali dictionaries and pedagogical books for Bengali language teaching are available for reference and research. There is also bibliography and catalogues of South Asian books including books in Bengali.

International Institute of Social History (http://socialhistory.org/en/collections/bengal-collections--%20http://socialhistory.org/en/collections)

Since 1996 the International Institute of Social History has been actively collecting material on the social history of Bengal.The Communist Party of India (Marxist-Leninist) collection contains letters from prison by Charu Majumdar (leader of the party during the Naxalbari uprising of 1967) to his wife Lila.

Blogs- There are some blogs on the web where free digitised Bengali books are available for download. Most of these bloggers didn't digitise these books by themselves but found these books from some unknown sources (Often one blogger copies from others' blogs or websites).These blogs mainly upload popular Bengali story books by authors like Sunil Gangopadhyay, Sirshendu Mukhopadhyay, Samaresh Basu, Buddhadev Guha, Humayan Ahmed. A few blogs also upload books in Bengali on 'How to Cook', 'How to learn Computer' etc. A large number of English detective stories and comics are also available in Bengali translation. A high contribution of Bangladeshi people in this field is one significant point (See Annexure).

E-Gyankosh (http://www.egyankosh.ac.in)

E-Gyankosh of Indira Gandhi National Open University (IGNOU) provides full-text access to digitized course materials in Indian languages, although majority of IGNOU course materials are available in English. About 1% of its materials are in Hindi and other regional languages including Bengali.

Private Collection of Mukul Dey (http://www.chitralekha.org)

Indian painter-engraver Mukul Chandra Dey (1895-1989) was an important personality of his time. A student of Rabindranath Tagore's Santiniketan School during the early years of the 20th century (C.E. 1906-1912), he left his mark as a pioneer of drypoint-etching in India. He was also the first Indian principal of Government School of Arts, Calcutta (1928-1943). Mukul Dey deserves to be remembered not only as an eminent artist but also as an art collector. Passionately interested in the various forms of folk arts and crafts, as well as the works of his contemporary Neo-Bengal School artists, he was an intrepid collector. For researchers of art history and cultural history of the period, his collection can be a good entry point. A detailed online catalogue is available. But the materials are not accessible via web. There are few materials in Bengali on period newspaper clippings of art exhibitions, old art exhibition catalogues, magazines of art school students ,original correspondence and manuscripts, reminiscences on Tagore and Indira Debi Chaudhurani and other materials related to Rabindranath Tagore's first solo exhibition in India, 1932. His relatives who now run the archive are very eager to digitise all these documents.

Bengali Digital Resources in Higher Education

After long discussion with students (Undergraduate, Postgraduate and Research scholars) and teachers of Bengali Department, this project also tried to figure out the situation of the use of digital resources in higher education.

Most digitised books are available on free blogs are popular story books and hence scarcity of scholarly materials in Bengali for higher education is evident. Most of the students do not know where to search and how to search and they prefer to visit libraries. In suburban and rural colleges students (in many cases, first generation learners) do not really search for academic materials on net and teachers are also reluctant to use digital tools and material due to lack of proper infrastructure.

Those engaged in postgraduate studies and pursuing research are willing to use digital resources but they are often disheartened due to scarcity of materials. Recently a few scholars started uploading essays in Bengali on Academia.edu. But teachers are doubtful about the quality of these materials as anyone can upload papers here. E-thesis depository spaces like Shodhganga (http://shodhganga.inflibnet.ac.in/) and Vidyanidhi (http://eprints.uni-mysore.ac.in/4778/) contain materials in English and a few in regional languages like Hindi but not in Bengali. In the Directory of Open Access Journals –DOAJ (http://www.doaj.org/doaj?func=byCountry), there are 596 journals published from India. But there are only two bi-lingual journals which publish articles in Bengali. One is Barnolipi (ISSN/EISSN: 22492666). But it existed for only one and a half year and it is no more available online. The other one is Pratidhwani-the Echo (ISSN/EISSN: 22785264). It has started its journey from 2012 and it is an initiative of Karimganj College, Assam.

In most of the cases it is found that students are not aware of scholarly resources mentioned in the previous section. Researchers in Bengali language often use English e-resources for their individual purposes. Teachers are unanimous in the belief that online publication of Bengali research articles will bring more research citations and also decrease the rate of duplicity of same research topic. But scarcity of open access Bengali materials (digitized and born digital) online is a great hindrance in doing research in Bengali. On the other hand Students of History and Political Science and Economics expressed in a sentence that they do not find materials in Bengali language in the web-domain for their subjects. When

the resources (mentioned in previous section) were introduced to them, they shared many technical challenges they faced due to slow internet connection, dead links, unavailability of pages etc.

But deficiency of Bengali materials is always not the case. Often it is the older mindset of people and lack of awareness that keeps them obsessed with traditional modes of learning in libraries and archives. There are almost 17000 entries in the domain of Bengali Wikipedia. But either students are unaware of the existence or don't rely on these materials as these are not updated. Most of them are even unaware of the fact that they can edit these pages. Researchers in Bengali language and literature may also come forward to participate actively in digitising rare materials. Of course funding and technical equipments are great hindrance but institutions like School of Cultural Texts and Records, Jadavpur University are eager to provide scanners and other things who want to digitise important cultural resources.

Presently concept of online Bengali bookshops has emerged. Large numbers of online e-magazine and e-newspapers in Bengali are growing day by day. What we need is spreading the news of existence of these resources. Otherwise these will be limited to people outside Bengal who has no access to hard copies. It is a positive step on the part of people who are using social networking sites in Bengali and often bringing out creative magazines online to reach a greater audience.

Students and researchers from Bengali language background need to be trained in digital cultures, they should be encouraged to write online and create blogs online.

It is a fact that student and researchers have access to good quality of offline resources in Bengali but when it comes to rare books and other technical tasks like searching for a phrase quickly, digital resources can be consulted. There are websites—Bichitra (http://bichitra.jdvu.ac.in/index.php), the online Tagore variorum housed at School of Cultural Texts and Records, Jadavpur University and Society for Natural Language Technology Research (http://www.nltr.org/) that may introduce a new way in research in Bengali.

Problems

Metadata of Bengali digitised materials are mostly in transliterated form and not in Bengali. Hence searching in Bengali fonts often brings no result. People engaged in digitisation should be experts in handling Bengali standard key board like Avro. It should also be good if people engaged in digitisation of Indic languages join in workshops and build a common standard of Metadata. Rather than following Western forms like Dublin code it may be thought of an indigenous standard and code of metadata in Bengali.

Issue of Free Access and the question of copyright go hand in hand. A large bulk of digitised Bengali materials is available in the archive room of School of Cultural Texts and Records and Centre for Studies in Social Sciences. These cannot be uploaded online for free access due to copyright issues or the unwillingness of the contributors of original materials. Regarding problem of digitisation it is observed that most materials are fragile and digitisation tasks with scanner and other technological instruments often led to the destruction of the original material. Most donors are not willing to give their works to these institutions as often they think that it will diminish their own authority and researchers will go to the University directly and not to them. Often the donors can't trust the institutes and ask to digitise materials in their own home and return the original materials as soon as possible before they are stolen or lost.

We also need to think of preserving the large terabytes of data on one hand and original copies on the other hand.

Often external factors like funding are also a great problem. Most of the pilot projects carried out by these institutions is from the Endangered Archives Project of British Library. Priority of funding then often is set by these external funded bodies. It is still our postcolonial misery that our own indigenous cultural resources are being considered for preservation by the West.

Conclusion

Presence of Bengali in the digital domain is growing gradually due to various digitization efforts. But proper awareness and infrastructure are required to ensure the active participation from researchers, students and teachers. Such initiative has been undertaken by SNLTR (http://www.nltr.org/) which promotes research in Corpus Linguistics, Computational Linguistics and Natural Language Processing in Bengali. Among its primary goals are to create an archive of a fully Unicode-compatible Bengali literary corpus to be hosted and published online, as well as the creation of fonts that will help people type Bengali text easily. Their available online collections include--complete works of Rabindranath Tagore, Saratchandra Chattopadhyay, Bankim Chandra Chattopadhyay, Vivekananda; film scripts of Satyajit Roy's *Goopy Gyne Bagha Byne*. More digitization initiatives should be taken not only to preserve our sanctum cultural past but also to disseminate freely in the internet domain so that Bengali culture reaches out to global communities of scholars and enthusiastic book readers. A common repository of digitised materials in Bengali may also be imagined. The attempts of digitisation and attempts of creating born digital materials in Bengali are all scattered attempts. Everyday a lot many individual efforts are taken like creating an online collection of some Bengali poet's works or creating a blog like site where Bengali folktales are uploaded. But the irony is people are not taking any further step to enrich these sites/blogs. Institutional collaboration can be one way of bringing all digital materials in one single platform. But the individual initiatives should also be taken into consideration. Indian language centres especially need to be active in engagement with these concerns.

Annexure

Online Unicode compliant Bengali e-magazine

- Guruchandali (http://www.guruchandali.com)
- Ichchhamoti (http://www.ichchhamoti.in)
- Journey90s (http://www.journey90s.co.in/journey90s/index.php)
- Karnika (http://www.karnika.co.in/karnika/index.php)
- Maaskabari(http://www.maaskabari.com/maaskabari)
- Mukhomukhi (http://www.mukhomukhi.com)
- Notundesh (http://www.notundesh.com)
- Parabaas (http://www.parabaas.com)
- Sachalayatan (http://www.sachalayatan.com)
- Sristi (http://www.sristi.co.in/SRISTI/index.php)

Blogs

- amitbec05.blogspot.in
- banglabookpdf.blogspot.com
- banglaebooksclassics.blogspot.in
- Bengali ebookdownload.blogspot.com
- Bengali-ebooks-world.blogspot.com
- book24 u.blogspot.in
- ekblogboi.blogspot.in
- free-bangla-book.blogspot.in
- freebdbookpdf.blogspot.in
- Koel 1bd.blogspot.in

E-Newspaper

- Abasar (http://www.abasar.net/)
- AmaderMalda (http://www.aamadermalda.in/)
- Anandabazarpatrika (http://www.anandabazar.com/)
- BartamanPtraika (http://bartamanpatrika.com/)
- Bhorerkagoj (http://www.bhorerkagoj.net/new/)
- Daily DesherKotha (http://www.dailydesherkatha.com/)
- DainikJugasankhya (http://jugasankha.net/)
- EiSamay (http://www.epaper.eisamay.com/)
- Ganashakti (http://bangla.ganashakti.co.in/)
- Karmakhetra (http://bangla.ganashakti.co.in/)
- SamayikPrasanga (http://samayikprasanga.in/)

Open Access Journal

- Bornolipi (http://www.barnolipi.com/);Barnolipi Journal has been closed on September 23, 2013.
- Pratidhwani (http://www.thecho.in/)

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