

Preserving Manuscripts and Heirlooms through Digitization

Abhishek Jain

Department of School of Computing, Graphic Era Hill University, Dehradun, Uttarakhand, India
248002

Abstract

Library is the indispensable part of educational institution designed to serve educational, cultural, research, recreational information to the users. Libraries are the places wherever the complete information gathering takes place together with intellectual and our cultural heritage. The collections possessed by the library are affected by numerous environmental factors that ultimately results in irreparable harm to numerous collections. The information embodied in manuscripts is effective however materials used for this purpose cause a true challenge. These manuscripts have proof of facts, their accomplishments, thoughts, work they need done, theories then on, that are essential for human development. These guide the younger generations for ages and should be saved for each coming generations. This article provides a short define of preservation strategies adopted to protect the manuscripts and heirlooms. Preventive measures should be applied with caution and value effective manner. This study explores the current state of manuscripts and the necessary preservation measures, and it provides a strategy for digitizing these cultural assets of India as a means of rescuing them. Manuscript production in India, especially using the SORI method, is also covered in this work. Various institutions involved in archiving and preserving manuscript are also highlighted with historical backgrounds. Various efforts taken in preserving manuscript in digital format in India and abroad are also discussed.

Keywords: Digital Preservation, Manuscripts, heirlooms, indigenous methods

Introduction:

Manuscripts date back thousands of years and are most numerous in India. In addition to wrapping, natural product gathers, and other chemical-based methods, indigenous ways of preserving leafy green manuscripts have been reported by a number of researchers. Studies have also been conducted on the digitization of these manuscripts for passing on their wealth of wisdom to future generations.

While efforts have been taken to digitize these endangered documents and prevent deterioration due to factors such as biological, chemical and climatic conditions, digital archiving has not been centralized to enable the present generation of digital citizens of the world (also known as 'Millennials') to benefit. A handwritten manuscript will last much longer than a CD or film would. Manuscript preservation and collection have seen a resurgence in India as printed texts have become more widely read. The Government of India has made consolidated efforts in preservation and providing access to manuscripts through many Research Centres across India.

This article seeks to document the preservation of palm leaf manuscripts in India and to highlight the role that these institutions are playing in creating awareness about these cultural heirlooms for Millennials. There is a pressing need to preserve these manuscripts that have been beautifully expressed in the form of an idea, thought, and imagination for posterity. They leave an enduring sense of India's multiethnic society and its deeply established, generation-spanning body of knowledge.

The Rich Indian Heritage: India and its rich heritage spanning more than two millennia is a storehouse of manuscripts. Given the cultural diversity of India, there are manuscripts that have been preserved in all corners of the country in diverse languages, calligraphies, illumination, illustrations and materials. Communication is about sharing ideas, feelings and emotions with fellow human beings. It is with this intent that manuscripts came to be evolved forms of communication and, today, their preservation is a step forward in commemorating this form of communication in the annals of our cultural history.

Libraries and archive collections are an unparalleled resource for our history and culture, containing the wealth of human knowledge and artistic expression. From illuminated medieval manuscripts and historical documents to some of the earliest writings ever recorded, the bulk of material held in most collections is made of paper. The digital preservation paves ways to access documents easily if available on the web from any part of the world. Libraries, Archives and Museums are engaged in providing Library services to the academics, common citizen and also conserve and preserve the rare collections, manuscripts and Indigenous Traditional Knowledge

The Indian system. The primary function of archives is the long-term storage of significant government papers and public records that are reflective of the operation of a given administration across time. To preserve something is to keep it from deteriorating or to restore it to its original state. Books, archives, and museums are all trustworthy places to learn about a country's history and culture because of the wealth of information they contain. The Indian manuscripts constitute the world's largest and most diverse archive of written materials attesting to India's cultural richness and the presence of its many ancient civilizations. These manuscripts, written in a wide variety of Indian languages, may be found in a wide variety of locations around the nation, including monasteries, temples, museums, library systems, the homes of people, and a number of private organizations.

There are more and older manuscripts in India than everywhere else. In February 2003, the government of Indian Ministry of Culture and Tourism created a National Mission for Manuscript. The manuscripts frequently remain the only witnesses of a substantial number of texts that are still unedited and therefore unknown in any other form. This means that when the manuscripts disappear or are destroyed, their contents are lost forever, not only for scholars but also for the general interested public. The loss of these texts means that part of the diversity in the cultural and religious outlook of the peoples in the region will disappear with them. Within the religious and cultural traditions there is a tendency for small groups, with their own exegetic practices, to be regarded as deviant by the majorities who are informed by the transnational mainstream religious practices that are considered to be in agreement with 'modern times'.

Preserving the Ancient Manuscripts: Manuscripts refer to the written versions of documents. Every region of India has a history of producing manuscripts in one of our numerous languages. Latin "manus," meaning "hand," is the etymological ancestor of the term manuscript. The Oxford

Preserving Manuscripts and Heirlooms through Digitization

English Dictionary explains that the term "manuscribe" was used in Middle English to refer to handwriting as opposed to printing. There can be no doubt that a country's manuscripts are irreplaceable resources for reviving its own national culture. This reflects their contemporary society and provides a crucial bridge between scientific knowledge and cultural understanding. In addition to stone, iron, and copper encarvings, there are many more formats for manuscripts. These can also be found on vellum, paper, papyrus, cloth, and other similar materials. Humans have been a conduit for knowledge transfer for ages. In the past, knowledge was transmitted either verbally or via handwritten documents. Manuscripts facilitated diffusion prior to the advent of print technology; nonetheless, it was the advent of the electronic format that really marked the dawn of the information age. Manuscript writing is a laborious and time-consuming process that might take many months to finish. The use of images in certain manuscripts is seen as a significant asset. Multicolored ink borders, large fonts, and full-page images or text insertions were common design elements for these types of pages. Manuscripts may be unbound, bound, or in a codex. Both "paleography" and "manuscript logy" are terms used to describe the study of handwritten texts.

Scholarly Works on Preservation: Ross (2012) argues that the future generations will benefit greatly from the open access of rare manuscripts thanks to digital preservation.

According to Arora (2009), there are significant similarities between digital preservation and digitalization. The primary objective of digital conservation is to provide continued access to historically significant documents. 978-1-4799- 5532-9/15/\$31.00 IEEE's 4th International Conference on New Technologies for Libraries and the Information Profession 2015 Very little trouble reaching 272. Libraries in India have prioritized the digitization and protection of rare manuscripts since 1980 so that they may get access to electronic materials and services. Devi (2008) in Manipur, they are losing priceless texts because to deterioration and carelessness. These challenges may be overcome with the use of cutting-edge technology. Libraries are able to do more than only house and preserve priceless manuscripts because to digitalization, which also makes them available to the public.

According to Varatharajan & Chandrashekara (2007), numerous institutions in India have begun engaging in digital library operations. Although India has made great strides in preserving its rich cultural and traditional resources, there are still many priceless manuscripts and books composed on palm leaves that have yet to be digitized.

Rare artifacts should be digitally conserved so that we can protect them from destruction and use cutting-edge methods to ensure they are kept in their original form, as argued by Maniatis, Roussopoulos, Rosenthal, and Baker (2005) in the LOCKSS friend to peer online preservation system.

Herbs and natural products, as stated by Sahoo and The author in the Government journal of Orissa, have been utilized in the past to preserve priceless manuscripts and should be employed in the future as well.

Need for Digitization of Manuscript: Over the past ten years, technological advancements have been rapid. Digitization is the process by which a centralized information storage facility manipulates a digital resource, such as a document, picture, or sound file, that resides in a decentralized network. Accessibility and long-term preservation both benefit from digitization. Manuscripts may only be shared with other communities if they are digitized and made available

online. According to research carried out by Dr. S. C. Biswas as well as Mr. M. K. Prajapati, who examined over 1,100 printed catalogs and manual records from 70 libraries, organizations, and individuals, there are five million Indian manuscripts and sixty thousand Indian writings available in European countries. It is believed that there are between 1,50,000 and 1,000,000 Indian texts preserved in catalogues throughout South Asia and Asian countries. Sanskrit accounts for an estimated 67% of all manuscripts, Arabic for 8%, and other Indian dialects for 25%.

The Mission is a one-of-a-kind initiative with the goal of recovering and protecting India's extensive manuscript heritage. India is home to the biggest known collection of manuscripts, estimated at 10 million. Many different scripts, languages, calligraphies, illuminations, and illustrated styles are represented here. To recap, the goals are:

- a) Locate manuscripts through national level Survey and Post-Survey.
- b) The India National Electronic Database now has data on four million manuscripts, making it the largest database of its kind dedicated to Indian texts in the world; b) document every manuscript and document repository.
- c) Conserve manuscripts incorporating both modern and indigenous methods of conservation and training a new generation of manuscript conservators.
- d) To train the next generation of scholars in various aspects of Manuscript Studies like languages, scripts and critical editing and cataloguing of texts and conservation of manuscripts
- e) To promote access to manuscripts by digitizing the rarest and most endangered manuscripts
- f) To promote access to manuscripts through publication of critical editions of unpublished manuscripts and catalogues.
- g) To facilitate public's engagement with manuscripts through lectures, seminars, publications and other outreach programmes.

Manuscript is the wealth and heritage of our culture, history, language, literature and of course civilization and; it could be the better source of knowledge. Manuscripts constitute an important part of the rich Indian Cultural Heritage. These are the major repositories of the contribution that our predecessors made in the diverse fields of religion, philosophy, astronomy, literature, history, medicine and science. Manuscripts, in contrast to printed books and other mechanical reproductions, are prepared by hand. According to www.wikipedia.in, the word "manuscript" comes from the Old Latin word "manuscriptum," which meant hand written writings. Whether it's written on growl, cloth, metal, palms leaf, paper, or anything else, if it has important scientific, historical, or artistic significance, it's considered a manuscript. There are hundreds of distinct scripts and languages used for manuscripts. (www.indianetzone.com). Manuscripts of modern period also refer to autographs, correspondences and type written materials. The manuscripts have a long history of its existence. A "manuscript" is defined as "a book or paper written by pen before the introduction of printing" (Allied Chambers (India) Private Limited, 2000) by the Chambers Dictionary. As a result, all pre-print forms of writing are considered manuscripts. Manuscripts, as contrast to books that are printed on paper, refer to any written work that is not typed.

Types of Manuscripts

There are several different types of manuscripts:

- a) Palm leaf
- b) Birch Bark Sanchi Pat
- c) Bamboo Leaf
- d) Banana Leaf
- e) Bhoj Patra
- f) Cloth, Parchment, Ivory, Metal (Bronze, Copper, Gold etc.)
- g) Paper Factors

Responsibility for Deterioration of Archival Materials

- ✓ **Geographical are:** Humidity, temperature, light, and darkness levels, and precipitation all have a role.
- ✓ **Biological Factors are:** Pests such as ants, cockroaches, silverfish, lice, fungi, mold, rats, and so on.
- ✓ **Natural Factors are:** Flooding, quakes, fires, and eruptions are all examples of natural catastrophes.
- ✓ **Human factors are:** Practices for the Conservation of Manuscripts include taking special care with records to prevent damage or loss in the event of an invasion, war, terrorist attack, or other catastrophic event.

Environmental Controls are necessary to facilitate the preservation of organic library materials with respect to temperature, humidity, sunlight, dust, acidity, pollutants etc. Biological controls come into play when the archives and manuscripts get affected by fungi, moulds, silverfish, beetles, bookworms, termites, rodents and other biological agents when they are moist and hot.

Techniques for Preservation of Manuscripts: An ancient manuscript paper of the past is the value of a nation's civilization. Preservation of manuscripts generally means managing collections from deterioration and ensuring continuous availability. Preservation can help keeping the artifacts long lasting without damage and ensure the digital recording and collection of artifacts in the rapidly changing technological era. Damages due to natural agents will continue but can be minimized by controlling the external agents.

Aims of Preservation:

- a) To provide worldwide accessibility and 24X7 access.
- b) Preservation Strategies
- c) Refreshing

- d) Migration
- e) Replication
- f) Emulation
- g) Metadata Attachment
- h) Trustworthy Digital Objects
- i) Microfilming of Traditional Knowledge;
- j) Digitalization and Digital Preservation.
- k) Centrally Air –Conditioned building of Libraries, Archives and Museums conducive for the documents and manuscripts, artifacts etc. Indigenous

Material for Preserving Manuscripts

- a) Pieces of Vasambu, meaning dried ginger, are preserved in manuscript bundles to ward off insects.
- b) To protect the cloth-wrapped manuscripts from insects, dried and powdered Aswagandha leaves are stored nearby.
- c) Lemon-grass oil coatings are applied on the leaves of books to fortify them and kill any microbial growths.
- d) Vermillion or kumkum fruit dust (both red in color) is used as an effective mosquito repellent in certain libraries.
- e) Palm leaf manuscripts may be made flexible again with the use of oil extracts from several natural ingredients like black spice, sandal wood, or clove.
- f) Manuscript libraries might benefit from the insecticidal capabilities of a blend of neem laves, karanja, nirgundi, and citronella.
- g) Ants and cockroaches are also deterred by mint leaves.
- h) Many libraries sprinkle the floors with powdered sandalwood to kill insects.
- i) The antiseptic properties of turmeric paste applied to seasoned palm leaves are widely recognized.
- j) The strong fragrant scent of black cumin (Kala Jeera) is utilized as an insect repellent. The seeds may be scattered about the area where the manuscripts are kept to deter pests.

Traditional Knowledge of Conservation

The vital problems include:

1. Shortage of funds,

Preserving Manuscripts and Heirlooms through Digitization

2. Deficiency in technical competence
3. Poor support systems.
4. There is no formal method for preserving and documenting indigenous knowledge and practices based on oral tradition.
5. Issues for obtaining copyright for digitization
6. Lack of experienced and trained LIS professionals

Advent of Digitization: Digitization is the process of converting analog media (such as photographs) into digital data (such as text, images, sounds, and moving pictures) for the purpose of further processing and retrieval. Both accessibility and long-term preservation need digitization. One may thus conclude that digitizing manuscripts is the sole viable option for sharing cultural artifacts across groups. Because of the accessibility and security offered by the web, manuscripts are now possible to be digitized and made publicly accessible for the first time.

Tools for Digitization:

- a) Improving access.
- b) Preventing damage caused by frequent handling.
- c) Examining possibilities of preparing e-books.
- d) Resource-sharing with other institutions.
- e) Future use and Storage

Benefits Aspects of Digital Preservation : Digital archiving makes information easily accessible online and around the clock. There is no need to worry about running out of storage space for the collection, and the material can be easily retrieved using keywords thanks to digital preservation of manuscripts. Digital preservation also allows for the sharing of resources in an online environment.

Processes of Digitization Methodology : Every stage of the digitization process calls for a unique combination of hardware and software technologies. Here are the steps involved in transforming paper documents into digital files:

- a) **Acquiring Documents:** Processing of acquired papers via digitization.
- b) **Registration of Documents:** It's important to keep track of document registration and provide each document a unique filename.
- c) **Scanning:** Scanning and digitizing paper documents. A variety of image-taking techniques are in use within the academic world. Tools include both hand-held and automated book scanners, as well as high-resolution digital cameras. Flatbed detectors, book scanners, high-resolution cameras, and robotic library scanners are the most popular and easily available options for capturing images.
- d) **Optical Character Recognition:** Converting scanned documents into editable text.

- e) **Proofreading and formatting:** Refinement and formatting of the document.
- f) **Final version:** Adding data and other factors to complete the product

Listing of Some Digital Preservation Initiatives in India

- a) The Indira Gandhi National Center for the Arts in New Delhi was founded in her honor with the goal of being a hub for the exploration and celebration of Indian art and culture.
- b) The National Archive of India (NAI) is South Asia's largest archive. There is a wealth of information to be gleaned from its many records, including official documents, private documents, oriental documents, cartographic documents, and microfilms.
- c) Approximately 3,600 unique and historically significant manuscripts in a variety of languages can be found in the National Library of India in Kolkata. The Rare Books department is responsible for the safekeeping of these manuscripts and other valuable and rare books. This archive also includes the xylographs that His Holiness the Dalai Lama gave to the library.
- d) Khuda Bakhsh Oriental Public Library, Patna : Library has emerged as an outstanding research Library embracing a large number of rare manuscripts, some of them richly illuminated viz. "Tarik-e-Khandan-e-Timuriya", the only copy in the world, contains 132 beautiful paintings by the famous court artists of Akbar the Great and a writing of Jehangir.
- e) The Rampur Raza Library, constructed by the the Nawabs of Rampur, India State, is a beautiful, unrivaled storehouse of cultural legacy and love and cherish-house of knowledge. Apart from its 60,000 printed volumes, it also has a priceless collection of rare and priceless manuscripts, historical documents, examples of Islamic calligraphy, tiny paintings, astronomical equipment, and rare illustrated works written in Arabic and Persian.
- f) The Asiatic Society of Bengal: The scholarly society founded on Jan. 15, 1784, by Sir William Jones, a British lawyer and Orientalist, to encourage Oriental studies. Apart from in-house digitization of books, journals, manuscripts, 'Digitization and Archiving of the journals and books of the Asiatic Society, Kolkata', a project of the society has been initiated in December 2016. Complete sets of Asiatic Researches (1788-1842), Memoirs of the Asiatic Society journals of the Asiatic Society (1832-2016), Bibliotheca Indica Series have been scanned.
- g) Nehru Memorial Museum & Library: The Nehru Memorial Museum and Library (NMML), a memorial to Jawaharlal Nehru, the architect of modern India, is housed with research library on modern and contemporary Indian history and social sciences. Its published resources acquired for the Library include books, pamphlets, newspapers, periodicals and other documentary materials. The Library has a rich collection of material on microfilms and microfiche. The NMML Archives, besides the Jawaharlal Nehru family papers, has acquired papers of nationalist leaders of Modern India and other eminent Indians who distinguished themselves in any field. Also records of non- official organizations, associations and societies which played an important role in the development of modern India are also acquired by the NMML.

Guiding Principle of National Manuscript Mission : The primary goal of the National Archive Mission is the long-term preservation of manuscripts. To achieve this goal, National Text Mission is using ICT to digitize all paper manuscripts and rare books in the country. However, digitalization

norms present a challenge for this community. The National Manuscript Mission collaborated with the National Information Centre, the Indian government's top IT body, to better understand and enhance digitization practices at libraries throughout the globe. Standards for picture file formats, archiving, and retrieval [7] are under consideration.

Conclusion

Numerous universities and research centers in India have created institutional repositories to share research materials with their peers. Manuscripts and rare records are still accessible in the private collections of villagers, Mathas, Madarasas, private libraries, monasteries, and other institutions, but they require the help of the public to be preserved and conserved. For the sake of future generations, it is crucial that we devote greater resources to the protection and preservation of our nation's unique manuscripts, books, papers, government records, and digital resources. The information networks should make the unique items available to everyone, fostering national and worldwide interest in Indian culture and history. The cultural heritage assets that become available should prove to be a valuable asset in the fields of study, teaching, and content production. Today, Information has become the fourth basic need of our life and if we are well equipped with information technology, our country would not lag behind in this rapidly changing world. The nation's libraries should be the ones to gather and preserve its written history. One such innovation is digital preservation, and it is the library's obligation to advance library operations by making the most of cutting-edge information technology. Although document digitization is still ongoing, less attention is paid to preserving our cultural history.

References

1. Anderson, Cokie G. *Starting a Digitization Centre*. Oxford: Chandos Publishing, 2004 Annual Report. (2007). National Mission for Manuscripts.
2. Archaeological Survey of India, Government of India, http://asi.nic.in/asi_aboutus.asp
3. Arora, A. (2006, May 12). Digital Restoration. *Kriti Rakshana*, 2-4.
4. B. Pandher, "Digitization of manuscripts," in *Librarianship in Digital Era*, Chopra, H.S., Ed., Amritsar: Uttam Publishers, pp. 505-512, 2012.
5. Bhattacharyya, B. "Palm Leaf Manuscripts and other Preservation", *Indian Archives*
6. Chakraborty, M. (2010). Collection, Conservation and Publication of Manuscripts: Tagore's Initiative. *Kriti Rakshana*, 6(1-2), 7-10.
7. Chandra, Lokesh (2006). Rare Indian Manuscripts in Asian Countries, *Tattvabodha*, Vol – I, NMM
8. Chowdhury, G.G., Chowdhury, S. (1999). Digital library research: major issues and trends. *Journal of Documentation*. 55 (4), 409-448.
9. Digital Libraries. www.digitallibraries.com
10. Digital Preservation Coalition, "Preservation Management of Digital Materials: The Handbook" http://www.dpconline.org/advice/preservation_handbook, 2008.
11. Digital Preservation www.digitalpreservation.com
12. Gaur, Ramesh C. (2011). Preservation and Access to Manuscript Heritage in India. *International Journal of Information Research*. 1(1), 1-15.
13. Gupta, C. B., & Haider, S. H. (1995). Conservation Practices in Ancient India. *Conservation of Cultural Property in India*. 28, 36-43.
14. Hamilton, V. (2004). Sustainability for digital libraries. *Library Review*, 53

15. Harinarayan, N. (1995). Techniques of Conservation of Palm Leaf Manuscripts: Ancient and Modern. *Palm leaf and Other Manuscripts in Indian Languages*, 261-274.
16. Harinarayana, N., and Jeyaraj, V., (Ed.), Care of Museum Manuscripts, Published by the Commissioner of Museums, Government Museum, Madras, June, 1995. "National Mission for Manuscripts" - Government of India website. www.wikipedia.org
17. Infolibnet Shodhganga. Available at http://shodhganga.infolibnet.ac.in/bitstream/10603/17836/7/10_chapter%202.pdf
18. J. Sharma, N. Kaur, "Digitization of manuscripts in archival cell Panjab University Chandigarh," in Information communication technology applications in library services, Rao, P.V., Ed., New Delhi: Abhishek Publications, pp. 59-68, 20
19. Kalâkalpa, *Journal of the Indira Gandhi National Centre for the Arts*, New Delhi.
20. Kamat, J. (2000). http://www.kamat.com/database/books/kareducation/palmleaf_texts.htm.
21. Manuscript Conservation centers National Manuscript Mission. <http://www.namami.org/conservation.htm> Nanakshahi: Interpreting Sikh culture. <http://www.nanakshahi.org/accomplishments.html>
22. Mukhopadhyaya, P. (2006). History of survey and cataloguing of manuscripts in India. Nair, R. (2006). Digitization of indigenous materials: problems and
23. O.P. Agrawal. (1982). Palm Leaf and Paper: Illustrated Manuscripts of India and Southeast Asia. (Ed John Guy).
24. O.P. Agrawal. (1984). Conservation of Manuscripts and Paintings of Southeast Asia. London: Butterworths.
25. Orissa historical research Journal, vol. XVII, issue 3 <http://orissa.gov.in/e-magazine/Journal/journalvol3/Journal.htm>
26. P. Kumar, "Digital preservation," in Librarianship in Digital Era, Chopra, H.S., Ed., Amritsar: Uttam Publishers, pp. 505-512, 2012.
27. P. Maniatis, M. R. Roussopoulos, S.H. David M. Baker, LOCKSS peer-to-peer digital preservation system," *ACM Transaction on Computer System*, vol. 23, no. 1, pp. 2-50, 2005.
28. Project Document. (2002). National Mission for Manuscripts. Punjab Digital Library <http://www.panjabdigilib.org/>
29. Ranbir, K. (1961). Preservation and Repair of Palm Leaf Manuscripts. *India Archives* XIV.
30. Ross, "Digital Preservation, Archival Science and Methodological Foundations for Digital Libraries," in *New Review of Information networking*, vol.17, no. 1, pp. 43- 68, 2012.
31. S. Kumar and L. Shah, Leena, "Digital preservation of manuscripts: A case study," in 2nd Convention Planner-2004, Imphal: Manipur University, pp. 27- 28, 2004.
32. Sahoo J., & Mohanty, B. (2003). Giving Life to Palm Leaf Manuscripts: Technological Aspects. *The Orissa Historical Research Journal*. Vol. xlvi, No. 2, 108-112.
33. Saini, M.L. Manuscript literature in Indian language. *ILA Bulletin*. 1969, 25 (7), 6-19.
34. Salomon, R. (1998). *Indian Epigraphy*. New Delhi: Munshiram Manoharlal Publishers Pvt. Ltd.
34. solutions in the Context of Kerala University. *Library and Information Studies in the Digital Age*. Ess Publications, New Delhi (India), pp. 222-247.
35. Vaishnav .A.A and Sonwane, S.S. "Information requirement for digitization of manuscript at BAMUL" <http://www.irinfolibnet.ac.in/www.infolibrarian.com>