Chapter – 3

Historical Development, Materials, Cataloguing, Preservation and Digitization of Manuscripts

3.1. Introduction

India’s manuscripts have for centuries captured the imagination of the world. As early as the seventh century Chinese traveller Hiuen Tsang took back hundreds of manuscripts from India. Later in the late eighteenth century, the Nawab of Awadh gifted a superb illuminated manuscript of the Padshahnama to King George III of England. Today, it is considered one of the finest pieces in the Royal Collection. When the English East India Company first came to India, they acknowledged the sub-continent as the bearer of a great and rich civilization that abounded in intellectual and artistic endeavour. Several Company officers developed a fascination with various aspects of Indian civilization including languages, philosophy, art and architecture. The early issues of the Royal Asiatic Journal in the early nineteenth century fully reflect this curiosity in all things Indian. Among the many unusual men who formed the first group of Orientalists in late eighteenth and early nineteenth centuries, who systematically studied and reflected on various aspects of the Indian sub-continent’s civilization, were the famous philologist and founder of the Asiatic Society of Bengal, William Jones; scholar of Telugu, C. P. Brown; traveller and Eastern language scholar, John Leyden; the first Surveyor-General of India, Colin Mackenzie; Sanskrit scholar,
Charles Wilkins; the translator of numerous Sanskrit works, H. H. Wilson and the multi-faceted Orientalist, H. T. Colebrook. These great scholars all took an avid interest in many facets of the culture of the sub-continent as found in the vast treasure of handwritten manuscripts on a variety of materials including palm leaf, paper, cloth and even gold and silver. Many of their personal collections are deposited at the India Office Library and elsewhere in Britain as well as in institutions in India. As early as 1803, the idea of a “catalogue of all most useful Indian works now in existence with an abstract of their contents” was put to the Asiatic Society (Saini, M. L., 1969). Four years later, H. T. Colebrook as the Society’s fourth president appealed to the Government to set aside an additional grant of five or six thousand rupees per annum to undertake such a catalogue (Saini, M. L., 1969). While the Company did not grant the funds, catalogues were already being prepared by the Orientalists. This early phase of cataloguing by the Orientalists took place amidst a fervent phase of institution building (the establishment of the Benar us Sanskrit College, the universities in the three Presidencies, and Oriental Research Institutes among others) and the rise of Western education in India. As colonial policy began to veer away from any veneration of aspects of their subjects’ culture and languages, an interest in regional languages such as Bengali, Hindi, Urdu, Tamil and Telugu among others began to emerge among the socio-religious reformers whose rhetoric is dotted with many references to the greatness of India’s traditional learning and literature as found in manuscripts (NMM, 2010).
Meanwhile, European Indologists had begun to undertake landmark translations of ancient and medieval literary and scientific works based on manuscripts they had found. F. Max Muller's translation of the *Rigveda* in 1849 was one such landmark. Another was the release of Theodore Aufrecht's *Catalogus Catalogorum* ("Catalogue of Catalogues") in the years 1891-1903 of Sanskrit manuscripts that was compiled with considerable personal effort and expense. Around this time, Patna based antique collector Khuda Bakhsh and the Nawab of Rampur were engrossed in outbidding each other for a number of manuscripts and other works of art. Their collections form the bulk of the collections of Rampur Raza Library and Khuda Bakhsh Oriental Public Library (NMM, 2010).4

While a number of efforts were on at the Oriental Research Institutes in the late nineteenth and early twentieth centuries including the publication of the *Arthashastra* by the great librarian of the Mysore Institute, R. Shama Shastri, Madras University undertook the publication of the *New Catalogus Catalogorum* in 1937 and reached the letter 'bh'. The project was suspended after the publication of the first fourteen volumes. The National Mission for Manuscripts revived the programme in 2003 (NMM, 2010)5.

By the time of India's Independence, there were a number of medieval and more modern institutions that had large holdings of rare and often unpublished manuscripts. Pandit Jawaharlal Nehru, the first Prime Minister of India was aware of the intellectual heritage of India and in his magnum opus *The Discovery of India*, he wrote "One of our major misfortunes is that we have lost so much of the
world's ancient literature-in Greece, in India and elsewhere... Probably an organised search for old manuscripts in the libraries of religious institutions, monasteries and private persons would yield rich results. That, and the critical examination of these manuscripts and, where considered desirable, their publication and translation, are among the many things we have to do in India when we succeed in breaking through our shackles and can function for ourselves (NMM, 2010).” So involved was he that he took a personal interest in ensuring that the Gilgit manuscripts, to date India's oldest manuscripts from the sixth century A.D., were brought from Kashmir to the National Archives of India to be preserved for posterity. In the first decade after Independence, a number of state-sponsored efforts were made to catalogue and tap India's manuscript heritage. The Sanskrit Commission was set up and in their Report in 1956-7, they recommended that the Government should establish a Central Manuscript Survey which should undertake the search, survey, collection, cataloguing and publication of manuscripts...and that, for this purpose it should have in its Central and Regional Branches qualified personnel experienced in Manuscript and editorial work and conversant with the local scripts and conditions. While a number of efforts, often independent and unconnected to similar efforts elsewhere, were made to catalogue large manuscript collections, the situation was less than ideal in many institutions. The incipient conservation initiatives in India focused mostly on art and buildings. Apart from the Arts and Antiquities Act in 1972 where manuscripts are mentioned as one of a number of art objects and antiquities, no legislation was put in place to safeguard manuscripts.
Manuscripts, therefore, were neglected and largely in very poor condition in various institutions and homes around the country even as scholarship that could use them continued to dwindle. In the early 1980s, the Indira Gandhi National Centre for the Arts took some steps towards rectifying the situation and carefully catalogued and micro-filmed about 100,000 important manuscripts around the country. Still, a major undertaking focused on manuscript conservation and documentation was missing. It was under the Tenth Five Year Plan that a sweeping initiative was announced. The Ministry of Tourism and Culture, Government of India, established the National Mission for Manuscripts in February 2003 as an ambitious five year project with the specific objectives of locating, documenting, conserving and disseminating the knowledge content of India’s manuscripts.

The manuscript heritage of India is unique, not only in terms of quantity but also in terms of subject matter it deals with as well as the beauty of its physical presentation. It contains the cumulative knowledge of Indian tradition in fields of learning as diverse as physics and music, metallurgy and animal husbandry, metaphysics and agriculture, so on and so forth. The National Mission for Manuscripts was created in the year 2003 with a view to preserving and conserving this knowledge base as well as disseminating the content of manuscripts to scholars and people at large. It has come a long way since then and has fruitfully contributed to creating a database of more than 30 lakh manuscripts, training conservators all over the country, creating a resource pool of manuscriptologists and palaeographists and providing support to institutions
for preparing descriptive catalogues. It has also helped in creating awareness about manuscripts through outreach programmes like lectures and seminars. By publishing the lectures and proceedings of seminars, the contents have been rendered accessible to a much larger audience than would have been otherwise possible.

3.2. History of Survey, Acquisition and Cataloguing of Manuscripts in India

Though, the systematic survey of manuscripts, their collection and preservation, and also cataloguing has been going on since the establishment of the East India Company’s rule in India, the importance of manuscripts, their storing and listing were not totally unknown in classical and medieval India. Since manuscripts were the sole medium for the transmission of knowledge, the house of every teacher was a veritable library of manuscripts. The architects and masters of music also had their own collections. Manuscripts were collected by the rulers of different states, including the Mughal emperors, and religious institutions, including monasteries (mathas) of different sects and the Jain bhandaras. The Jain munis played a significant role in the area of collecting and preserving the manuscripts of various shastras – Jain, Brahanical and Buddhist.

The credit of compiling the earliest known catalogue in India goes to the Jain community. So far as our information goes, the earliest catalogue of manuscripts was compiled under the title, Brihattipanika, as early as Vikrama
Samvat 1440 by a Jain monk, whose name is unfortunately not known. The *Brihattipanik*, covers some manuscripts in the collections of several places such as Patan, Cambey and Bharauch. It furnishes data of authors' names, period of writing and *grantha-parimana* (the extent of each text). The manuscript of this catalogue is still preserved in the Shaninatha Bhandara. Next in line is the celebrated name of the monastic Kavindracharya of Varanasi (Kashi), on whom the title of 'Sarvavidyanidhana' was conferred by the Mughal emperor Shah Jahan. Kavindracharya flourished in the 17th century and built up a considerable collection of manuscripts. He compiled his subject-wise classified catalogue of 2192 manuscripts between 1628 and 1688.

Those innumerable manuscripts on poetical literature were collected and preserved by the compilers of Sanskrit anthologies and their patrons, since at least the 9th century is well borne out by glancing through some of the published anthologies. Mention may be made of Vidyakara's *Subhashitaratnakosha* (11th century; excerpts from 223 poets), Shridharadasa's *Saduktikarnamrita* (13th century), Sharngadhara's *Sharngadharapaddhati* (1363; 292 poets), Vallabhadeva's *Subhashitavali* (15th century; 380 poets) Rupagosvamin's *Padyavali* (16th century; 133 poets).

Collecting manuscripts from various regions and traditions and collating them for the purpose of fixing a text in a particular time and space or writing commentaries upon them were not unknown practices in ancient and medieval India. A commentary on the *Narayanopanishad* ascribed to Shankaracharya states that there are various text traditions of the Upanishad. Nilakantha, the
commentator on the Mahabharata states that he collated manuscripts acquired from different regions and selected the best readings on the basis of these manuscripts. Since the late medieval period, the emperors of Delhi and rulers of different states all over India showed keen interest in collecting and preserving manuscripts. Among the independent rulers, Tipu Sultan of Mysore (18th century) built up a library of oriental manuscripts in Arabic, Persian and Hindustani languages. After his defeat and death, while fighting with the British forces, his library was taken over by the British. The manuscripts from Tipu's library were studied and catalogued by Charles Stewart (Stewart, Charles, 1809)⁷.

Native rulers under the umbrella of the East India Company and subsequently of the British Government, too collected manuscripts and built up libraries. Enlightened rulers of Travancore, Cochin and Mysore are celebrated names in this field. The Travancore Palace Library collection was started by Maharaja Vishakham Tirunal (1880-1885). The manuscripts collected and preserved in this Library were subsequently catalogued by eminent traditional Sanskrit scholars, such as K. Sambasiva Sastri and K. Mahadeva Sastri, and a catalogue in eight volumes was published (Sastri, K. S and Sastri, K. M (Ed.), 1938)⁸. In this connection, it should be mentioned that another important collection of Sanskrit manuscripts was built up by the Government of Travancore in the Curator's Office Library and a catalogue in ten volumes was edited by K. Sambasiva Sastri, K. Mahadeva Sastri, P.K. Narayana Pillai and L.A. Ravi Verma. (Sastri, K. S and others (Ed.), 1941)⁹.
Rulers of Bikaner and Jodhpur also collected manuscripts which have been, however, documented at a much later date. The contribution of the Dogra rulers of Jammu and Kashmir in this field is also noteworthy. It is to be noted that the manuscript collections in India, to be described in the following lines, have a vast range of language coverage, viz. Sanskrit, Prakrit, Pali, almost all regional languages, Arabic, Persian, Tibetan, Zend, Pahlavi, et al (NMM, 2010)\(^\text{10}\).

The British rulers, who took upon themselves the cause of education and of patronizing Indian traditional knowledge systems, directed their attention towards the Indian literary heritage preserved in the manuscripts. Since the inception of the Asiatic Society in Calcutta, in 1785, the systematic search, survey, collection and documentation of manuscripts were started. Several government collections gradually came into existence in Calcutta, Varanasi, Pune and Madras. The credit of compiling the first catalogue of Indian manuscripts in India goes to Dr. Nicholas, chief surgeon in the General Hospital in Surat, who compiled a 15 page list of manuscripts between 1788 and 1795. This list describes, besides Sanskrit, a few Zend, Pahlavi, Persian and Arabic works. However, one must note that James Fraser also published, from London, in 1742, a brief catalogue of some Sanskrit, Persian and Arabic manuscripts, but we do not have any knowledge as to whether this catalogue was compiled in India, or that the manuscripts described therein did exist in India, till that time. It is recorded that Sir William Jones and Lady Jones acquired some Sanskrit, Prakrit and other Oriental manuscripts from India, which were presented to the Royal Society in London (later on handed over to the India Office Library), in
1792. Sir Charles Wilkins, the first English translator of the Bhagavadgita (published 1785), prepared a catalogue of this collection which was published in the Philosophical transactions of the Royal Society of London (1798, p. 593 and 1799, p. 335) (NMM, 2010).11

Pandit Ramagovinda Tarkaratna prepared 149 page catalogue, in which he classified alphabetical lists of three thousand manuscripts in the holdings of the College of Fort William, Library College of the Asiatic Society of Bengal and the Benaras Sanskrit College. The Catalogue was compiled by Pandit Ramagovinda Tarkaratna under the instructions of James Prinsep. It described manuscripts in Sanskrit, Bengali, Kannada, Marathi, etc. The long Sanskrit subtitle of the Catalogue is quite interesting (Ramagovinda, Tarkaratna, 1838).12

3.2.1. Survey of Indic manuscripts during 19th and 20th centuries

Extensive survey of and searches for manuscripts were carried on by Indian and European experts in various regions of the country, particularly in Bengal, western, central and northern regions. In the western region, G. Buhler, F. Kielhorn, Peter Peterson, R.G. Bhandarkar, S.R. Bhandarkar were the pioneers in the field. Their tour reports contain, inter alia, numerous descriptions of manuscripts. A few of these reports deserve to be mentioned hereunder (NMM, 2010).13

1. Report of Georg Buhler's tour in Southern Maratha in search of Sanskrit manuscripts for the Govt. of Bombay, 12th Feb. 1867, contains the description of 200 mss. (Pub. in ZDMG);
2. Detailed Report of a tour (by G. Buhler) in search of Sanskrit mss. made in Kashmir, Rajputana and Central India (Pub. in two parts, 1877)

3. F. Keilhorn published the Supplementary Catalogue of Sanskrit Works in the Saraswati Bhandaram Library of the Maharaja of Mysore in 1874.

4. His two lists of Sanskrit Manuscripts purchased for the Govt. of Bombay, during the years 1877/78, 1879/80 (Pub. 1881) are very important.


The Deccan College of Poona gradually developed a veritable repository of Indic manuscripts. The preliminary cataloguing of the Deccan College was done by G. Buhler and F. Kielhorn, as for example (NMM, 2010):

1. Three lists of Mss. in the Deccan College and the Elphinston College collections by G. Buhler (Pub. 1874/1875).


3. R.G. Bhandarkar, Report to K.M. Chatfield, Poona as regards the search of Sanskrit Manuscripts (1880).


7. Reports on search of Sanskrit Manuscripts through Central India, Central Provinces and Rajputana by S.R. Bhandarkar during 1904 and 1905.


As far as eastern zone is concerned, Raja Rajendralala Mitra and Mm. Haraprasada Sastri are the most celebrated names in the field of search, survey and cataloguing of manuscripts in the eastern zone. We have already mentioned the earliest catalogue of manuscripts from Calcutta (i.e. Ramagovinda Tarkaratna's Suchipatram, 1838). Rajendralala Mitra started working in this field in the early second half of the 19th century (NMM, 2010)\textsuperscript{15}.


3. Most outstanding work of Raja Rajendralala Mitra is the *Notices of Sanskrit Manuscripts* (deposited in the Library of the Asiatic Society of Bengal, Calcutta or in other collections). First series: Vols. 1-11. Published under order of Govt. of Bengal (Calcutta: Baptist Mission Press, 1871-1895). On the demise of Rajendralala Mitra, Mm. Haraprasada Sastri took up the Project and published the Second series in four volumes (1898-1911)

The whole set has been reprinted by Sharada Prakashan, Delhi, with biographical sketches of both the scholars by Satkari Mukhopadhyaya in 1990.

Raja Rajendralala Mitra’s other important contributions are (NMM, 2010):

1. *Catalogues of Sanskrit Manuscripts existing in Oudh* (1872-1883);
3. *Descriptive Catalogue of Sanskrit manuscripts in the Libraries of Asiatic Society of Bengal* (1877);


6. The Asiatic Society (earlier known as Asiatic Society of Bengal) started compiling and publishing excellent descriptive catalogues of Sanskrit,
vernacular and Arabic, Persian and Urdu manuscripts preserved under the Society's care since the last quarter of the 19th century. Mitra's first catalogue, published in 1877 was followed by a long series of catalogues of manuscripts. The catalogues published by the Society are the best specimens of descriptive cataloguing in India. The first volume in this series appeared as early as 1895 (the volume number was changed and the contents revised later on). The Series continued till recently. The Sanskrit manuscripts have been described in 14 volumes, the latest having been published in 1887. Scholars such as Mm. Haraprasada Sastri, Hrishikesh Sastri, Sivachandra Guin, Nilamani Chakravarti, Bhavabhuti Vidyaratna, Ashutosh Tarkatirtha, Nanigopal Banerji, Jogendranath Gupta, Narendra Chandra Vedantatirtha, Chintaharan Chakravarti and Satyaranjan Banerji have been the compilers and editors of different volumes. Besides, the Society has brought out quite a few volumes of catalogues of Rajasthani, Bengali, Assamese, Tibetan, Arabic, Persian and Urdu manuscripts.

Government Sanskrit College in Kolkata has been, since its inception, a rich repository of Sanskrit manuscripts. It published a series of catalogues in ten volumes between 1895 and 1909, and started publishing a revised series since 1956.

In the southern region of the country, the most important and rich repository of manuscripts is the Government Oriental Manuscripts Library in Chennai. The nucleus of the vast collection of manuscripts in this Library is
formed by three collections of Colonel Colin Mackenzie (1754-1821), Dr. Leyden and C.P. Brown (1798-1855). Mackenzie took his collection to Calcutta and went on adding to it till his death in 1821. This collection was examined by H.H. Wilson, the then Secretary to the Asiatic Society, who compiled a descriptive catalogue of the collection which was published by the Society in Calcutta in 1828. Subsequently a part of this collection was brought to Madras by the East India Company. Dr. Leyden collected some manuscripts between 1803 and 1811 which were deposited in the India House Library of London. C.P. Brown noticed this collection in 1837 and thanks to his efforts it was brought to India. Brown's own collection of Sanskrit, Tamil and Telugu manuscripts, which was presented to the East India Company was brought to India in 1855. All these three collections were first deposited in the College Library, Madras and then shifted to the Government Oriental Manuscript Library (GOML) when it was founded in 1869. The collection grew rapidly during the last 140 years. The present holding of Sanskrit, Tamil, Telugu, Kannada, Marathi, Urdu, Arabic, Persian, Sinhalese and other manuscripts comprises 72,000 manuscripts. The first catalogue of manuscripts in the Madras Mackenzie collection was compiled by Gustav Opert in 1878. Since then, almost a hundred volumes of catalogues have been published by the Library (NMM, 2010).

Next to GOML, Chennai, mention must be made of the Thanjavur Maharaja Serfoji’s Saraswati Mahal Library. The Nayaka and Maratha rulers of Thanjavur had always been great patrons of art and literature. The Library was first conceived by the Nayaka kings (1535-1676) and further developed by the
Maratha kings (1676-1855). It was known as the Royal Palace Library of Tanjore. The first Index of Sanskrit manuscripts was prepared by Arthur Coke Burnell (Burnell, A. C., 1880)\(^{18}\). In 1918, the Royal family made it a public library which became known as Thanjavur Maharaja Serfoji's Saraswati Mahal Library. The Library possesses very valuable and some very rare manuscripts collected since the medieval period including some in Sanskrit, Tamil, Telugu, Marathi and Modi. Between 1928 and 1952, twenty seven volumes of descriptive catalogues (29 vols. Sanskrit, 3 vols. Tamil, 4 vols. Marathi, 2 vols. Telugu and 1 vol. Modi) have been published (NMM, 2010)\(^{19}\).

The former princely State of Mysore, now Karnataka, too has a rich heritage of manuscripts in government and private collections. Tipu Sultan's collection has already been mentioned. The first known catalogue from Mysore is the *Catalogue of Sanskrit Manuscripts in several private collections in Mysore and Coorg*, compiled by Lewis Rice (Lewis, R., 1884)\(^{20}\). This was followed by the Catalogue of Sanskrit works in the Saraswati Bhandaram Library described above. The richest repository of Manuscripts in the state is the Oriental Research Institute, now under the University of Mysore. The Library was established by Chamaraja Wodeyar, the then Maharaja of Mysore, in 1891, then named as the Government Oriental Library, and later on renamed as the Oriental Research Institute in 1916. The manuscripts preserved in the Institute have been collected during the last one hundred years from different parts of the State. The collection is rich in Sanskrit, Tamil, Telugu, Kannada, Tulu as well as manuscripts of other languages. One of the valuable manuscripts in this collection is the illustrated
encyclopaedic work, *Shrītattvanidhi*, the first volume of which has been published by the Institute. Manuscripts on Visistadvaita and Dvaita philosophy and Shaiva Agamas (both Siddhanta Shaiva and Virashaiva) are unique treasures of this Library. The Institute has published Descriptive Catalogue of Sanskrit manuscripts in 16 volumes (1978-1990). Besides, the Institute has to its credit more than two hundred works, most published for the first time, edited from the manuscripts preserved in the Institute (Oriental Research Institute, 1990).21

The Bhandarkar Oriental Research Institute of Pune possesses one of the most important and valuable collections of manuscripts in India. The total number of manuscripts in this collection is estimated at 28,000. The collection has a long and interesting history. In 1868 the then Government of Bombay Presidency appointed Georg Buhler and F. Kielhorn to search for and collect manuscripts from the Presidency and other areas. The work was continued by other scholars such as R.G. Bhandarkar, Peter Peterson, Kathawate, S.R. Bhandarkar, K.B. Pathak and V.S. Ghate till 1915. The scholars mentioned above prepared and published reports on their activities and acquisitions from time to time, some of which have been detailed above. The manuscripts had been initially deposited in the Elphinstone College of Bombay, and subsequently the whole collection was shifted to the Deccan College, Pune in 1878. When the Bhandarkar Oriental Institute of Pune was established, the collection of some 20,000 manuscripts, known as the Government Collection was shifted to the Institute and placed under the supervision of Prof. P.K. Gode, the first curator. In due course about 8,000 were added to this collection. Cataloguing of the manuscripts was
undertaken in early 19th century by various professors and curators and the first volume of the Descriptive Catalogue appeared in 1916. Until 1957, 19 volumes of subject-wise classified catalogues had been published by the Institute (Bhandarkar Oriental Research Institute of Pune, 1957)\textsuperscript{22}.

In Kerala, the biggest collection of manuscripts is housed in the Oriental Manuscripts Library and Research Institute in which earlier collections of Sanskrit and Malayalam manuscripts have been merged. The uniqueness of this collection lies in the works on continued literary compositions of Kerala, Musicology, Performing arts such as Kathakali and Kutiyattam (NMM, 2010)\textsuperscript{23}.

3.3. Writing Materials of Manuscripts: A brief historical account

The urge of man to express his power of speech in some form of written record led him to discover various kinds of writing materials to suit his purpose. As the writing on these materials was essentially done with hand, these are termed as Manuscripts. Man naturally makes use of those writing materials, which can be most readily procured and most suitable to write on. However, all these writing materials may be divided into two categories. Firstly, there were some materials, which were durable and used as more or less permanent writing materials like stone, copper, gold, iron and silver that are less prone to deterioration. Secondly, there were some materials like ivory, clay tablets, bamboo sticks, wood, bark, linen, wax cotton, silk, parchment, vellum, papyrus, sanchipat, birch bark and palm leaf which are perishable in nature. A brief historical account of all these writing materials is given below.
3.3.1. Stone based Materials

Stone is a hard solid substance found in the ground and Rock is the hard substance which the earth is made of. Stones and Rocks were shaped to make things such as Bricks, Pillars and Tablets.

3.3.1.1. Pillars

A pillar is a tall solid structure, which is usually used to support part of a building. Writing on Pillars or (Stambhas) was very common in Rajasthan. These Stambhas were defined as Dhavaj Stambha, Vir Stambha, Sati Stambha, Chhaya Stambha, and Yup Stambha. Dhavaj in front of a temple, Jai in case of Victory, Kirti for an influential person, Vir stands for valiant soldiers, Sati for those ladies who used to sacrifice themselves at the time of death of their husbands, chhaya in which the photo of the person is chiseled and Yup is for sacrificing an animal on Yajna ceremony (Chopra, H.S., 1995)24.

3.3.1.2. Stone Tablets

Stone tablets are the flat pieces of Stone which people used to write on before paper was invented. Stones and rocks were the earliest durable materials used for writing. The writing was incised on rocks, pillars of stone and the walls of caves and temples. The Specimens are available even today from Himalayas to Mysore and most of the inscriptions are belonging to the Emperor Ashok. A rock inscription is available near Jain temple in Bijolion, a village in Rajasthan, bears “Unaat-Sikhar-Purana” which is a work of Digamber sect of Jainism and belongs to 1170A.D (Chopra, H.S., 1995)25. Writing on stone had to be done painstakingly with the help of chisels or some sharp tools. Once written, the
messages acquired very long life and the writings were known as inscriptions. Stone inscriptions mostly bear texts of special value, royal annals and religious codes of conduct.

3.3.2. Clay based materials

Clay is a kind of earth that is soft when it is wet and that is hard when it is dry. Clay is shaped and baked to make things such as Bricks, Pots and Tablets.

3.3.2.1. Clay Bricks

Brick is a rectangular block of baked clay, which is usually red or brown. Inscribed bricks of varied sizes were discovered in India, which served as a medium of writing of religious texts. Some intact bricks with writings of Buddhist Sutras were found in Gopalpur village of Gorakhpur district in Uttar Pradesh in India, which can be assigned to 3rd or 4th century A.D (Pandey, R.B, 1952)26.

3.3.2.2. Clay-tablets

Clay tablets are the flat pieces of clay which people used to write on before paper was invented. Writing on Clay-tablets was created by our ancestors – the Sumerians, the Babylonians and the Assyrians. The oldest clay-tablets recovered so far were of Babylonian origin written by Chaldeans, a tribe of Babylonia. Such clay-tablets are preserved now in British Museum. Huge quantities of Chaldean clay-tablets in “Cuneiform Script” have been found out during Tigris excavation. In 1833 A.D. a British Archaeologist Sir Henry Layard discovered a great Public Library of about 10000 clay tablets at Nineveh, near Mosul in Iraq. This Library is believed to have been created by Asurbanipal – an Assyrian King. Other ancient cities credited with libraries of clay tablets were Ur,
Nippur, Kish and Teller. These clay-tablets contain writings on History, Mythology, Mathematics, legal and commercial records. The volume of such records indicates that reading/writing was taught in Schools Connected with temples and the practice of copying was very much prevalent. For making clay-tablets clay was first moistened then kneaded into dough, shaped by hand inscribed with a stylus while still soft and finally hardened in the Sun or they were baked in kilns for better durability. The tablets, which looked like bricks were of different shapes and dimensions and about five inches long. Burnt clay tablets are quite hard and almost indestructible. Clay-tablets bear a style of writing known as “Cuneiform”. Wedge shaped stylus used for writing on soft clay invariably produced wedge shaped marks, which was a typical style of cuneiform writing (Perti, R.K. (Ed.), 1995)\textsuperscript{27}.

3.3.3. Metal based materials

Metal is a hard substance such as iron, steel, gold or lead. A plate is a small, flat piece of metal with someone’s name or some thing written on it. Use of metal plates for writing purpose was introduced at a later date in comparison to stone and rock. The metal plates were generally used as documents of a more mundane nature like land grants, legal codes, inter-state agreements and the like. More than stone and brick, metallic plates were considered lasting and handily material for writing. The evidences are available in large number in various museums of the world (Pandey, R.B, 1952)\textsuperscript{28}. 

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3.3.3.1. Copper Plates

Copper is reddish brown metal that is used to make things such as coins and electrical wires. Copper plates were also widely used as writing materials on which various kinds of documents were inscribed. These were known as Tamrasasari Tamrapahali, Tamrapatra and Danapatra. The kings, governors and nobles used to make gift of lands and money to the temples to learned Brahmans for patronizing learning and religion and the transactions were made on copper plates. The use of copper plate was prevalent from the Mauryan period (Buhler, G., 1904)\textsuperscript{29}. Fa-Hien, the noted Chinese traveler informed in his travel diary that the Buddhist Monasteries possessed copper plate grants some of which were as old as the time of Lord Buddha. Hiuen Tsang has mentioned that kaniska wrote the entire Vinya-pitaka on Copper Plates after the first meeting of the Buddhist Council (Pandey, R.B, 1952)\textsuperscript{30}

Figure – 3.1: Inscription on copper plates
Source: Gowthami Regional Library, Rajahmundry
3.3.3.2. Gold Plates

Gold is a valuable, yellow coloured metal that is used for making jewellery and ornaments and as an international currency. Gold was used only for very important documents like moral maxims, royal letters and law grants. Writing on gold was very rare but there is a reference to it in the Buddhist Jatakas. A gold plate bearing an inscription in Kharosthi was discovered at Ganga Stupa near Taxila by the oriental scholar General Cunningham (Chakraborti, M. L., 1975)\textsuperscript{31}.

3.3.3.3. Iron Plates

Iron is an element which usually takes the form of a hard, dark gray metal. Iron tablets are the flat pieces of iron which people used to write on before paper was invented. Iron was also used as a writing material but due to rusting its use was not so common. But there is an inscription written on the iron pillar of Mehrauli near Kutab Minar in Delhi, which contains a long eulogy in rust proof iron. Moreover in the Achleswar Temple at Abu there is a huge trident, which is made of iron with incised writing on it and it is dated to 1468A.D (Chakraborti, M. L., 1975)\textsuperscript{32}.

3.3.3.4. Silver Plaques

Silver is a valuable pale-gray material that is used for making jewellery and ornaments. A plaque is a flat piece of metal or stone with writing on it, which fixed to a wall or the other structure to remind people of ah important person or event. Writing on silver was very rare. However, some official documents were inscribed on silver plaques specimens of which were traced at Taxila and
Bhattiprolu. In the British Museum there are manuscripts written on gilded and silver plated palm leaves (Pandey, R.B, 1952)\(^3\).

### 3.3.4. Wooden based materials

Wood is the material which forms the trunks and branches of trees.

#### 3.3.4.1. Wooden Tablets and Boards

Wooden tablets are the flat pieces of wood which people used to write on before paper was invented. Wooden boards were used for writing manuscripts. It has been referred to in the Jatakas and Vinaya Pitaka. They were named as "Phalaka" and had been in use in India since the Buddhist age. Piece of such varnished wood were also used for writing love letters the reference to which is found in "Dashakumara Charitam", a Sanskrit fiction written by Dabdi. The Bodleian Library at Oxford possesses and Indian Manuscript written in such wooden boards. Wooden board remained in use up to the early days of free India. This wooden board was generally 1 'wide and 1.5' long with a wooden handle. Multani or Gachni was rubbed with little water for preparation of a coloured smooth surface to write on. After use wooden boards were washed for next writing. Written wooden boards were known as "Phalakas" (Chopra, H.S., 1995)\(^3\). The use of wax covered wooden tablets coated with wax termed in Greek Pinax. Grammteion and in Latin cera, Tabella was extensively used by ancient Romans (Bozman, E.F. (Ed.), 1967)\(^3\). These tablets were used for school exercises, accounts and literary compositions.
3.3.4.2. Bamboo Strips

Bamboo is a tall tropical plant with hard, hollow stems. Bamboo and wooden slips were one of the main media for literacy in early China, and then subsequently in medieval Japan. The long, narrow strips of wood or bamboo typically carry a single column of brush-written text each, with space for several tens of Chinese characters. For longer texts, many slips may be bound together in sequence with thread. Each strip of wood or bamboo is said to be as long as a chopstick and as wide as two. The earliest surviving examples of wood or bamboo slips date from the 5th c. BC during the Warring States period. However, references in earlier texts surviving on other media make it clear that some precursor of these Warring States period bamboo slips was in use as early as the late Shang period (from about 1250 BC). Bamboo or wooden strips were the standard writing material during the Han dynasty and excavated examples have been found in abundance. Subsequently, paper began to displace bamboo and wooden strips from mainstream uses and by the 4th c. AD bamboo had been largely abandoned as a medium for writing in China. Bamboo and wooden slips are now no longer used, as they have now been replaced by paper (The Art of War, 2010)\textsuperscript{36}.

The manuscripts of some Indonesian people consists of long strips of bamboo welded by beating one to the other, then folded together between wooden covers and bound together with a string of wooden rushes (Bozman, E.F. (Ed.), 1967)\textsuperscript{37}.
3.3.4.3. Sandalwood

Sandalwood is the sweet smelling wood of tree that is found in south Asia and Australia and it is also the name of the tree itself. From the Buddhist work "Lalita Vistara" we learn that boards made of sandalwood were sued like slates in schools (Chakraborti, M. L., 1975)\textsuperscript{38}.

3.3.4.4. Terracotta Board

Terracotta is a brownish red-clay that has been baked and used for making things such as flower pots, small statues and tiles and Terracotta is used to describe things that are brownish-red in colour. Terracotta Boards were used for writing. Mackay identified two similar boards from the finds of Mohen-Jo-Daro (Chopra, H.S., 1995)\textsuperscript{39}. 

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3.3.5. Cloth Based Materials

3.3.5.1. Cotton Cloth

Cotton Cloth leaves were generally made by pasting two thick khadi cloth pieces together. It was called “Pata” or “Patika”. Cotton cloths were used for official and private documents. It was also used in temples, for writing letters, for Janam Patyris (horoscopes) and other illustrations. The customary letters written by Jains form one village to another for begging pardon for nay mistakes were also written clothes. Some cotton cloth manuscripts are available in Shringeri Math in Andhra Pradesh. Two more manuscripts on such cloth are preserved in the Patan Bhandars, one of which is written in 1418 Sambat and consists of 92 leaves measuring 25" X 3". It is a Jain work known as Dharamavidhi and written by Sri Prabhusun (Pandey, R.B, 1952)40.

3.3.5.2. Silk Cloth

Silk is a substance which is made into smooth fine Cloth and sewing thread. Silk cloth also served as a medium for writing but being costly it was rarely used. G.Buhler found a list of Jain Sutras written with ink on silk cloth in a Jain Library of Jaisalmer (Buhler, G., 1904)41.

3.3.6. Skin Based Materials

3.3.6.1. Vellum

Vellum is strong skin based material of good quality for writing on. Vellum (from the Old French Vélin, for “calfskin”) is mammal skin prepared for writing or printing on, to produce single pages, scrolls, codices or books. It is generally smooth and durable, although there are great variations depending on
preparation, the quality of the skin and the type of animal used. The manufacture involves the cleaning, bleaching, stretching on a frame, and scraping of the skin with a hemispherical knife. To create tension, scraping is alternated by wetting and drying. A final finish may be achieved by abrading the surface with pumice, and treating with a preparation of lime or chalk to make it accept writing or printing ink (Chakraborti, M. L., 1975)\textsuperscript{42}. The following Picture shows the Manuscript written on Vellum.

![A vellum deed with seal tag dated 1638.](http://vellumpaper.info/) (accessed on June 12, 2010)

3.3.6.2. Parchment

Parchment was the skin of a sheep or goat that was used for writing on. Parchment is the generic term representing animal skins used for writing purposes. Usually it is prepared from the inner side of the split skins of animals such as sheep, goat, deer etc. for its preparation hair or wool from the skin is removed and the skin is placed in lime to get rid of its fat. The skin is stretched
on a frame and shaved with crescent shaped knives and scrapers both the sides. When it is dried the skin is tightened and scraping is continued. It is then dampened with hot water and powdered chalk is rubbed on with pumice stone to make it smoothen and soften. It is also softened by application of castor oil or treated with alum (Perti, R.K. (Ed.), 1995)43.

3.3.7. Materials based on Bark

Bark is the tough material that covers the outside of a tree. The bark of trees as writing material are still used by other primitive peoples in America, Africa, Asia and its use in ancient Rome caused its name, liber, to be attached to the book, which was made from it (Bozman, E.F. (Ed.), 1967)44.

3.3.7.1. Birch – bark

A birch is a type of tall tree with thin branches. A birch bark document is a document written on pieces of birch bark. Such documents existed in several cultures. For instance, some Gandharan Buddhist texts have been found written on birch bark and preserved in clay jars. The following Pictures show the Manuscript written on Birch-bark (Birch-bark_letter, 2010)45.

On July 26, 1951, during excavations in Novgorod, a Soviet expedition led by Artemiy Artsikhovsky found the first Russian birch bark writing in a layer dated to ca. 1400. Since then, more than 1,000 similar documents were discovered in Staraya Russa, Smolensk, Torzhok, Pskov, Tver, Moscow, Ryazan, although Novgorod remains by far the most prolific source of them. In Ukraine, birch bark documents were found in Zvenigorod, Volynia. In Belarus, several documents were unearthed in Vitebsk and Mstislavl.
Figure – 3.4: Birch-bark letter no. 497, c. 1340-90  
(Accessed on June 12, 2010)

Figure – 3.5: Birch-bark letter no. 202 contains spelling lessons and drawings made by a boy named Onfim; based on draftsmanship, experts estimate his age as between 6 and 7 at the time.  
(Accessed on June 12, 2010)

Figure – 3.6: Birch-bark letter no. 292, Oldest known Karelian language text (First half of 13th century)  
(Accessed on June 12, 2010)
The late discovery of birch documents, as well as their amazing state of preservation, is explained by a deep culture layer in Novgorod (up to eight meters, or 25 feet) and heavy waterlogged clay soil which prevents the access of oxygen. Serious excavations in Novgorod started only in 1932, although some attempts had been made in the 19th century. Although their existence was mentioned in some old East Slavic manuscripts, the discovery of birch bark documents significantly changed the understanding of the cultural level and language spoken by the East Slavs between 11th and 15th centuries. About a hundred styluses have also been found, mostly made of iron, some of bone or bronze.

The document numbered 292 from the Novgorod excavations (unearthed in 1957) is the oldest known document in any Finnic language. It is dated to the beginning of the 13th century. The language used in the document is thought to be an archaic form of the language spoken in Olonets Karelia, a dialect of the Karelian language.

3.3.7.2. Sanchi Paat

Sanchi Paat was the writing material used in ancient times, only used in Assam and made from the bark of the Agar Tree, a tree found in upper and middle Assam. The manuscripts in Assam were written on this particular material which is now very rare to find. To write on Sanchi Paat a special kind of waterproof ink was used, prepared with local products such as Silikha Seed, Kehraj (a type of grass), ashes and minerals and applied with the help of bird's feather. This Sanchipaat is now so rare that it is hardly found in Xatras temples and most
manuscripts are part of private collections. Kolong Kala Kendra, a socio-cultural organisation of Nagaon, established in 2000, works for the preservation of these rare manuscripts written on Sanchipaat. More than 200 such manuscripts are now available to see in the museum of Kolong Kala Kendra. Some of the pictures of these manuscripts are as follows (Online Records of Kolong Kala Kendra, 2010)⁴⁶:

Figure 3.7: Preservation of ancient manuscripts written on sanchi paat


3.3.8. Materials based on Leaves

A lotus or a lotus flower is a type of water lily that grows in Africa and Asia. A Palm or a Palm tree is a tree that grows in hot countries. It has long leaves growing at the top and no branches. The dry leaves of Lotus and Palm were used as material for writing.

3.3.8.1. Lotus Leaf

The use of lotus leaf for writing has been mentioned in Kalidas's "Abhijanana Shakuntalam (Chopra, H.S., 1995)\(^47\).

3.3.8.2. Palm-leaf

Palm leaf manuscripts are manuscripts made out of dried palm leaves. They served as the paper of the ancient world in parts of Asia as far back as the fifteenth century BC and possibly much earlier. They were used to record actual and mythical narratives in South Asia and in South East Asia. Initially knowledge was passed down orally, but after the invention of alphabets and their diffusion to South Asia, people eventually began to write it down in dried and smoke treated palm leaves of Palmyra palm or talipot palm. In India, there are several varieties of Palm trees, but only three types of palm leaf are being used as writing substances. They are Tala, Sritala; and Corypha Talirca Palms (Ali, Ahmed, 2007)\(^48\). To bind leaves of a manuscript, wholes were punched in the center of the leaves or on either side of the leaves, and cords passed through them kept the leaves together. The manuscripts were placed between stiff boards, generally of wood, sometimes decorated by carving or painting. The following Pictures depict the Palm Leaf Manuscripts found in Andhra Pradesh.
Figure 3.8: Ancient manuscripts written on Palm Leaves

Source: SVORI, Tirupati

Source: Gowiati Regional Library, Rajahmundry
3.3.9. Paper Based Materials

3.3.9.1. Papyrus

Papyrus is tall water plant that grows in Africa. Papyrus is type of paper made from papyrus stems that was used in ancient Egypt, Rome and Greece and a papyrus is an ancient document that is written on papyrus. Papyrus is a reed like plant. The stem of the plant is 3 feet to 10 feet lengthy and triangular in form. Papyrus sheets are varied in size, ordinary ones measuring about 5 inches to 6 inches wide and generally not more than 20 sheets to a roll. Long rolls were used for making books and called as Papyrus Scrolls. The style of writing in such type of papyrus sheets was known as “hieroglyphic” (a pictorial writing style developed by Egyptians about 3000 B.C.), which means sacred writing. The scribes wrote on papyrus with reed pens and ink of different colours (Perti, R.K. (Ed.), 1995)\textsuperscript{49}.

3.3.9.2. Vellum paper

Vellum paper was originally discovered and developed by the Hebrews in the early years of the first millennium BC. At its conception, vellum was a see-through writing surface manufactured from un-tanned animal skin. It was produced in small quantities by first cleaning and removing hair from the skin, and then drying the skin under tension. Vellum paper distributors would next polish the pelts with a pumice rock. Pumice is a porous volcanic rock which is valued worldwide for its abrasive properties. Vellum paper makers followed the pumice polish with a talc powder covering. Talc acts as a filler, and served as the last step in the production sequence.
Figure 3.9: Vellum Scrap booking

During its early applications, vellum paper was valued for backlit documents, as light easily shows through the thin animal pelt. Overtime manufacturers began producing vellum paper with the pelts of stillborn animals to save on production costs. Often goat and sheep skins are used in the production of parchment, a term that can be used interchangeably with vellum. Vellum is valued in numerous applications other than as a writing surface, common uses include drumheads and light shades.

There is no doubt that many are now hooked with scrap booking. In fact, some just started it as a hobby and later on become a profitable business. Scrap booking is not just for sentimental or artistic people. This hobby is for individuals who want to transform their pictures into memorable keepsakes. You can embellish your pictures in your scrapbook by using vellum paper. This material can bring dimension and unique effect on your scrapbook and photos (vellumpaper.info, 2010).

Vellum paper is the best material to decorate the pages of your scrapbook. It comes in different designs and colors, so one can create pages according to ones personality and mood. Using vellum allows matching the page design according to the essence of the picture or overall theme of the scrapbook. Making scrapbook using vellum paper is not only for photos. Actually, one can use it to make personalized greeting cards, party announcements, bridal and baby shower and wedding memento. Vellum is such a versatile scrapbook paper. You can punch holes on it and put a lace or ribbon. This will make your craft elegant and artistic. If you have a preferred design or color for your scrapbook,
vellum will do the trick. There are vellum with polka dots design, stripes, frosted sheer, embossed designs and more. You can opt for plain vellum or you may use the ones with butterfly, heart or leaf designs.

In the present day vellum paper has a wide variety of uses which include manuscripts, postcards, certificates, scrap booking, and tracing. Vellum is now sold in a variety of cream and pastel colours, and even an occasional brightly coloured and decorated form. Vellum can even be bought with gold embossing, marble decorations, or metallic properties. Vellum paper can be purchased with a text weight ranging from the lighter 50 gsm (grams per square meter) to the heavy 120 gsm. Non imitation vellum is still used in drumheads today. Its acoustic properties are valued in ethnic hand drums which are used by most Indian tribes. Replacement vellum drum heads are sold in a plethora of diameters and thicknesses to fit the most diverse needs.

3.4. Preservation of Manuscripts in India

India’s ancient cultural heritage is extraordinary, and a key focus for the work of the National Mission for Manuscripts (NMM) is the preservation of the knowledge and 'memory' contained within the estimated five million manuscripts held within India and abroad. Managing the preservation of these manuscripts is an enormous challenge. Yet nature has already provided us with a dynamic framework to help manage the preservation of manuscript heritage. The interconnected web offers an approach to managing preservation that is both holistic and interconnected. The preservation strategies are like interconnected
threads with actions which send ripples across a web that spans space and time – past, present and future. As the stands become more closely linked, strengthened and intertwined, the preservation benefits are maximized. Furthermore, for India, the preservation web aligns with the same pattern of India’s ancient philosophical traditions that acknowledge the interconnectedness of all things (Brown, H, 2010)\textsuperscript{51}.

3.4.1. Risks and dangers to India’s manuscript collections

Important manuscripts have become brittle and are crumbling to dust. They are also affected by exposure to light, humidity, pollution, dirt and dampness. Their ability to survive for much longer is severely limited. Other high profile risks are disasters – fires, floods, earthquakes and tsunamis, and destruction by people (deliberate and through ignorance), while at the macro level, the tiniest insects, rodents and mould spores slowly and relentlessly wreak their own distinctive trails of destruction. Weaving another layer of complexity, the digitized copies of these manuscripts present their own long term preservation challenges and risks. These include the complications presented by rapid changes in technologies and software (Jonathan, A. S., 1999)\textsuperscript{52}.

3.4.2. The Preservation Web

Looking at the preservation web more closely one of the clearest descriptions of its characteristics is by IFLA – the International Federation of Library Associations:

Preservation \ldots includes all the managerial and financial considerations\ldots

including storage and accommodation provisions, staffing levels, policies,
techniques and methods involved in preserving library and archival material and the information contained in them' (IFLA, 1998). From these perspectives, one can see that the strands of the preservation web are numerous and far reaching. Most significantly there is no artificial limit to information formats – the preservation framework extends across all formats of knowledge from the traditional to the digital worlds. A risk management perspective can provide further insight into the characteristics of the preservation web. From this perspective, a single strand and the entire web can be tested for vulnerabilities using a risk management methodology designed to find and treat the weak points before they lead to unnecessary failure.

3.4.3. What should be preserved?

Selecting the 'cradle of past activity', the priority to preserve for the future, is inevitably a balancing act. Criteria such as physical condition, use, rarity and value (historical, aesthetic, evidential and/or monetary) will all help inform priorities and will be usually be set within a risk management context. However, in India and across the whole world, despite the best intentions, the realities of under funding and lack of skilled staff, adequate buildings, equipment and other resources mean that organizations are often struggling to intervene and preserve even their highest priority manuscripts. The consequences of loss are significant (NMM, 2010).  

3.4.4. The Strands of the Web

Like the twelve months of the year, it is possible to identify twelve strategies or strands that help mitigate many of the risks and help preserve manuscript
heritage over time. The NMM features these strands in its preservation work, its training programs and publications, and they include:

- Environmental control
- IPM (integrated pest management)
- Storage and enclosures
- Collection maintenance and repair
- Disaster preparedness
- Copying or reformatting
- Exhibition support
- Conservation
- Education and training of users and staff
- Preservation policies
- Resourcing
- Collaboration.

All these strands are interconnected. The active 'management of collective knowing' involves an awareness of the dynamic interconnections so that the whole approach to preservation becomes integrated. This leads to a strategic approach, with whole manuscript collections being prioritised, conserved, copied and protected as an holistic program, thereby maximizing the preservation benefits. A closer look at each strand provides further insight into the workings of the interconnected preservation web (Brown, H, 2010)\textsuperscript{55}.
3.4.5. Environmental Control

This strand is the major strategy for preserving items. A short cut rule is 'low and slow'; aiming to keep the temperatures as low as possible and the fluctuations in relative humidity as slow as possible. A long term stable environment will effectively slow the rate of deterioration in collection items. There are a number of simple steps that can be taken to improve the environment, without the need for expensive airconditioning. These include:

- Ensuring good circulation of air
- Making sure that gutters are cleaned out and cracks and holes are repaired in walls and ceilings
- Ensuring windows and doors fit securely
- Using screens, shutters and blinds.

The most stable room is often an internal room on the ground floor. Without attention to the environmental strand the whole web will unravel (Brown, H, 2010)56.

3.4.6. IPM (Integrated Pest Management)

The strand of Integrated Pest Management (IPM) is closely linked with environmental control. IPM aims to make the collection environment unattractive to insects and pests. The IPM program focuses on keeping pests away, good housekeeping and early detection through controlled and regular monitoring. Chemicals are only then used as a last resort. The five stages are:

- Avoid
- Block
Detect

Respond

Recover

The NMM has previously showcased how traditional techniques can be effective pest repellents e.g. the use of neem leaves and the dye in traditional cloths that cover manuscripts. In the context of the preservation web, intertwining traditional techniques with the more modern approach of IPM has the potential to increase the effectiveness of both approaches (Sah, A (ed.), 2006)\textsuperscript{57}.

3.4.7. Storage/Enclosures

Appropriate storage is another important strand that helps preserve manuscripts over time. Again this strand is closely connected with environmental controls, as good storage helps reduce environmental fluctuations. Key features include 'off the ground' storage, and protective enclosures such as destarched cotton cloth, or storage boxes made of acid free materials (Brown, H, 2010)\textsuperscript{58}.

3.4.8. Collection Maintenance and Repair

This thread involves basic 'first aid' support that extends the life span of items and reduces the need for treatments later. Examples range from simple regular cleaning and brushing, to basic repairs of tears and loose pages (Brown, H, 2010)\textsuperscript{59}.

3.4.9. Disaster Preparedness

The strand involving disaster preparedness is central part of the preservation web. An article by K. K. Gupta in Kriti Rakshana highlights the
importance of disaster preparedness in reducing the likelihood and impact of a disaster affecting manuscript material. Disaster preparedness involves:

- Prevention – e.g. building maintenance
- Preparation – e.g. contacts, disaster teams, priority salvage items, equipments, training
- Response – e.g. contacting emergency services, redirecting water flows
- Salvage – e.g. assessing damage, setting up drying areas (Gupta, K. K., 2009)\(^6\)

From a risk management perspective, all the best preservation strategies in the world will simply come undone without a disaster plan and trained staff. In other words, without the strand of disaster preparedness, the whole preservation web can be swiftly destroyed. Furthermore a disaster plan that is limited to a few specialized formats such the digitized copies is like a thread blowing in the wind if it does take into account the location of the originals as well as any other copies, such as microfilm masters. Like the ripples in a spider's web, a closer connection between all these different formats and areas can result in a strategic and integrated disaster preparedness approach (Brown, H, 2010)\(^6\).

3.4.10. Copying or Reformatting

Reformatting – simply copying information from one form to another – is another important strand that is widely used for the preservation of manuscript heritage. Currently the key international reformatting strategies for documentary heritage materials are digitizing and preservation microfilming. Too often copying projects are managed in isolation from other preservation initiatives. However,
with an interconnected approach there is the opportunity to explore the synergies between copying and conserving an original manuscript that may have intrinsic value. As a further example of an interconnected approach in action, manuscripts can be fumigated, cleaned, copied, conserved and re-housed as a streamlined, integrated process. As another dimension to interconnectedness, there are likely to be benefits in linking a copying program with the environment and storage – ensuring that, after copying, the whole collection of original manuscripts is placed in a stable, low risk environment, and along with protective enclosures (Brown, H, 2010)\textsuperscript{62}.

3.4.11. Exhibition Support

This strand supports all the preservation aspects of exhibitions, including areas such as:

- Determining whether the items are stable enough to exhibit
- Keeping the exhibition environment safe
- Loan agreements
- Condition reporting
- Safe handling and packing of items.

An interconnected approach would involve assessment of preservation risks from the early stages of planning, and consider the sequencing of digitizing for display and publicity prior to conservation treatments. Again there are clear interconnections with other threads such as environmental conditions, conservation, storage and disaster preparedness (Brown, H, 2010)\textsuperscript{63}.
3.4.12. Conservation of Manuscripts

The 'curative' strand of conservation is concerned with treatments – it can be the equivalent of 'intensive care'. Intensive conservation treatments require the skills of trained conservators and examples range from stain reduction to de-acidification, to major repairs. From an interconnected perspective intensive conservation treatments are wasted without considering related strands such as storage, environment and copying.

The methods of Conservation Treatment are as follows (Raval, V. H., 2010):

- **Fumigation:** First of all the document should be fumigated by Thymol and Paradichlorobenzene. After the completion of fumigation the superficial dust and other foreign deposition should be removed with soft flat headed brush.

- **Paper Strips Removal:** Paper strips found in some folios should be removed by solution of water and methanol (1:1).

- **Cleaning:** The manuscript folios should then be required solvent based cleaning which were given by cotton swabs deeped in Methyl Alcohol in water (80%). By the repetitive action of this method on in-house made vacuum table, desired result should be achieved. The remaining local stains should be removed by the suitable solvents, mainly Carbontetrachloride and Dichloromethane.

- **De-acidification:** After the removal of stains from the manuscript folios it should be given a layer of 2% solution of Barrium Hydroxide to neutralize...
the acidity and to protect the document from further threat due to increase in acidity.

➢ **Lining of Folios:** The folios which were having neither text nor painting at one side of the folios should be given a full lining by 9-10 GSM banana tissue paper at the former side and accurate strip lining should be done and appropriate thickness should be maintained by multiple strips of tissue papers.

➢ **Mending of tears and holes:** Mending of the tears and holes should also be done by the putty made from fibres from the tissue paper in the aforesaid adhesive and later it was retoned to the actual colour shade of the folio.

In the full process of the conservation work on these folios it was persistently ensured that every bit of work is performed within the ethics and principles of conservation.

3.4.13. Education and Training

This thread is vital to ensure that India’s manuscript heritage is preserved for the future. We need people with a whole new awareness and skill sets to build, strengthen and adapt the strands of the interconnected web holistically and strategically. Again, the NMM has taken an active role in this area with a range of seminars and conservation training programs for staff and users delivered across India through the network of Manuscript Conservation Centres. These programs are complemented by other outreach programs to a broad audience base that
extends from scholars and university students to school students (Brown, H, 2010)\textsuperscript{65}.

3.4.14. Preservation Policies

Working with specially identified Manuscript Resource Centres (MRC-s) and Manuscript Conservation Centres (MCC-s) in states all over the country, the Mission collects data on manuscripts located in a variety of places, from universities and libraries to temples, mathas, madrasas, monasteries and private collections. It also brings manuscripts and the knowledge they house to the public through lectures, seminars, publications and specially designed programmes for school children and university students. A number of other programmes are designed to promote manuscript conservation, manuscript digitization and scholarship through manuscript studies workshops. This strand interconnects all others. Policy direction aligns the strategies for preserving the manuscripts and applies resources where they are most needed. Preservation policies are plans of action for safekeeping. They explain what should be preserved and why certain actions are taken. Without this high level commitment, the strands of the web will break and the preservation of manuscript heritage will flounder. India is currently developing policies in the area of digital preservation. To maximize their effectiveness, they should similarly be part of an integrated preservation policy framework (Brown, H, 2010)\textsuperscript{66}.

3.4.15. Resourcing

The resourcing strand is essentially about ongoing commitment and funding for the staff, equipment and materials needed to sustain the preservation
web, now and in future. It similarly interconnects and nourishes all the other strands and is a vital component of 'the management of collective knowing.' Long term resourcing is needed to turn preservation projects into ongoing programs for the NMM and other preservation organizations across India to preserve cultural memory for future generations (Brown, H, 2010)\(^67\).

3.4.16. Collaboration

Collaboration is the ultimate of interconnections – the higher level linking of preservation webs between organizations. As preservation risks and strategies are similar across collections, collaboration is a way of sharing expertise and strengthening the webs. Formal collaborations are an important way of sharing development costs, harnessing and focusing effort, and attracting resourcing and support for programs. The NMM is involved in a range of such collaborations within India and increasingly with international organisations such as the UNESCO Memory of the World program. However, while collaboration and alliances are beneficial, they also cost and need ongoing commitment and nurturing to avoid tangled webs (Brown, H, 2010)\(^68\).

3.5. Digitization of Manuscripts in India

A treasure of rare manuscripts originally handwritten on a variety of materials including palm leaf, paper, gold and silver plates have been dug out from all over the country and digitized. The manuscript library can be accessed online at namami.org. India has with her approximately five million manuscripts – the largest collection in the whole world! And these manuscripts are of an
incredible variety, covering different themes, scripts, languages, calligraphies and illustrations. As the website explains, the manuscripts “together constitute the ‘memory’ of India’s history, heritage and thought”. Presently there are a about a million manuscripts in the library (the largest database on Indian manuscripts in the world) and some date back to the 4th century. Another 800,000 manuscripts are to be added to the collection in the next six months (Nita, 2007).

India’s manuscripts have for centuries captured the imagination of the world. As early as the seventh century Chinese traveler Hiuen Tsang took back hundreds of manuscripts from India. Later in the late eighteenth century, the Nawab of Awadh gifted a superb illuminated manuscript of the Padshahnama to King George III of England. Today, it is considered one of the finest pieces in the Royal Collection. When the English East India Company first came to India, they acknowledged the sub-continent as the bearer of a great and rich civilization that abounded in intellectual and artistic endeavour. Several Company officers developed a fascination with various aspects of Indian civilization including languages, philosophy, art and architecture. The early issues of the Royal Asiatic Journal in the early nineteenth century fully reflect this curiosity in all things Indian.

Well, those who are curious about India now have a vast treasure to dip into. The process of locating manuscripts will continue...some are stored in private collections, places of religious worship, some in obscure museums. Training scholars in various aspects of Manuscript Studies like languages, scripts and critical editing and cataloguing of texts and conservation will also take place.
Also, the library will conduct lectures, seminars, publications and other outreach programmes so that there is interaction with the public. Some of these manuscripts are in scripts which cannot be read and the next generation of scholars is to be trained in deciphering them. This venture has been in the pipeline for quite some time. In fact for many decades manuscripts were neglected, so much so that many of them have become “insect ridden, fungus infected or brittle, fading and fragile”! Only digitization can save them. Of course some manuscripts have been lost forever… some destroyed through neglect and some by foreign invaders. A virtual treasure of texts and manuscripts were destroyed when the Nalanda University was burnt down in the 12th century by the invading armies of the Mughals. India knows the value of these manuscripts, now more than ever. Perhaps it is because the world has realized it too. Old systems like Yoga, Ayurveda, Unani and even the building science such as Vaastu Shastra are getting attention from the west. While the manuscripts are going to be electronically available, some selected ones may also be published or preserved through microfilming. This will be wonderful, as there is nothing like seeing them. Some of these are on cloth, palm leaves, bamboo leaves and even paper! The ones which are selected and preserved will be kept in the National Manuscripts Library which is coming up in New Delhi. These manuscripts are not just religious texts, but also literature and books on medicine and herbs. And once digitized, they will become India’s memory (Nita, 2007).70

Digitizing is one of the major strategies pursued by the NMM as it provides enhanced access as well as saving wear and tear on the original manuscripts.
However, while substantial progress has been made in the field of digital preservation, the stands of this part of the web are still literally 'under construction'. However within the risk management context, the NMM has already invested in the strategy of using preservation microfilm as a long term storage option. By intertwining the strands of digitization and microfilming, it is possible to get the best of both worlds, with the digitizing providing the access and microfilming a long term preservation strategy. Recent developments with microfilm technologies have now made it possible to write digital files to microfilm, ensuring the flexibility of a 'digital to microfilm and back again' cycle. The role of microfilm as a strategy in digital preservation is increasingly attracting international recognition (Digital Curation Centre, 2010)\textsuperscript{71}.

3.6. Preservation and Conservation of Manuscripts

There is not much variation in the lexical meanings of the terms 'preservation' and 'conservation' and can be considered as synonyms. But in manuscriptology the term 'conservation' is used by many traditionalists to indicate the rectification of manuscripts so as to restore them, to the extent possible, to their original condition i.e., with 'restoration'. If suitable methods are not adopted for conservation, it is not possible to prevent the manuscripts from getting damages in the case of undamaged manuscripts or to protect them from causing further damages to those manuscripts which are already damaged. But now the most predominant view is that conservation includes both preservation and restoration and accordingly preservation is only a part of conservation.
In the modern age of advanced technology, it is possible that the contents of ancient documents can be preserved through methods such as transferring the whole text to a computer disc or by micro-filming. It is also an admitted fact that whatever may be the care one takes for the protection of manuscripts, they may not be protected for ever. It is possible only to keep them for a much longer period. Hence it is highly essential that by using modern techniques the text, the most important component in an ancient document, is to be safely protected and should not be allowed to be lost permanently. It should be remembered that the materials of the document, such as birch-bark, paper and palm-leaf, writing instruments such as stylus, quill and twig, and substances used in writing such as ink, extraction of leaves and carbon, have both historical and cultural significance and play an important role in determining the antiquity of the document. Even otherwise they are monuments of the cultural heritage and are to be protected as such.

3.6.1. Causes for damages to Ancient Documents and Manuscripts

Before going into the techniques of conservation it is essential to know the Causes for damages to Ancient Documents and Manuscripts. The important causes include climatic conditions, biological factors, man-made problems and pollutants, among many.

Climatic Conditions

Hotness, humidity and rain do adversely affect the longevity of manuscripts. Hence manuscripts are to be protected from sunlight, rain and moisture. Exposure of manuscripts to intense sunlight or soaking in water or
keeping the manuscripts in humid conditions should be strictly avoided. Complete or partial damage to manuscripts may occur due to causes like flood, wind and fire. Excessive heat and humidity accelerate the process of damage of the materials on the surfaces of which the texts are scribed. The ideal temperature and humidity for palm-leaf manuscripts are 20-22°C and 45-55% respectively.

**Biological Factors**

Different types of worms and insects eat away both palm-leaf and paper manuscripts. Book-worms and insects like termites (wood termites and soil termites), cockroach, silver-fish, cricket, book-lice etc., spoil the manuscripts in various ways. They excrete and germinate on them. They nibble the materials of the manuscripts, cause wetness and decolouring. Some of the fungi produce a type of acid which makes the paper yellowish or black. They also create wetness on the surface of the manuscript. It is said that neem leaves, snake skin, and feathers of peacock can be used for protecting the manuscripts from rates and insects.

**Man-made Problems**

The damages caused due to improper storing and careless handlings are purely of man-made in nature. The manuscripts are not to be dumped as a pile. Suitable storing places are to be selected. Each codex to the extent needed is to be tightly tied. It may be noted that more loosening or more tightening (pressing) is injurious to manuscript material. In the storing place the codices are to be properly arranged so as to cause no damage to any one of them. Care is also
required while taking out the manuscripts from the shelves or boxes. When referring to the manuscript each folio is to be carefully skipped over so as to avoid causing crinkles, tearing or folding for the folios. In the case of paper manuscripts more attention is required to avoid any folding of the edges of the paper. Very of the people who handle the manuscripts do not give much attention to the above factors and hence damages are caused. Damages of this sort are entirely man-made. The care of manuscripts is very important and in the context of preservation of manuscripts many people use the term 'care and preservation of manuscripts'.

**Pollutants**

There exist a number of pollutants which cause deterioration to manuscripts. Various types of dust particles are present in the atmosphere and some of them cause damage to manuscript materials. Dust particles of minerals, cement and many of the chemicals belong to this category. Dust particles of geological origin, though not much harmful by themselves, stimulate the actions of gaseous pollutants and water vapours which have a direct role in causing gradual ruining of manuscripts. Also, deposits of dust make the written letters on the manuscripts unclear to be read. The various gases present in a unpolluted atmosphere keep a natural balance so as to make it congenial to both living beings and non-living objects. In an atmosphere polluted by industries, filthy conditions etc. cause imbalance in the nature's ordained proportion of atmospheric gases. Such conditions cause the presence of larger quantum of harmful gases to the longevity of manuscripts. Gases like ammonia, sulphur
dioxide, oxides of nitrogen are harmful for manuscript materials especially to palm-leaves. Oxygen, an essential gas for living-beings, plays a prominent role in damaging the cellulose materials and hence an excess presence of oxygen causes damage to the organic elements present in palm-leaves.

3.6.2. Preservation of Manuscripts

The methods utilized for the preservation of manuscripts can be classified into two types. They are (1) Traditional methods (2) Modern methods.

Traditional Methods

The basic principles adopted all over India for the preservation of manuscripts are almost same. The materials used in different regions for the preservation, to a great extent, show similarities. It is said that for the protection of manuscripts, separate protecting covers are made out of embossed metal in Nepal. Similarly Buhler states that in Jaina Libraries palm-leaf manuscripts are safely placed in small boxes of white metal and then they are kept in sacks made out of white cotton cloth. It is reported that in Kashmir, manuscripts are bound in leather for protecting them from dust and insects. Manuscripts are to be protected not only from worms and insects but also from moisture.

Care is also required to protect them from torrential rain and flood. The traditional way of keeping manuscripts is in wooden or cane boxes and in wooden almirahs. The folios of the manuscripts are bound tightly before keeping them in the box so as to protect them from easy access to insects and worms. The codices are tied properly with upper and bottom wooden plates (pieces of wooden plank). These wooden plates are in the size of the manuscripts. These
protecting wooden plates are generally made out of teak-wood, jack-wood or neem-wood. In some rare instances they are made out of ivory. Such manuscript bundles are found in palaces and very often the outer ivory coverings are beautifully decorated with carvings of pictures which bear relevance to the content of the manuscript.

The wooden boxes in which the manuscripts are to be kept are generally out of teak-wood since teak-wood is not easily susceptible to termites and is more durable. These boxes have four stands so that the bottom of the box does not touch the floor. Around the stands turmeric powder is sprinkled. In certain cases each manuscript is kept in separate boxes specially designed for the same. It is also seen that the manuscripts are protected from dust by covering it with a silk cloth and kept in boxes.

The dried neem leaves are spread inside at the bottom of the boxes in which manuscripts are kept. Also black pepper and camphor are strewed inside the box. The black pepper is considered to be an efficient material for absorbing moisture and camphor is useful for protecting the manuscripts from fungi and insects. Though not very common, instead of black pepper, black cumin is found to be used.

The palm-leaf manuscripts are taken out from the boxes occasionally. The boxes will be cleaned and placed in sunlight for a few hours. After removing the dust particles by rubbing the leaves with a piece of nice cloth or by brushing, each folio is oiled with lemon-grass oil. The oiled folio is suspended in the air in shade so as to avoid direct exposure to sunlight for about a day. Then they will
be placed again in the box. If required, fresh threads are used replacing the old ones.

For oiling the palm-leaves lemon-grass oil was used till some year back. Due to its exorbitant price, instead of lemon-grass oil, a mixture with citranol oil is now made use of. Citranol oil is mixed with neem oil, turpentine, camphor and black-oxide in a specific proportion. The proportion of mixing is as follows: citranol oil 500 gms + neem oil 250 gms + camphor powder 250 gms + turpentine 1 ltr + black-oxide 50 gms. Some variation is made in the quantity of black-oxide according to the colour of the manuscripts. i.e., if the leaves are blacker the quantity of black oxide will be less. In some libraries the manuscripts are kept in open racks.

Camphor powder is sprayed on the racks during intermittent periods. Occasionally naphthalene balls are also placed on the racks. For dusting and oiling special types of brushes are used. A vacuum cleaner can be used to clean the racks. For dusting and oiling special types of brushes are used. A vacuum cleaner can be used to clean the racks.

Modern Methods

Both in the traditional methods and also in modern methods the importance of the care of manuscripts is well recognized. The techniques adopted for it are also almost same. Continuous care of manuscripts to a large extent protects manuscripts from causes of damage. Those manuscripts for which restoration techniques are applied, through proper care and maintenance, the recurrence of the cured damages can be stalled off.
For the continuous care of manuscripts attention is to be given to the following:

1. The temperature and humidity within the stack room, to the extent possible, are to be kept ideal to manuscript materials and all possible efforts are to be made to avoid causes of major fluctuation to humidity and temperature.

2. Stack room requires sufficient ventilation.

3. Exposure of manuscripts and stack room to direct sunlight is to be avoided.

4. Attention needs to be given for regular cleaning of the stack room.

5. Dusting and oiling of manuscripts are to be done during regular intervals.

6. Insecticides not injurious to manuscripts may be used according to requirement.

7. Careless handling of manuscripts is to be avoided.

8. Every manuscript bundle is to be checked intermittently and problems if any should be rectified. Worn-out or broken threads of the manuscript codices need to be replaced.

These are only some of the methods to be adopted for the preservation of manuscripts and are found to be used in ancient and modern periods.

Chief Modern Techniques of Preservation

The chief techniques used in modern times for preservation of manuscripts are the following:

a. Air-conditioning

b. Deep-Freezing
a. Air-Conditioning

Maintaining constant temperature prolong the period of longevity of manuscripts. In India where extreme climatic conditions exist, air-conditioning of the library is highly essential. To a great extent it helps to reduce the problem of dust. The air-conditioned rooms are not congenial for the survival of many of the worms and insects. However, attention is required to have the air-conditioning throughout the day. In the India conditions, if required, special arrangements may be made to ensure uninterrupted power supply and to maintain constant voltage. Switching off the air-conditioner for hours together will adversely affect the manuscripts.

b. Deep-Freezing

When the temperature is at freezing point or below, the insects and worms cannot survive. Hence documents which are to be preserved can be kept at freezing point. Since insecticides are not used in this method it is non-toxic. For deep-freezing a specially designed Deep-freezer is used. The books or manuscripts are placed inside polythene bags and are tightly sealed. These loaded bags are placed on a trolley fitted inside the freezer. After closing the lid, the deep-freezer is switched on. The loaded bags are kept inside the chamber for about three days. Then the bags are taken out form the freezer and keep them in the open air for a few hours to remove the dews if any on the outer surface of the
polythene bags. Then the manuscripts are taken out of the bags and are placed in their original storing place.

c. Fumigation

Fumigating the manuscripts is helpful in eradicating worms and insects. For this purpose, special fumigation chambers are used. Chemicals like Themol, Ethoxide, Aluminium Phosphide are used as fumigants. The fumigants are heated with the help of electric bulbs fumes. The manuscripts are kept in such chambers allowed to undergo fumigation for some time. After the treatment is completed, the doors of the chamber are opened and the gas is driven out from inside with the help of exhaust fans. The chamber is kept opened for some time so as to get fresh air in. then the treated manuscripts and be taken out and kept in their original place.

d. Moisture Absorbents

To protect the manuscripts from getting wet due to moisture, different types of moisture absorbents are found to be used. The chief among them are silica gel, anhydrous calcium chloride and charcoal. Among all the moisture absorbents, silica gel is the most efficient and is considered to be very safe. For reducing the humidity in non-air-conditioned manuscript libraries, the use of moisture absorbents is very suitable. Such absorbents can be placed in different parts of the room.

e. Xeroxing

Whatever may be the care one takes, it may not be possible for one to preserve the manuscripts for ever. Hence preservation of the contents becomes
essential. Xeroxing is used for preserving the contents of manuscripts. Having Xerox copies is also a preservation technique in the sense that for references and studies these Xeroxed copies can be utilized and thus the original manuscripts are kept untouched. This helps in the safe protection of the original manuscripts.

f. Microfilming

With the help of a microfilm camera, manuscripts can be microfilmed and when needed, they can be read through a microfilm reader. By using microfilms frequent handling of the original manuscripts can be avoided. However, it may be noted that in the case of both Xeroxing and microfilming the heat emitted is injurious to the manuscript material. In traditional kerala houses the ceiling of the room are made with thick wooden planks. This type of ceiling is known in Malayalam as ‘maccu’ or ‘tattu’. The inter space between the roof and the ceiling is very spacious and this inter space is known as ‘tattinpuram’

g. Digital Archiving

The written lines of the manuscript as such can be transferred to CD ROMS and whenever necessary they can be read either from the computer screen or from their print out. For this purpose computers with scanning facility are used. Both palm-leaf and paper manuscripts can be directly scanned with the help of a scanner.
3.6.3. Techniques of Restoration

In conservation of manuscript due importance is given to restoration. The techniques used by the sample Manuscript Libraries for restoring the damaged manuscripts to their original state, to the extent possible, are discussed below:

a. Separation of Sticking Manuscripts

Leaves of bundled manuscripts, if not occasionally untied and cleaned, in course of time, may stick together. In addition various types of external causes also create this problem. It is found that the leaves of manuscripts stick together duo to dampness or excessive humidity and cannot be easily separated without damage. In such cases, separation is possible with the help of a spatula after moistening the palm-leaves. Another method is to keep the sticked leaves immersed in hot glycerin water for about an hour, each being taken out, with the help of spatula. The palm-leaves are dried if kept in between the blotting paper sheets. When letters are written with ink, it is not advisable to use the above said techniques.

b. Restoring Legibility of Writing

In manuscripts letters may become faded or non-legible. In palm-leaf manuscripts they can be revived without much difficulty. Extractions of certain leaves are quite commonly used for this purpose. But plants selected for this purpose vary according to the local availability. Smearing with lamp-black is common to all regions. A small quantum of lamp-black is taken on a cotton piece and gently rubbed on the letters. Excess quoting of lamp-black, if any is removed
by a soft cotton cloth, and then the leaves are cleaned with a mixture of alcohol and glycerin.

c. Restoration of non-stiff quality of leaves

The Fresh palm-leaves are flexible to a certain extent. As time elapses, this flexible quality may be lost and the palm-leaves may become stiff and thus become prone to brittleness. Softening of leaves is done either by immersing them in glycerin or by brushing them with glycerin.

d. Filling holes and broken edges

Due to the attack of insects holes are formed both in palm leaves and paper. Bigger holes are filled with pieces of unused palm-leaf or paper as the case may be. The piece is cut out equal in shape and size to the hole in the manuscript and this piece is stuck to the original leaf at which the hole is found. For making to stick, polyvinyl acetate adhesive is used. The same method is adopted for the rectification of the broken edges. In the case of small holes, fibre of mulberry tissue paper is made use of. The fibre of mulberry tissue paper is placed on a glass sheet by making use of the pointed edge of a needle or knife. Then the fibres are mixed with methyl cellulose adhesive. The holes in the manuscript are filled in with this mixture and made flat and smooth with the help of a spatula.

e. Removing brittleness and fragility conditions

Old manuscripts very often become brittle and fragile. When handled, such manuscripts will be crumbled to pieces. In such cases an additional supporting tissue is used so as to enable one to use the manuscript without
causing damage to it. The tissue used is either fine chiffon or acid-free tissue paper. The adhesive used for sticking the tissue to the manuscript leaves can be starch paste or carboxyl methyl cellulose or cellulose acetate sheet.

f. Lamination

Deterioration in the strength of the manuscript materials can be noticed in old manuscript, which also becomes very fragile. Lamination is used as a technique of restoration in such cases. In paper manuscripts reinforcement to paper is done through lamination. It is done either manually or by machine. Different types of lamination are done manually. In machines there exist two types:

(1) Flat-bed laminator and (2) Rotary laminator.

Though lamination is gene used as a technique of restoration, it can also be used as a preservation technique in the case of undamaged paper manuscripts. Also lamination gives protection from easy deterioration. If laminated many of the torn leaves or pages can be conserved. In addition, through lamination the scribbled matter becomes more legible.

g. Removal of Stains

There are instances in which manuscripts may be got stained. It can happen to both paper and palm-leaf manuscripts. In the case of paper manuscripts dry-cleaning is used as one of the methods for stain removal. Solvents can also be used for this purpose. There exist different types of solvents. The solvents which are not harmful to the manuscript materials such as
palm-leaf and paper and also to the ink-written letters are to be selected. The solvent can be applied on the affected part with the help of a brush.

h. Cello tapes and Tissue papers

The torn folios of palm-leaf manuscripts can to a certain extent be set right by using cello tapes and tissue papers. They are used quite extensively for paper manuscripts.

For any manuscript library the most essential task is the conservation and preservation of manuscripts. If proper attention is not given, the condition of many of the manuscripts in the stock may become worse and will become unfit for use by researchers. Also it is difficult to utilize such manuscripts for the purposes of critical edition. They are also monuments of cultural heritage. Hence extra care is required for the conservation of manuscripts.
References:


2. Ibid


4. Ibid

5. Ibid

6. Ibid


11. Ibid


15. Ibid


17. Ibid


20. Lewis, R (1884), *Catalogue of Sanskrit Manuscripts in several private collections in Mysore and Coorg*, Bangalore: Mysore Govt. Press


22. Bhandarkar Oriental Research Institute of Pune (1957), *19 volumes of subject-wise classified catalogues on Manuscripts*


25. Ibid


32. *Ibid*
46. Online Records of Kolong Kala Kendra, a socio-cultural organisation of Nagaon, Pranigudam, Nagaon, Assam, India, dated 25/02/2010.


56. Ibid


60. Gupta, K. K. (2009), ‘Disaster Management in Manuscript Repositories’

Kriti Rakshana vol. 3 no. 5& 6, vol. 4 no 1-4 April 2008 – March 2009
pp.22-25.


62. Ibid

63. Ibid

64. Raval, V. H. (2010), Conservation of Vajrayana Buddhist Manuscript from
N. C. Mehta Gallery Collection, Ahmedabad, Kriti Rakshana, A bi-
monthly publication of the National Mission for Manuscripts, Vol. 5 nos. 5-
6, April – July, p.32


67. Ibid

68. Ibid

69. Nita, (2007), Valuable and rare manuscripts are now online, March 14,
http://nitawriter.wordpress.com/2007/03/14/valuable-and-rare-
manuscripts-are-now-online/ (accessed on June 25, 2010)

70. Ibid

71. Digital Curation Centre (2010), Digital Curation Reference Manual,
Chapter: The role of microfilm in digital preservation, [forthcoming]
http://www.dcc.ac.uk/resources/curation-reference-manual/chapters-
production/role-microfilm-digital-preservation) (accessed on April 5, 2010)