

Digital Preservation of Mahayana Buddhist Manuscripts of Arunachal Pradesh: Strategies, Issues and Challenges

Maltesh Motebennur

Abstract

The paper deals with the strategies, issues and challenges faced during the survey for the digital preservation of Mahayana Buddhist manuscripts of Arunachal Pradesh. Arunachal Pradesh, the abode of various colourful tribes is notable for its tribal history and cultural heritage. There are more than twenty-six major tribes and hundred sub tribes. Out of which, half a dozen of tribes profess living Buddhism- both Theravada and Mahayana forms. In the present scenario, it is estimated that only in Tawang monastery there are more than five thousand rare Buddhist manuscripts that contains knowledge on religion, philosophy, medicine, Lord Buddha's original preaching's etc. Besides there are at least five dozens of old Mahayana monasteries in Arunachal Pradesh where hundreds of Buddhist manuscripts are preserved written in Bodic script. The present paper is the project outcome, taken by the author with the help of National Mission for Manuscripts carries out the methodologies used in a long and effort-intensive process, the software used in this effort by the Mission, developed by National Informatics Centre (NIC), is Manus Granthavali.

Keywords: Digital Preservation, Digital Content, Manuscript Preservation

1. Introduction

The North East India is the meeting ground of various cultures since pre historic period. Before independence, it consisted of independent Kingdom of Assam, Manipur, Tripura and some hills region. The area is notable for its rich cultural heritage in the form of temples, monasteries, stupas, traditional arts and crafts, dances, festivals, rituals and so on. During medieval period the state of Manipur and Tripura were ruled by Hindu Kings. The same was the case in Assam; with the coming of the Ahoms in Assam (13th-14th Century), a number of Buronjies were written. Simultaneously with the growth of Neo Vishnavism propounded by great, saint Shrimant Shankar Dev. The cultural heritage of Assam was given a new flip one of the finest

contributions of the Ahom Kings as well as Shankar Dev was to popularised the writings of manuscripts. The Buddhist monasteries (Mahayana Buddhist monasteries in Tawang area as well as Theravada Buddhist manuscripts in eastern part of Arunachal Pradesh and some parts of Assam also patronised, writing of manuscripts as well as manuscript painting. In Tripura also the Manikya King and in Manipur after the introduction of Vishnavism in 17th century writings of manuscripts were patronised by the rulers.

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of Buddhist manuscripts are preserved written in Bodhi scripts. In the Theravada monasteries of Arunachal Pradesh located in districts Lohit and Changlang more than thousands such manuscripts are preserved written in Monai scripts in fact a number of Theravada monasteries in Assam also contains a number of manuscripts in their position. The largest River island Majuli (Assam) in the home of a number of Vishnavi Sastras and monasteries contains thousands of manuscripts. The Sastra at Bardow and Barpeta are also rich in such Vishnava manuscripts. Besides a number of manuscripts preserved in the museums, Libraries and individual positions of which we know a very little.

However, North East India has thousands of manuscripts both Vishnava and Buddhist manuscripts. The concepts of preservation, conservation, restoration have not been used so far due to lack of technical knowledge and manpower. Many manuscripts are destroyed due to the prevailing climatic conditions lack of preservation lack of interest. Thus, the manuscripts, which are of at most importance to know the history and culture of the people of the area, are lost forever. The importance of Buddhist manuscripts cannot be over estimated from the simple fact that these manuscripts contain ideas regarding cultural interaction of North East India with Tibet and parts of South East Asia. Like that, the Vishnava manuscripts contain the history and culture of mediaeval Assam. No doubt the loss of these manuscripts are great blow for Indian culture it is in this context the early documentation of manuscripts and digitization process should be taken at the right earnest is the need of the hour is to preserve and protect these manuscripts for the posterity.

2. Mahayana Buddhist Manuscripts

Arunachal Pradesh, the abode of various colorful tribes is notable for its tribal history and cultural heritage. The heritage of the people is reflected in their social –cultural- religious institutions. Prehistoric remains, ruins of temples, forts, Buddhist monuments and traditional arts and crafts provide fine examples of Indian cultural relics. Here one can notice belief in Donyi-Polo (worship of Sun-Moon) animism, nature worship, worship of Vishnu as well as Buddha. Interestingly, out of about twenty-six major tribes, more than half a dozen of tribes profess living Buddhism- both Theravada and Mahayana forms. The tribes like the Khamtis, the Singphos, and the Tikhak Tangasa are believers in Theravada Buddhism. The Monpa, the Sherdukpen, the Nah, the Memba, the Khamba, the Meyor and the Zhakring are following the tenets of Mahayana Buddhism.

The Mahayana tribes are mainly noticed in the Indo-Tibetan border area of Arunachal (Thripati, 2008). The Monpa and the Sherdukpen live in Kameng frontier (Tawang and West Kameng area). The Nah in Upper Subansiri, the Memba and the Khamba in Upper Siang and the Meyors and the Zhakrings inhabit the Lohit frontier. These Mahayana Buddhist tribes are said to have migrated to their present settlement from Tibet sometime in the past, the credit for which goes to Guru Padmasambhava locally called Lupon Rimpoche, who planted the seed of Buddhism in Monpa-Sherdukpen area sometime in 8th century A.D. As per the legends, various places in Kameng area are associated with the visit of Padmasambhava. In the Monpa area, Places like Taktsang, Jik-taksang, Bagajang, Kimnash, Terma Bumgan, Bigha and Komefuk were said to have been visited by the great

Guru. The Sherdupens also cherish nine places like Jambring, Khang, Gisih, Flujima, Machula, Chupt, Jakhung, Pemaloso, Urgyan Pemagom (Chaksung), and Shra-ha noma, hollowed by association with the Master. Tradition has it that it was Padmasambhava who predicted the construction of three oldest Buddhist temples in this area and as if to fulfill it, a Nyingmapa Lama from Bhutan, Sherbum by name, built the three oldest Nyingmapa temples of Ugyelling, Sangelling and Tsorgelling sometime in 11th -12th century A.D. These three oldest monasteries are still situated near the town of Tawang.

Every gompas, monasteries, stupas and manes should have manuscripts in Buddhist areas. These manuscripts locally in Monpa language called as *Pecha*, these are tightly wrapped in a yellow silken or cotton long cloth, sandwiched between two wooden pieces. Every family has a small chapel in the shape of an altar called *Chosam* at the rare of the house. It is wooden and has a few shelves on which are kept images of several divinities and ritual articles. The rich have a separate room for the altar. The religious books, manuscripts (*Pechas*) are if one has, many are stacked in the pigeon-holed along shelves beside the altar. Every village in Monpa area has gumpa, irrespective of size of the gompas the collection of *Pecha* varies.

2.1 Tawang Monastery

Perched atop a hill, overlooking the ridge and surrounded by thick clouds, the legendary 17th century Tawang Monastery is the fountainhead of spiritual life of the followers of the Gelugpa sect of the Mahayana school of Buddhism. (Sarkar, 1988) Majestically seated on a ridge that overlooks the Tawang Chu valley of (Tsosum) of Kameng division

of Arunachal Pradesh. At a strategic point where there trade route from Tibet, Bhutan and East Kameng meets, the Gompa is the heart and soul of the Monpas. Being the biggest monastery of Arunachal and perhaps the second largest of Asia, the monastery is locally known as *Tawang Gaden Namgyal Lhatse* or the Celestial Paradise of the Divine site chosen by horse. Tawang monastery situated at about 10,000 feet above the sea level. The monastery is surrounded on all sides except on the east by mountains with snow-capped peaks and coniferous forest below. Viewed from the distance, it appears like a fort if guarding the votaries in the wide valley below. The impression is not devoid substance in view of the hostility its founder faced from the *Karmapas* and *Nyingmapas*, then dominant Buddhist sects in the area and more so, from the *Dukpas* of Bhutan, who are said to have attempted to capture Tawang. This explains well the strategic location as well as the structures purely defensive in nature made in the layout of the Monastery that remains not only a strong base for propagation of religion but in the past was also a military post against the *Dukpa* attacks. It is apt to know that the founder of the Gompa gave so much importance to defense aspect that he lifted all prohibitions against the military activities from the inmates of the Monastery and out of monthly rations of thirteen bras of cereals, as much as ten given as inducement to actively join in the defense of the monastery. The spur on which the Monastery is situated has rivers in the south and west, a narrow ridge on the north connecting it with the range and gradual slope on the east. Thus, the position of the Gompa is very strong as it is difficult to approach the Monastery from the north along the ridge. Even now, one can see many holes in the boundary wall of the Monastery, in which guns were fixed to

repulse the attack of the enemy and even used to watch the activities of the advancing enemies. The Monastery covering an area of 135 sq. mts. in length can be approached from the North along the ridge. The Monastery accommodates 500 to 800 Lamas and is the second largest in Asia and largest of its kind in India.

A three-stored building stands on the western side of the court, known as *Par-Khang* (Library) and is of (15.3m x 15m x 9m). The Tawang monastery library is housed in a big square hall, which covers the entire first floor. Heavy curtains bearing Buddhist symbols are hung over the balcony. An altar with images of divinities and rituals stands on the western side of the hall. The chief image is that of Tsongkhapa. The sacred manuscripts (*Pechas*) are kept on pigeonholed racks on both the sides of the altar as well as on the northern and southern sides of the hall.

The Tawang monastery library contains two printed sets of *Tanjur*, three sets of *Kanjur* and five volumes of *Changia Sungbum*. Each set of *Tanjur* contains 225 volumes. Among the three sets of *Kanjur*, two sets are hand written and one set printed. The printed set extends to 101 volumes. One hand-written set has 131 volumes and the other 125 volumes. The letters of the letter set are washed with pure gold. Some of them are written with silver. There are three pages of the religious text, called *Gyetongpa*, embossed throughout in letters of gold is kept in the museum. Many of these valuable manuscripts are brittle and edges are broken. The wood protections on both the sides of these manuscripts eaten by wood borer insects and some of these manuscripts have got bores or holes in between, caused by these wood borers. The suggestion has been given to monastery abbot and

Parkhang incharge, at least for replacing these worms eaten wood supports. The origins of these manuscripts are not ascertained since there are no records. On interview of Parkhang incharge, the facts were collected about these rare manuscripts. He has an opinion that these manuscripts probably brought during construction of Tawang monastery itself, probably more than four hundred years old. The hand written manuscripts are very fragile in nature, some of them are almost in ramshackle conditions. These manuscripts are to be digitised and preserved before decaying further (Maltesh, 2006).

There are more than one hundred eight Gompas in the Tawang area alone. Each Gompa has several manuscripts preserved in their custody. Besides there are thousands of such manuscript collections in individual position as well.

3. A Sample Project

A sample project was undertaken by the author, with the objective of better understanding on the different issue pertaining to the digitization of Manuscripts. An excellent Mahayana Buddhist manuscript - *Gyetongpa* was chosen for the sample project. The project was jointly envisaged and executed by The National Mission for Manuscripts took up the task of preparing *Kritisampada*, in order to document the wealth of Indian manuscripts lying scattered in different organisational and private collection in India and abroad. The National Mission for Manuscripts carries out the methodologies used in a long and effort-intensive process, the documentation of manuscripts through various means. The four important methods such as i) Survey and Post-Survey; ii) Manuscript Resource Centres (MRCs); iii) Manuscript Partner Centres

(MPCs); iv) National Informatics Centre and Indira Gandhi National Centre for the Arts. Information format for the data collection employed by the Mission and its partner institutes standardised so that the information made available on the internet is uniform, as complete as possible and there is no scope for confusion. Questionnaire, CAT-CAT, Manus (data form) has been used. The software used in this effort by the Mission, developed by National Informatics Centre (NIC), is *Manus Granthavali*. It updated frequently and has undergone several modifications with the addition of new fields and the possibility of multiple subject entries for a single manuscript. *Manus Granthavali* based on the Dublin Core Metadata Standards that are globally accepted and used in libraries everywhere. A state-of-the-art software, it has been installed in almost all of the MRC-s and MPC-s of the Mission.

4. Project Set-up

The project set-up was designated into two operational areas:

1. The Image Capture Station

The image capture station consisted of a digital camera (Nikon D100 with bayonet mount 28-70mm f/2.8 ED-IF AF-S Zoom-Nikon lens) mounted vertically on the photographic copy stand (Bogen System 800 Repro Copy Stand W/bb 1740), with side illumination through 40 watts incandescent lamp. The background was chosen to be slightly lighter than the document colour in order to minimize shadows and optimize digital transfer. The Digital Camera had special colorimetric filters that enabled the camera to capture a broader spectrum of colours than most digital scanners.

The lighting was also provided selectively from by two 1000-watt Elinchrome strobe lights (daylight balance) at 45 % angle to copy surface, with

multiple diffusion filters between copy surface and light to soften shadows and reduce glare for specific pages with illustrations.

2. Image Processing Station

The image processing station was a HP Brio PC with Pentium IV processor, 128 MB DDRAM. The workstation had the image processing softwares like *Manus Granthavali* Kodak Imaging, Adobe Photoshop 6 and above. There was an image transfer device connected to the USB port, which gathered images from the memory card of the digital camera.

5. Project Process

The project process consisted of the following steps:

5.1. Document Assessment and Set-up

The condition of the document, sequence of pages, original page numbering order, was noted at this stage. The lighting environment was adjusted as per the specific requirement of the document using a light meter. The manuscript was set-up on the Photographic Copy Stand bed opening it at an angle of 120 degree to avoid the stress to the manuscript.

5.2. Image Capture

At this stage, the image was captured from the manuscript at the image capture station. Initially few shots were taken at different aperture, focal length and shutter speed. The captured images were transferred to the Image Processing Station for comparative study and standardisation of the image capture specifications.

The final images were captured using a cable shutter-release trigger at

-Aperture: 16

-Focal Length: 55mm

-Shutter speed: 2.5 seconds

The images were captured in colour as uncompressed 8-bit-per-channel (24 bit RGB) TIFF files at 300 dpi.

The images were then transferred to the Image Processing Station.

5.3. Image Processing:

The image processing consisted of following steps

- ◆ Image Identification Tagging: The images, once transferred from the Image Capture Station, were renamed as per the page sequence.

Image Quality Check: The images were checked for any deviation in terms of clarity, legibility, and colour.

- ◆ Basic Editing: The images were checked for any tilt/skews and deviation from normal orientation, and were rectified to the acceptable level of 4-degree tilt of NARA specifications. The images, which contained some portion of the opposite page, were cropped, resized and the normal processing was done.
- ◆ Final Editing: The graphics level of each image was checked with the original. The images, which had come brighter, were toned down to match the actual. The unwanted stain marks, worm marks were removed. The colour channels were checked to conform to 8 bit per channel specifications.
- ◆ Format Conversion: The base files were converted to three basic formats as per the requirements, namely PDF, TIFF and JPEG.

E-Book Format Conversion: The individual image PDF files were tagged and a composite

PDF file was prepared as per the original document pagination and sequence.

6. Project Output

The images were obtained in three forms, namely TIFF, PDF and JPEG. All the image files of the individual pages were obtained in uncompressed TIFF, and JPEG, with the objective of archival. The composite PDF containing the individual pages were in E-book form, with the objective of viewing and access. The image files of a page of the document of various intermittent stages of processing were also obtained. The images were stored in CD-ROM and were made resident in hard disk of the central server.

7. Project Experience

The aspects of the project, which needs attention if the project is taken-up at larger scale, are as follows:

The project would need a server administered hard disk based storage system with fault tolerance and disaster recovery provision along with CD-ROM based storage for archival. The reason being, it is difficult for a CD-ROM to contain images of a document or an E-book in its entirety. For random access by viewers, hard-disk based storage is option that is more reliable.

It was observed that, for the images of document pages containing the illustrations, there were undesirable and unavoidable but minute tonal variations. This is because the illustration contains any shade of colour; some of them are washed with gold and silver, which can lie in the spectrum of millions of colour. The CCD unit of the digital camera captures a limited band of the spectrum of colours. To circumvent this limitation, white light can be used.

The digital restoration of the images of the manuscript was done using the state-of-art image editing software, *Manus Granthavali* and Adobe Photoshop Version 6, which is in itself very resource consuming on the processing workstation. The process of digital restoration is also very expertise-intensive which involves cloning, multilayer processing, the hue, saturation and gradient adjustments etc. It was observed that for complete satisfactory digital restoration of an A4 page of the said manuscript, at least 4-5 hours were needed for an expert professional to work with the above-mentioned infrastructural set-up.

8. Challenges faced during the project:

- ◆ Convincing the authorities of the monasteries
- ◆ Difficulty in accessibility of rare and valuable manuscripts
- ◆ Protecting the Intellectual Property Rights (IPR) Copyright (Arora, 2006)
- ◆ Security
- ◆ Lack of expertise
- ◆ Techno phobia
- ◆ Coordination in work
- ◆ Ownership
- ◆ Cost of regular refreshing
- ◆ Tuff climatic and topographic conditions
- ◆ Funding
- ◆ Lack of Technical Service
- ◆ Lack of Communications

9. Conclusion

India is the repository of an astounding wealth of ancient knowledge belonging to different periods of history, going back to thousands of years. Most of this knowledge belonging to different areas of intellectual activity such as religion, philosophy, systems of science, arts and literature is preserved

in the form of manuscripts. Composed in different Indian languages and scripts, they are preserved in materials such as birch bark, palm leaf, cloth, wood, stone and paper.

India has the largest collection of manuscripts in the world. They are spread all over the country and also abroad in different libraries, academic institutions, museums, temples and monasteries and in private collections. The rich manuscript wealth of India today faces a threat of survival. However, India has possibly lost a vast amount of this wealth. Sufficient information on them is not available today. Among the existing collection, most of them are in a state of decay and damage. Among the extant collection, only a very small portion has been surveyed and documented properly. Experts fear that almost all the palm leaf manuscripts will perish in the near future due to decay, and wear and tear. The invaluable heritage of India in the form of manuscripts has to be documented, preserved and made accessible to us and to succeeding generations. It is estimated that there are several Buddhist manuscripts still scattered all over the country and abroad these are to be digitised or microfilmed with the help of funding agencies, so that we can at least register these valuable collections into UNESCO's Memory of the World.

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About Author

Mr. Motebennur Maltesh, Deputy Librarian, and
Library I/C of Rajiv Gandhi Central University
(Formerly Arunachal University), Rono-Hills,
Itanagar, Arunachal Pradesh.

E-mail: mmaltesh@rediffmail.com