

HAND PAPERMAKING IN CENTRAL BURMA AND NORTHERN THAILAND

by Stephanie Watkins*

INTRODUCTION

The Union of Myanmar (pronounced mee an' mar), also known as Burma, and Thailand, formerly known as Siam, are neighboring countries in Asia. They are situated between India to the west, China to the north, Laos and Cambodia (also known as Kampuchea) to the East and Malaysia and Indonesia to the south.

The words "Burma" and "Myanmar" have the same meaning: "The First Inhabitants of the World." The current government has tried to separate itself from former governments with the name change. However, the natives still refer to themselves as "Burman" and their culture as "Burmese."

"Thailand" means "land of the free." The country's name was change from Siam in 1939 to reflect the change to a constitutional monarchy in that decade. Both countries are predominantly Buddhist, but practise differing forms of Theravada, or Hinayana Buddhism.

The papermakers which will be discussed are from Central Burma and Northern Thailand, in an area collectively known as "Shan". The geographical names of Shan, Siam, and Assam, which is the north-eastern portion of India, all have the same root and mean "Free People." It is also an indication of the widespread migration of cultures in this portion of the world. The original knowledge of papermaking in the Shan region most probably derived from Chinese sources such as from the Yunan Province in Southern China.

The secular paper needs of both societies includes books, writing supports, wrapping papers for food or merchandise, umbrellas, firecracker coverings, toilet paper, and women's sanitary napkins among other things. Religious needs can include prayer offerings for Buddha such as paper flags, paper flowers, or cut paper in the shape of *hti*, which are the metal crowns at the top of the Burmese pagodas. Accordion folded paper darkened by charcoal with white writing, is used along with palm leaves and lacquered bamboo leaves for recording religious scriptures. In Burma, two specialized papers have developed for the purpose of interleaving gold and gold leaf during the beating process. These are rice straw and bamboo straw papers. Both papers are made in Central Burma near the last royal city of Mandalay.

*Getty Fellow in Paper Conservation, Northeast Document Conservation Center, Andover, MA, 01810.

RICE STRAW PAPER

The rice straw papermaking village visited was Nuang Gone. There are several papermakers in the village. The family of Daw Thaung Kywe demonstrated their papermaking process for the tour group. Rice straw paper is manufactured in three thicknesses and quality grades: the coarsest being used for wrapping produce, the finest being used for interlayer support during the gold-beating process. The samples purchased were eight mil, twenty-three mil, and twenty-eight mil in thickness.

The locally grown straw given to the oxen is considered unsuitable for papermaking fibers. Therefore, the rice straw used for papermaking is purchased as needed from the northern part of the country near Shwebo. It is retted in water and lime in clay pots or in cement tubs for five days. One clay pot will produce enough material for five days of papermaking. Next, the rice straw is cooked and steamed under a wood fire for thirty-six hours. The material is then rinsed and washed in the cold running water of a nearby stream.

After cooking and rinsing, the fiber is beaten with a metal-tipped, wooden stamper for approximately twelve hours. The stamper works like a see-saw balance. It is raised by stepping on one end. Releasing foot pressure causes the wooden spike end to fall into a small depressed cavity, hitting the fiber. Pulp needed for a coarser grade paper requires less beating and for finer grade paper requires more beating.

Once the pulp is prepared, the process of sheet formation can begin. Measured balls of pulp are used for consistency in sheet thickness. More pulp is needed to produce thicker sheets; less pulp for thinner sheets on the same size screen. Water is added to a bowl and a pronged wooden rod is twirled to disperse the fibers. The slurry is then poured into the screen already immersed, and weighted with rocks in the water vat.

Hands are used to distribute the pulp slurry evenly over the screen. After stirring the slurry, a smoothed stick is used to remove the air bubbles on the water surface which might cause deformations in the sheet. The entire sheet formation procedure takes only a minute or two.

The screen mould is then carefully lifted from the vat and left to dry in the sun. The sight of paper screens stacked like cards drying in the field is a tell tale sign of a papermaker in Asia. After drying, the sheets are removed from the screen using a dull, teak knife, reminiscent of a bone folder. The screens are made from locally woven cloth and sewn around splints of wood. After removal, the paper is cut to sizes suited for the intended use.

Papers destined for gold-beating are also burnished. The paper is placed on an iron slab and beaten in an alternating rhythm with two smooth wooden logs. This procedure produces characteristic diagonal marks on the paper.

BAMBOO STRAW PAPER

From the rice straw papermaking village of Nyang Gone, it is a short oxen's or bullock's ride to the bamboo straw papermaking village of Daung Ma, which means "pea hen." Three families currently make this specialized paper in this village. U Htun Shwe's family demonstrated the papermaking process. The procedure to produce bamboo straw paper is similar to the methods used to make rice straw paper, but a meticulous and methodical approach is necessary for good results. The material is gathered locally before six months of age when a hollow cavity will begin to form in the center of the stalk. It is cut between the nodes, the outer "bark" is stripped, and splints are made of the material. The pithy inner core is not used for papermaking.

The splints ret in lime and water for three to six years. There are fewer and fewer families making this paper, yet there is a steady demand for it. In an effort to satisfy the need, the retting time is sometimes shortened. After the retting time has elapsed, the bamboo will be cooked in boiling water for a day and a half. Afterwards, the fibers are splayed by pounding with a wooden hammer on a rock.

Next comes the very precise and tedious beating process done by hand for one hundred fifty hours. One batch of pulp, approximately one pound, produces twelve, two by four foot sheets. The pulp is laid out, then beaten with wooden mallets. The beating is done indoors, to help keep the fiber moist. It is also cooler there for the workers, and keeps the pulp as clean as possible in this dusty part of the country.

Water is added to the pulp throughout the entire beating process with straw tools which look like "feather dusters." The pulp in sheet form is often lifted, flipped over and rolled to ensure even beating of the pulp. A mortar and pestal grinds the pulp further and use of a deer's antler or stag's horn on a smooth slate is the final step. Deer are considered sacred to the Buddhist Burmese and the Koretsky's have suggested that this tool has religious as well as practical significance for the papermakers. The pulp appears shiny at this stage.

After beating, the pulp is measured into balls for consistency in sheet formation. Like the rice straw papermaker's, the bamboo straw papermakers disperse the pulp with a pronged rod, which is spun and twirled between the hands to distribute the fiber in a bowl of water. The pulp slurry is then poured into the screen already immersed in the shallow vat.

As with rice straw, the pulp is distributed by hand and a smooth stick is used to eliminate surface bubbles. The difference between the two papermakers was the carefulness, thoroughness, and repetition of these procedures by the bamboo papermaker. In contrast to the speed and fluidity of the rice straw papermaker, the bamboo straw papermaker was very slow and exacting in his movements. The formation of one sheet of paper took approximately fifteen to twenty minutes from start to finish.

A cross member was placed in the center of the mould to help with stability and handling during the draining and removal from the vat. The mould, which had been secured to the edges of the vat, was unclamped and released. One edge of the screen was slowly lifted for draining. A smooth stick was run along the underside of the screen to remove bubbles, extra water, and any extraneous matter.

The mould was then taken outside and a cloth (an old *longyi*- a wrap which is the native Burmese garment), is stretched taut across the reverse of the screen to wick out additional moisture. This procedure is repeated several times with the material wrung out after each absorption. The paper on the screens is then left to dry in the yard.

The mould frames are made of wood two-by-fours with mortise and tenon joints. A very finely woven cloth is stretched and tied around the screen frame. The removal of the bamboo straw paper from the mould is unique. The cloth screen is untied from the wooden framework along the top edge and the cloth gently separated an inch or two from the paper. Once this initial separation is achieved, the motion is reversed and the paper is removed from the cloth screen. None of the other papermakers encountered untied the screen to remove the paper.

The next step is to cut the paper into squares. Leftover material is saved to be reused. After cutting, the squares are rubbed with a wood block on a padded surface and surface hairs and other irregularities are diminished. About the paper, Dr. Rajai Atalla, while a scientist at the Institute of Paper Chemistry in Appleton, WI, stated, "...there is not a single unbeaten fiber, although the crystalline structure of the cellulose fiber has not been disturbed." (Koretsky, *The Goldbeaters of Mandalay*, p. 31) Paper destined for use in gold-beating will also be burnished.

Burnishing is accomplished on brass plates in a subterranean basement where it is cool and the humidity level is higher and more consistent than outdoors. The paper is dampened prior to beating and the wooden sticks are sometimes lightly oiled. The burnishers, all young girls, sign their names to the papers they burnish and are paid per sheet. The resulting material is shiny and translucent, with the characteristic diagonal burnishing marks still apparent. The unburnished paper purchased was three mil in thickness: Burnished paper was one mil in thickness.

MULBERRY FIBER--BURMESE

South east of Mandalay in the mountains near Inle Lake, is Pindaya. Pindaya is famous for its sacred caves, but it is also the home of Ma Htoo, who makes paper from mulberry fiber. There it is called *sa*. The plant grows in the neighboring mountain area. She purchases her fiber already de-barked.

The fiber is soaked in water for a day and then cooked with wood ash for five hours. The cooked fiber is beaten for a few minutes on a wooden platten with wooden mallets.

The moulds are made of coarse cotton fabric and tied around bamboo splints. Ma Htoo cannot get fabric large enough to fit her moulds, so pieces together the fabric to form the screen. Before making a sheet of paper, she rubs crude oil (the translation was a "petroleum product") with a cloth around the edges of the screen to facilitate easier removal of the paper from the screen after drying. Oil in paper leads to longevity problems. However, Ma Htoo's paper is used for very temporal, secular uses, such as umbrellas, which are oiled and coated anyway.

She fills her cement vat or trough in front of her house and can place up to five screens at a time. The vat is shallow and the screens are held in place with rocks. Water is added to the measured pulp and it is distributed in a pot and poured onto the screen as in the production of the straw papers. Ma Htoo distributes the pulp over the screen by stirring and agitating the water with her hands.

Using both sides of her hand instead of a stick, she slaps the water surface to break up some of the clumps of fiber and reduce air bubbles. As her vat is built in the ground rather than built up like a table, she works leaning over the screens while balancing on a stick supported by the edges of the trough.

To form a sheet, the trough is drained and the rocks are removed. The screens are then set up in the yard to dry. Once dry, the paper is peeled away from the screen. The sheet formation varied in thickness from four mil to seven mil. Like all the other papermakers, this craft is a family tradition. Ma Htoo had learned from her grandfather and father, and her sister is a papermaker also.

MULBERRY FIBER--THAILAND

In Thailand, the mulberry fiber is called *ton sa* or just *sa* as in Burma. This was the only fiber used by all of the hand papermakers visited in northern Thailand. The plant grows in the mountains and is collected by nomadic hill tribes, such as members of the Akha tribe. Papermakers are dependant on these transient suppliers. Also, they traditionally make paper only in the cooler, non-farming season.

After stripping and debarking, the fiber is cooked for several hours in metal cans. Bleach is sometimes added as well to decrease the cooking time and to make the paper whiter. However, one papermaker saw her orders diminish after her papers turned brown, perhaps due to an over abundance of bleach.

Beating of the fiber by hand is done with wooden mallets on a wooden or stone surface for ten or fifteen minutes. Metal Hollander Beaters, manufactured in Thailand, process the fiber further. Even the most remote rural Thai papermakers had these beaters. To accommodate the longer mulberry fibers, the blades of the machine are spaced farther apart and are duller than is customary for beating other fibers such as cotton, linen, or wood pulp. The vat is a large cement tub and the pulp is dispersed with a long pole.

The screen, which is made from a synthetic material sewn around a wooden frame, is then dipped into the top of the vat and pulled out, forming a sheet. Despite the depth of the vat, only the top few inches of slurry are used for papermaking. There is little orientation or distribution of the fibers on the screen, through movements such as "jiggling" the screen. The screens are then placed in the yard to dry. The numerous papers bought had variable thicknesses within each sheet, but averaged between three and six mil.

CONCLUSIONS

All of the papermakers visited were part-time papermakers, the methods they used were learned from ancestors, and none gathered or cultivated their own fibers. All the fibers were obtained from mountainous regions, were cooked under wood fires, and were dried on the mould screen. The Burmese papers were formed by pouring slurry onto the screen and the Thai papers were formed by dipping the screen into a vat. Beating methods varied the most. Dyes were sometimes added to the Burmese straw papers and bleach, dyes, and colored fibers were added to some of the Thai papers.

At the suggestion of the Myanmar government, more and more recycled and cardboard papermaking machines are replacing hand papermaking in Burma. Thai papermakers are adding and adopting modern machinery to their papermaking process.

ACKNOWLEDGEMENTS

This research trip was partially funded by a post-graduate fellowship offered through the Northeast Document Conservation Center. I extend my deepest appreciation for the experience and the opportunity to speak about it at the Book and Paper Group Session of the American Institute for Conservation Conference in Buffalo, New York in June 1992. The tour of papermakers was arranged by Elaine Koretsky of Carriage House Papers. Lastly, my heart felt thanks go to Joe Newman and Glenn Samson for proofing and editing this paper.

BIBLIOGRAPHY

- Field, Dorothy, A Gathering of Papermakers, Carriage House Press, Brookline, MA, 1988, [Hand papermaking in Thailand].
- Field, Dorothy, "Notes on Spirit Money from Thailand," Hand Papermaking, Vol. 5, No. 1, Summer 1990, [About Chinese spirit paper].
- Hunter, Dard, Papermaking in Indo-China, Chillicothe, OH, 1947.
- Hunter, Dard, Papermaking in Southern Siam, Chillicothe, OH, 1936. [Four sample papers enclosed].
- Koretsky, Elaine, "Musing Midst the Mitsumata," Friends of the Dard Hunter Paper Museum Newsletter, Feb. 1988, Vol. 7, No. 1 [On the differences in dipping and pouring of pulp to create paper.]
- Koretsky, Elaine and Donna, The Gold Beaters of Mandalay, Carriage House Press, 1991, Brookline, MA. [Covers rice straw, bamboo straw, and mulberry paper-makers in the Union of Myanmar (Burma)].
- Koretsky, Elaine and Donna, "Rice Straw Paper," Hand Papermaking, Vol. 5, No. 1, Summer 1990 [A precursor to the The Gold Beaters of Mandalay].
- Rischel, Anna-Grethe, A Study Tour of Handmade Paper of Thailand and Japan, (Studierejse til Thailand og Japan), *Bulliten, Nordisk Konserveratorforbund, den danske afdeling*, no. 37, pp. 45-51, 1988 [In Danish with English summary].

COMPARISON OF HAND PAPERMAKING TECHNIQUES IN
CENTRAL BURMA AND NORTHERN THAILAND

	RICE STRAW	BAMBOO STRAW	MULBERRY MYANMAR	MULBERRY thailand
SOURCE	MOUNTAINS MARKET	MOUNTAINS MARKET	MOUNTAINS MARKET	MOUNTAINS HILL TRIBES
RETTING	LIME AND WATER	LIME AND WATER		
COOKING	CEMENT	POT	POT WITH WOOD ASH	METAL TINS
BEATING				
ADDITIVES	RED DYE	YELLOW DYE	OIL ON SCREEN	BLEACH DYES
DISPERSION				IN VAT
formation	Pour	POUR	POUR	DIP
vAT	TABLE SHALLOW	TABLE SHALLOW	GROUND SHALLOW	TUB DEEP
DRYING	ON SCREEN AIR	ON SCREEN AIR	ON SCREEN AIR	ON SCREEN AIR