

The Stab-stitched Binding of Tai Manuscripts: A Survey of History, Technique, and Function

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ABSTRACT—This article discusses various aspects of stab-stitched binding in manuscripts of Laos and Northern Thailand, dealing with various binding patterns of this format, their function and the social history context of their production. The eighteen bound manuscripts from the collections of the Buddhist Archives in Luang Prabang, Laos, and the Chiang Mai Rajabhat University Library in Thailand were selected for detailed study. Provenance, category of text, function, bookbinding style, form and materials used were all considered for this study. Both historical and scientific methods were combined to better understand the provenance of this binding style, as well as the functional and historical aspects of these manuscripts.

Introduction

Originally Lao and Thai manuscripts were written on palm leaves, and paper is recorded as being used as a writing support only from the 17th century onward. The usage of a new material, among other things, stimulated a change in the form of books. Palm leaves were primarily used for religious texts. They were easily available in the tropical climate zone, durable and resistant to insects (more so than paper), thus suitable to preserve Buddhist literature for the ages. However, palm leaves were not as convenient for making notes, calculations or other less formal texts created by common people. Palm leaves were also easy to interchange within the fascicle (Thai/Lao: *phuk*) when the thread joining them broke, which is probably the reason that as soon as paper was adopted in the area, palm-leaf manuscripts (Thai/Lao: *khamphi bailan*) have gradually started to be replaced by leporello books (also known as concertina or accordion books). The paper used for making this new format was thick, much thicker than paper which constitutes the leaves of typical stab-stitched books from China and other parts of East Asia. The thick paper, a new writing support of leporello books, was comparatively durable and rigid enough to serve the same writing purposes as palm leaves. However, at the same time, its greater flexibility and size, not limited by the shape of the palm leaf, made it the most convenient material for book production. Moreover, though there are

some impressive examples of illustrated palm-leaf manuscripts¹ especially from northern India, paper is much more convenient for executing the kinds of illustrations that are widely used in astrological and medical treatises. Thus, a change in book technology occurred. The best paper used for the production of folded books was made of the bark of mulberry trees referred to locally as *sa* trees (*Broussonetia papyrifera*). This paper is softer and more flexible than the paper from the *khòì* (*Streblus asper*) tree, which is used further south in central and southern Thailand, as well as in Cambodia.²

The leporello form, also known as *parabaik* in the Burmese cultural tradition, uses a parallel folding technique whereby the pages form a continuous concertina.³ Several lengths of paper are pasted together to build the extended sheet of paper with the joins planned to fall where the pages fold forming a book's block when folded. A standard folding paper book measures approximately 15–20 × 40–60 cm. The folded block is then bound within soft or hard covers, either as separate panels front and back or as a more conventional case with a spine. At the same time other paper book forms, many of them sewn or in the form of loose leaves, were developed, particularly in Laos and Northern Thailand, as well as in adjacent Tai speaking areas in eastern Burma (Shan State) and southwestern China (Sipsòng Panna, Dehong, Menglian, Gengma, Jinggu). They, however, are little known and they have not been a subject of systematic study yet.

According to the late historian David Wyatt:

[Thai] 'sewn' books were generally very informal places for writing, and relatively few seem to have survived into modern times, though they may have been very widely used by ordinary people. (...) The 'sewn' books that have survived are not usually beautiful objects. They look like they were kept in people's homes, rather than in the book cupboards and libraries of temples. They seem to have been used mainly for household purposes. They do not seem to have been used for religious texts, which usually were on palm leaves or 'folded' books.⁴

Stab-stitched books have not yet been studied in detail. Thus, it is difficult to say how many of those books have been preserved, in which areas they were most often produced, and how this format evolved historically. The general technique, however unique, shows quite a variety in technological details and materials used. This resulted in a diversity of outlooks on these books, which could only be understood through detailed documentation of forms, material components and techniques of production on large samples of stab-stitched books. It is difficult to pinpoint when a group of manuscripts examined is sufficiently large to create historically valid results. Here we share our

¹ See Guy 1982, 18.

² For information about the production of *sa* and *khòì* paper manuscripts, see Kongkao Wiraprachak 1990. See also Bounleuth Sengsoulin 2016, 45–46. *Khòì* paper is made of the *Streblus asper* and has been in use for centuries in Thailand for Buddhist folding books and official records. The paper is less refined than *sa* paper but is more durable and resistant to yellowing and insect damage.

³ A concise description of the production and usage of Burmese folding books or *parabaik* is found in San San May and Igunma 2018, 17–19.

⁴ Wyatt 2006, 37 and 40.

preliminary observations, which may evolve when more data has been collected in the future, eventually showing a more complete picture of the history of East Asian bookbinding.

Stab-stitched binding: terminology and background

It should be noted here that English terminology for the binding of Asian books is not unified, and sometimes vague. Thus, stab-stitched books can also be described as four-hole stitched, side-stitched,⁵ threaded, double-leaved,⁶ stabbed, stitched, pouched⁷ or sewn.



Figure 1. The leaves and spine of a stab-bound Nan Savaeng ms 1 in the Buddhist Archives in Luang Prabang. © Agnieszka Helman-Ważny.

These names are simply related to a variety of typical binding elements, however some are more specific than others. When such books are described in English, the terms used usually follow Western bookbinding terminology, and it can lead to certain misunderstandings. Despite similar objectives, the specific binding cultures evolved from different origins, concepts and ideas. As Minah Song explains in her article *The History and Characteristics of Traditional Korean Books and Bookbinding*, the complexity of Asian book terminology and original terms are often lost in translation.⁸ She states that most vocabulary for the parts of a book used by Chinese, Korean and Japanese people originates from ancient Chinese terminology which, for example,

⁵ Song 2009, 55, 62–70.

⁶ Martiniq 1973, 227–236.

⁷ Ikegami 1979 [1986].

⁸ Song 2009, 63.

adopted anthropomorphic terms related to the human head. Specific names were created from the function, location, shape, or even symbolic importance of particular elements.

Stab-stitched binding is characterized by a thread-stitch with many variations depending on the book's size, the materials and the local binding tradition. The common thing, however, is that a thread is pulled through the stabbed holes on one side of a book, which then becomes a spine. Traditional Asian books bound in this way are usually significantly lighter in weight than leporello and loose-leaf books due to the specific properties of the paper used to make their leaves. The leaves of a stab-bound book will never open all the way, which is why the book will not lie flat when opened (Figure 1). One of the most typical features of all stab-stitched books is that the head and tail of the spine is sewn around, giving it this very distinct appearance. Interestingly this type of binding in East Asian countries has been commonly associated with printing, eventually further developing and gaining in popularity alongside printing technology.

In a Southeast Asian bookbinding history we do not have exact dates of when a particular style was created or when it fell into disuse. Most styles coexisted for long periods of time, and we can only assume the 'peaks of its popularity' in particular time intervals, specific regions, or when used for specific purposes. In historical context, the techniques and materials used for binding were rarely mentioned, being considered too common to note, as opposed to those related to the mounting of paintings or used in art genres seen as more splendid than manuscripts (which due to their literary function often are not even perceived as art).

This type of binding itself has a long history in China and other East Asian countries. In China, thread binding (*xian zhuang*) became the predominant book format late in the Ming dynasty (1368–1644), and represents the last phase in the history of traditional Chinese bookbinding.⁹ A Chinese book type of this binding, which peaked in popularity and eventually supplanted all other styles, is made up of sheets that are inscribed or printed on one side only, folded in half with the text-side out and then stacked together. Covers are added to the front and back, and the book is stitched along the spine on the left or right side – the edge opposite the fold. These books most often have four holes which were stabbed along the side of the spine. Larger books might have five or six stab-stitches, while some exceptionally large books were reinforced with seven or more, depending on additional circumstances. A large variety of thread stitching and knotting techniques were applied.

However manuscripts bound with a thread using a whole variety of stitching techniques have been produced for some time, since they have been found in the Dunhuang collection (assumed to be dated between the 9th and the 13th century).¹⁰ When presenting evidence for this type of binding, Li and Wood refer to both material and

⁹ Martinique 1973, 227; Chinnery and Li Yi 2007.

¹⁰ A number of examples can be found at *The International Dunhuang Project: The Silk Road Online* database (<http://idp.bl.uk/>). These are manuscripts archived as S.5534 (12 × 16 cm, 2 stabs), S. 5536 (14 × 11 cm, 4 stabs), S. 5451 (14.3 × 11.5 cm), S.5444 (11 × 15.5 cm), S.5531 (12 × 7 cm, 4 stabs), S.5535 (11 × 17.3 cm), S.5539 (14.5 × 20 cm, 7 stabs), S.5554 (14.5 × 11.5 cm), S.5646 (14 × 11 cm, 3 stabs).

written sources.¹¹ As for material evidence, the authors describe the selection of Buddhist devotional works from the British Library collection written on both sides of folded and stitched leaves of coarse hemp paper. As for the written evidence, Li and Wood refer to the account of Wang Zhu (living in Henan province during the Northern Song in the first half of the 11th century) where the stitching method of bookbinding was mentioned as being used to restore old books (making them more durable) even before Wang Zhu was born. Additionally the colophons on some of the booklets tell us that they were copied and bound during the Tang (618–907) and Northern Song (907–960) dynasties.¹² One of the most interesting of those is a thread-stitched book dated by its colophon to 969 CE, found at Dunhuang Mogao (Figure 2). This manuscript, measuring 14 × 11 cm, is written on paper with black and red ink and is composed of forty-four folios. The details of this manuscript's (S. 5646) binding differ from the later patterns used by the Chinese and Tai books of this format; however the concept of binding, such as double-leaves (bi-folios) bound together with a thread that has been pulled through all the pages via previously stabbed holes is the same.

On one hand the problems with dating the origin of this binding technique may not be solved by the material evidence (unless we have a chance to perform destructive C14 dating on various elements of the binding), since during the Song (960–1279) and Yuan (1279–1368) dynasties it was a common practice to rebind old books to make them more durable. On the other hand, there is no evidence that the preserved stab-stitched manuscripts from Dunhuang were rebound. Cave 17 in the Mogao Grottoes, where the manuscripts were found at the beginning of the 20th century, was probably sealed in the 11th century, and only rediscovered at the beginning of 20th century when the collection was transported to Europe.¹³ Since these manuscripts were not stitched in Europe, we can assume that the binding is genuine.

In Korea the stab-stitched binding (Korean: *seonjang*), predominant since the 13th century,¹⁴ followed the evolution of its Chinese predecessors; however a distinctive style (manifesting in differences regarding the average size, number of stitches, color of



Figure 2. Vajracchedika āprajñāpāramitasūtra (32 secs, fols 1-44R) dated by colophon to 969 CE from the British Library collection (archived as Or.8210/S.5646). © International Dunhuang Project at the British Library.

¹¹ Li and Wood 1989, 114–117.

¹² Li and Wood 1989, 117.

¹³ For the history of the acquisition of manuscripts along the Silk Road, see Hopkirk 1980; for a discussion on the reasons behind the sealing of Cave 17 in the Mogao Grottoes and studies of Dunhuang manuscripts, see, for example, van Schaik and Galambos 2012, 18–28; Galambos 2020a, 3–6; and Galambos 2020b, 171.

¹⁴ Song 2009, 63.

thread and book cover decorations) has been developed from locally available materials, and in response to specific social and religious demands. The size could vary depending on the purpose of the book, however Korean books measuring 25–30 cm × 15–20 cm are the most frequently documented.¹⁵

Stab-stitched binding (Japanese: *fukuro toji*) became the most popular style in Japan from the 15th century onward. Japanese stab-stitched books have the same technical construction as Chinese and Korean books, and similarly they most often have four stabbed holes in the binding. Nevertheless, other variations named after their more elaborate stitching patterns likewise existed.¹⁶

Although minor, considering the huge number of *pothi* loose-leaf books produced in Tibet, Tibetan book culture developed the stitched book format as well.¹⁷ This format, interestingly, often has a loop in the middle of the spine that allowed for such books to be carried by being strapped to a monk's robe. However the construction of such books is significantly different from the binding described above.

We do not know the exact origins of the stab-stitched binding in Tai book cultures. However taking into account the sequence in the spread of book and papermaking technologies in Asia, we should consider that this book format possibly may have been indirectly adapted from China via Laos-Yunnan-Burma (Myanmar) borderland communities.

Books made of mulberry paper (Lao: *chia sa*; Thai: *kradat sa*) are known in Laos, Northern Thailand and in adjacent Tai speaking regions in the Burmese Shan State and southwestern Yunnan under the generic term *phap sa*, sometimes pronounced *pap sa*, or its variant *pòp sa* (in the Tai Lü tradition). While *sa* is the indigenous name for the paper mulberry tree (see section below), *phap* means 'to fold'. This reflects the dominant use of the leporello as the standard book format of mulberry paper manuscripts in that region. Though *phap sa* covers all kinds of mulberry paper manuscripts regardless of their binding, special terms exist which differentiate the more widespread leporellos from the stab-stitched bound books. The Lao call the latter *phap nyip* which means literally 'stitched/sewn folding books' while the leporellos are known as *phap lan*. The Shan call the leporellos, which resemble the Burmese *parabaik* both with regard to size and decoration of the covers, *pap tup*, whereas the bound books are named *pap kiñ*.¹⁸ The Tai Lü—in their Yunnanese homeland as well as in neighboring areas in Burma, Laos and Northern Thailand—are the only major Tai ethnic group where stab-stitched binding dominates. These bound books are called *pap hua* in the vernacular, a term also used in Northern Thailand which refers to the sewing of the folios at their 'head' (Tai: *hua*). Terwiel and Chaichuen observe that '[t] here is a special kind of *pak kiñ*, made of a single sheet of paper, which may consist of several pieces that have been glued together to form the one sheet.'¹⁹

¹⁵ Song 2009, 66.

¹⁶ Ikegami 1979 [1986], 4.

¹⁷ Stoddard 2010, 336–379; Helman-Ważny 2014, 62–75.

¹⁸ Terwiel and Chaichuen 2003, 24.

¹⁹ Terwiel and Chaichuen 2003, 26.

This paper is fastened at the upper side to a wooden rod that has been exactly cut to the width of the paper’.

Recently more than three dozen stab-stitched manuscripts were found during a survey of home collections of people living in villages in a rural area of Luang Prabang province (in Northern Laos) by the staff of the Buddhist Archives in Luang Prabang (study supervised by Khamvone Boulyaphonh). These villages in Pak U and Nambak districts are all inhabited by Tai Lü whose ancestors migrated from the Laos-Yunnan-Burma borderlands generations ago.²⁰ It is the manuscript culture of the Tai Lü, rather than that of the mainstream Lao, which is most famous for the production of such sewn mulberry paper manuscripts. This underscores the fact that the tradition of making such stab-stitched bound manuscripts is still alive in Northern Laos, at least among Tai Lü communities, as is the case in the Tai Lü heartland of Sipsòng Panna (Yunnan) and Müang Sing (province of Luang Namtha, Laos). Usually in the villages, two to five families comprising the local healers or astrologers owned manuscripts. These books were all in a specific rectangular format, usually bound at the top with folded leaves stitched through the stabbed holes that had been made by a sharp tool, hence this type of binding being called ‘stab-stitched binding’ (Figure 3).

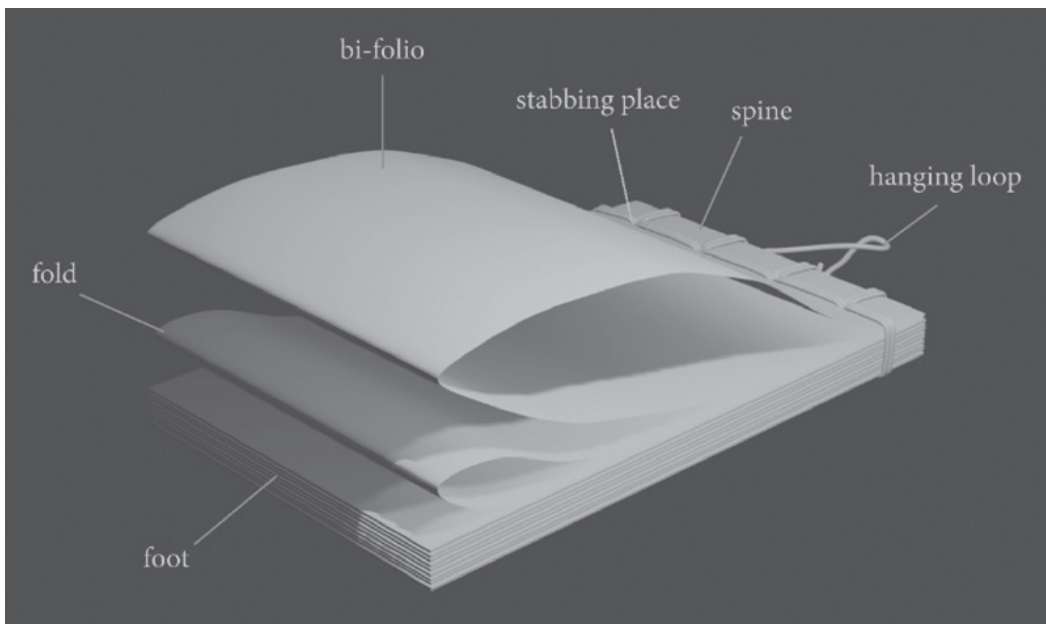


Figure 3: Image of the 3D model of a stab-stitched book based on the books found in Laos and Northern Thailand. © Created by Olga Wazny.

In February 2020 the authors of this article conducted a survey of manuscript collections of the Buddhist Archives in Luang Prabang, Laos, and at Chiang Mai

²⁰ These manuscripts are going to be inventoried and digitized in a project carried out by Dr Khamvone Boulyaphonh in the frame of the *Digital Repository of Endangered and Affected Manuscripts* (DREAMSEA) led by Prof. Dr. Omar Fathurahman (Jakarta) and Prof. Dr. Jan van der Putten (Hamburg) and financially supported by Arcadia, London.

Rajabhat University Library in Thailand. We were able to select eighteen stab-stitched manuscripts and study their binding, form and materials to understand the nature of their binding, as well as the functional and historical aspects of these manuscripts.

Content and function of the examined manuscripts

The studied manuscripts contain incantations, horoscopes, astrological or medical texts. The manuscripts tend to be informal, being used to keep notes on topics like the calendar or records of weather patterns. A good example of such books is the collection now preserved in the Buddhist Archives, which was originally owned by a local healer from the Tai Lü ethnic group named Nan Savaeng.

Nan Savaeng or Khanan ('ex-monk') Kham Savaeng Phutthasen is the only son of Mai ('ex-novice') Saengkham Phutthasian who was a local healer (in Tai Lü called *mò ya* and *mò mon*) in the village of Ban Pak Chaek from the 1970s until his death in 2018. Mai Saengkham was a Tai Lü whose native village was Ban Nayang Tai in the northern part of Luang Prabang province. His body was adorned by black tattoos in the traditional Tai Lü design, spreading from his waist down to his shin. During the 1960s, Mai Saengkham was a soldier in the Royal Lao Army and claimed to be invulnerable. Being confronted by many enemies, Mai Saengkham was frequently shot and several times he stepped on a landmine, always escaping harm. He credited this with his having learned a protective spell by heart, plus he was carrying a protective amulet called *chòm chai lek* ('the peak of the heart of iron'). His spell and amulet are said to have prevented altogether twelve people from being harmed by guns or bombs. For example, during the battle of Nam Bak in late 1967, Mai Saengkham and his eleven subordinates were staying in a hut in the countryside that was surrounded by armed forces of the pro-communist Pathet Lao. The twelve soldiers led by Mai Saengkham were all shot at by the enemy, and though the walls of the hut were damaged by bullets, the soldiers all survived without any injuries.

Later, in 1973, he married a woman named Ms Saengkep from Pak Chaek village and moved to live in that village. Mai Saengkham excelled in using traditional medicine and incantations to heal patients. Sometimes he acted as a medium to contact the spirit who had caused a person to become ill and sometimes he would perform exorcisms. The Tai Lü believe that a chronically ill person may have been possessed by an evil spirit seeking to get something from the ill patient. In such cases, Mai Saengkham would try to make contact with the spirit, asking what it preferred to eat. After Mai Saengkham's death in 2018, his son, Nan Savaeng, kept the manuscripts for study.

Nan Savaeng 1, code DS 0064 00001

Comprising twenty bi-folios, the manuscript is titled ຢາ ໝາມພັດຂຽນໄວ້ຜວດຄົນທັງໝາຍ *Ya Nan Phat Khian Vai Phuat Khon Thang Lai* ('Medicine, Nan Phat wrote it for all people') and contains texts about various kinds of medicinal herbs and the healing process of children to whom these herbs are administered when they have fever. The manuscript was written by Nan ('ex-monk') Phat from Pak Chaek village in Tai Lü language and the Tai Lü variant of the Dhamma script (Tham Lü) in 1963. The writing

of the text runs from folio 1 verso until 10 verso in one direction and from folio 20 recto until 17 recto in the opposite direction. There are six blank folios inside (folios 11–16). The colophons have the following content:

1. Front cover folio (1 recto):²¹ ໜ້າທັບພາຍເຄົ້າ [...] ວ່າແປງປານໃຈ [...] ໜານຜັດຂຽນປີກາເໝົ້າ ປີ ພັນ 9 ຮ້ອຍ 6 ສິບ 3 ເດີນ ສິບ ອອກ 5 ຄ່ຳ ພະຫັດ ທີ ຊາວ 5 ຂອງລາວ.

This is the front cover [...] changing like [my] heart [...] Nan Phat wrote [this manuscript] in a *ka mao* year, 1963, on the fifth day of the waxing moon of the tenth lunar month, a Thursday, on the twenty-fifth [day] according to the Lao calendar.²²

2. Back cover folio (20 verso): ໜ້າທັບພາຍປາຍ ຊື່ວ່າ ຢາ ໜານພັດ ຂຽນໄວ້ຜວດຄົນທັງຫຼາຍ ໄຜຍັງເຈັບບາດໄຂ້ພະຍາດຮ້າຍແລ້ວຄ່ອຍເຂົ້າສູ່ຫາຢາ ທີ່ຫາຍພະຍາດໄຂ້ [...].

This is the back-cover folio. [The manuscript] is titled *Ya* (Medicine), Nan Phat wrote it for all people. Anyone who is seriously sick may use this medicine. May his or her sickness be cured.

Nan Savaeng 2, code DS 0064 00002

Comprising twenty-five bi-folios, the manuscript is titled ຄຳສັບພະຄຳ *Kham Sappha Kham* ('Words, all kinds of words') and was written by Phò Thao Saen Sitthinavon from the village of Ban Pak Chaek. According to the colophon, the manuscript was written from a *tao nyi* year to the following *ka mao* year of the sexagesimal year cycle (corresponding to the period 1962/63–1963/64). The writer made this manuscript for his son named Ai Mai Namvong or Ai Mai Khamfoe. Later a man called Mai Bai bought the manuscript from the writer at the price of 450 Kip. Finally, Mai Bai handed it over as a gift to Mai Saengkham to use it for curing the villagers.

The manuscript was written in black ink on both sides of the folios in Tai Lü and Pali languages and Tham Lü script. The writing runs from folio 2 recto until folio 11 verso in one direction, and from folio 24 verso until folio 12 recto in the opposite direction.

The content on the recto sides pertains to incantations and blessings used at a wedding ceremony. The incantations include *Khatha Khanap Phi* ('Incantations for chasing spirits'), *Sut Khwan Nòi* ('Chanting to Call the Small Spirit'), and *Sut Khwan Luang* ('Chanting to call the great spirit'). The recitation or chanting of the *Sut Khwan Nòi* and *Sut Khwan Luang* is held for a long-ill person. *Sut Khwan Nòi* is organized first. If the patient has not yet recovered, then *Sut Khwan Luang* follows. Finally, if the patient is still seriously ill, one would organize a *Hong Nang Dam* ('Calling the black lady') ceremony. All these ceremonies are organized in order to call the *khwan* (one's guardian spirit) of the patient back to its body.

The Tai Lü, like the Lao, believe that *khwan* as vital essences inhabit the human

²¹ The front and back covers are just folios of mulberry paper bound together with the other folios of the manuscript.

²² 1325 Sravana 4 = Thursday, 25 July 1963.

body and are responsible for a person's psychological and spiritual well-being. Losing one's own *khwan* is thought to cause deteriorating physical or mental health problems.²³ Unfortunately, a *khwan* is easily frightened and any scary or unnerving experience can cause it to leave the body. When a person gets sick, their *khwan* is said to flee away. Therefore in order to recall the *khwan* the *Sut Khwan* ceremony is held. The *Sut Khwan* ceremony helps to encourage the patient to feel safe, peaceful, and at ease. When the patient is possessed by spirits, sometimes they would recover. The following part contains blessings used by a *mò phon* ('ceremonial master') to wish good luck to a new bride and groom at their wedding ceremony.

The content on the verso sides includes a horoscope and texts on fortune telling, such as *Khong Saita* ('Diagrams of fate'), *Roekfa 57 Tua* ('57 Auspices of the sky'), *Nu Kat Soe Pha* ('A rat bit a cloth'), *Sü Sat Ma Liang* ('Buying a pet'), and *Mat Khaen Büang Khwa Lae Büang Sai* ('Tying the Right and Left Hands').

Khong Sai Ta contains four diagrams for counting to see whether one's fate is 'lost' or 'perfect'. *Roekfa 57 Tua* contains a table of figures to determine the bad days in a month. *Nu Kat Soe Pha* is used for fortune telling by reading the hole(s) on a cloth which was bitten by rats. For example, one hole means that the owner of the cloth will get good luck; two holes means that the owner will fall in love; three holes means that he will get a disease; four holes means that they will face death. *Sü Sat Ma Liang* tells about the good or bad days to buy a pet. *Mat Khaen Büang Khwa Lae Büang Sai* describes the blessings that a ceremonial master is going to recite while binding the right and left hands of a person at the *Sut Khwan* ceremony.

Nan Savaeng 3, code DS 0064 00003

The multiple-text manuscript comprising seventy-one bi-folios contains three texts titled ທໍລະນີສານຫຼວງ, ນາງດໍາ ແລະ ທໍລະນີສານຈິດ *Tholani San Luang*, *Nang Dam*, and [*Thòlani*] *San Chüit* ('Great Message of the Earth', 'Black Lady', and 'Tasteless Message of the Earth') respectively; they are written in the Tai Lü, Pali and Lao languages and Tham Lü and modern Lao scripts. Khanan Saen or Phò Luang Tui from Ban Pak Chaek village was the scribe and Khanan Phai is identified as the sponsor of the manuscript and its original owner. Later Khanan Phai gave the manuscript to Mai Saengkham in order to use it for healing his patients in Ban Pak Chaek. The writing runs from folio 2 recto until folio 34 recto in one direction, and from folio 70 verso until folio 34 verso in the opposite direction. The texts were initially written in black ink in Tham Lü script and later continued by other writers with a blue ballpoint pen in Tham Lü and modern Lao scripts.

The content includes many kinds of incantations and medical texts such as *Thòlani San Luang* (Great Message of the Earth), *Nang Dam* (Black Lady) and *Thòlani San Chüit* (Tasteless Message of the Earth) and a list of traditional medicines and notes on the healing process. *Thòlani San Luang* is an incantation chanted by a ceremonial master at a house where a member of the family had a nightmare or saw an inauspicious sign, such as a crow landing on the roof and cawing. *Nang Dam* is an incantation to be chanted by

²³ See Hayashi Yukio 2003, 111–113.

a ceremonial master in order to cure a person who is ill with chronic disease. *Thòrani San Chit* is a text of incantation to be chanted by a ceremonial master in a house where family members are unhappy.

Vat Manorom Satharam, code DS 0062 00292

The undated manuscript comprising twenty-nine bi-folios is written in Tai Lü and Lao languages and Tham Lü script with a pen and black ink. A monk (*thu*) named Thampannya is identified as the scribe and the sponsor. The colophon appearing on the front cover folio states:

ເຈົ້າຂະໜານທຸທຳປັນຍາສ້າງ ຄັນວ່າ ໃຜຈັກເອົາຜົວເອົາເມ ທີ່ດູ່ສາຍມຸນປຸງງນີ້ເຜີ້. ອ້າຍ ຂະໜານທຸ
ປັນຍາ ສ້າງປາງເປນພິກຂຸແລ.

Chao Khanan Thu Thampanya made [this manuscript]. If somebody wants to get married, he or she needs to observe the line of love-matching here. Ai Khanan Thampanya (Dhammapaññā) made [the manuscript] when he was a monk.

The content relates to divination and rituals. The multiple-text manuscript comprises a *Sut Khwan Nòi* (Chanting for a Small Spirit); a table of months and days used for the reckoning of the good and bad days for performing daily activities. For example, the day of *Kao Kòng* (‘Nine Piles’) is considered good for tailoring clothes, sewing and for starting work in the rice fields, but not appropriate for performing a cremation ceremony, a *Sut Khwan Nang Dam* (‘Chanting for the Spirit of Black Lady’) and several other ceremonies. The manuscript is used by a ceremonial master who is knowledgeable and respected by the villagers in order to perform a healing ritual for an ill person.

Vat Manorom Satharam, code DS 0062 00293

The manuscript comprising thirty-seven bi-folios is incomplete (the first and last folios are missing). The manuscript is a composite volume as two originally separate codicological units are sewn together. The folios of the two parts are of equal length but those of the second part are of smaller width than those of the first part. Both parts do not have colophons or other paratexts providing the date when the writing was finished nor are the names of the scribes and sponsors recorded. The texts are written in Tai Lü, Lao, and Pali languages and Tham Lü scripts in blue ink, while some special symbols indicating new paragraphs or sub-chapters are marked in red.

The text contains horoscopes and rituals. The recto side of the first folio (Part 1) starts with a table of the days in the local Tai Lü calendar. The verso side of the cover folio starts with the words ‘Speaking about the brushing away of all misfortune from the kingdom of Chiang Tung (Khemarat)’ (ຈັກກ່າວດ້ວຍປັດສັບພະເຄາະກຽງທັງມວນ ຕາມເຂມະຣາຊະທານີສີບມາກ່ອນ ແລ). The manuscript is illustrated with many diagrams used for reckoning the auspicious days and times for performing daily activities. The manuscript is used by a ceremonial master, who is knowledgeable and respected by the villagers, as he knows how to give advice and perform rituals.

Vat Manorom Saththaram, code DS 0062 00294

The middle part of this manuscript, comprising forty-six bi-folios, was seriously damaged by fire. Some folios are missing, including the front and back covers. The main text is written in blue ink on both sides in Tham Lao script. Some additional texts are written in Lao and Pali languages and in Tham Lao and Old Lao (Lao Buhan) scripts. The scribe of this undated manuscript is a man named Khamsao Nòi.

The manuscript contains several divination texts related to various kinds of fortune-telling; for example the reckoning of the good and bad days for performing daily activities, including auspicious days for traveling and trading or the calculating of auspicious days for organizing the wedding of a young couple. Other texts pertain to the auspicious moments for starting the construction of a house or a temple or for moving to a new house.

Vat Manorom Saththaram, code DS 0062 00295

This manuscript comprising twenty-eight bi-folios probably dates from the 20th century; it is seriously damaged. It is written in Lao and Pali languages and Tham Lao script in purple ink. The writing is only on the recto side throughout the volume. The front and back cover folios were partially cut out by scissors. The names of the scribe and sponsor are unknown. The manuscript depicts tables of the local calendar and drawings. The content relates to divination or fortune-telling, determining the good and bad days for performing daily activities. The first page shows a table containing figures of days and months. The text under the table describes the days considered auspicious or inauspicious for performing daily routine work. For example, the day of *Kao Kòng* ('Nine Piles') is regarded as good for cutting clothes or for sewing and starting work in the rice fields but not good for performing a cremation ceremony. The manuscript is mostly to be used by a monk or a ceremonial master of the village who is knowledgeable and respected by the people in order to give them advice on performing ceremonial or other activities.

Vat Saen Sukharam, code BAD-13-2-021

This manuscript comprising thirty-eight bi-folios comes from the collection of Vat Saen Sukharam, Luang Prabang. The multiple-text manuscript is written in Lao and Pali languages and Tham Lao and Old Lao (Lao Buhan) scripts in black ink and pencil. The writing was on one side throughout the book. The folios of the front and back sides were cut out by scissors. It seems likely that this undated manuscript was written in the 20th century. The names of the scribe and sponsor are unknown. The texts are related both to Buddhist and secular matters, and they were used in rituals or ceremonies such as ຊວ່າຍ ເທວະດາ (*Suai Thevada*, 'Recitation to Deities'), ກ່າວເສຍເຄາະ (*Kao Sia Khò*, 'Exorcism'), ອິນທະອຸບາດ (*Intha Ubat*, 'Occurances by Indra'), and ພະເພິງອຸບາດ (*Pha Phoeng Ubat*, 'Occurrences by Fire'). The texts are to be used by a knowledgeable and respected ceremonial master in a ceremony.

Bunthat Sukhathivong, code DS 0065 00019

The manuscript is written in Lao and Pali languages and Tham Lao script in purple

ink. Both the recto and the verso sides of the nineteen bi-folios are written. It seems likely that this undated manuscript was written in the 20th century. The names of scribe and sponsor are unknown. The texts depict tables of the local calendar and drawings. The content relates to fortune-telling pertaining to the good and bad days for performing daily activities. The manuscript was probably copied from the manuscript *Vat Manorom Sathharam*, code DS 0062 00295, as the texts and tables resemble each other. This manuscript comes from the collection of Monk Khamda Sukhathivong, who was father of Mr. Bunthat Sukhathivong from Ban Mano, Luang Prabang. Monk Khamda was ordained at Vat Manorom Sathharam and died in 2018. After the death of Monk Khamda, Mr. Bunthat kept the manuscript in his house as a sacred object and later donated it and seventeen other short palm-leaf manuscripts to the Buddhist Archives of Luang Prabang so that they could be preserved, as he himself did not know how to use and practice with these manuscripts.

CMRU ARP.060

This manuscript titled *Yanta* (Magic Spells) is written in Tai Lü language and Tham Lü script and comprises twelve bi-folios written on both sides (including the front cover folio). On the recto side of the front cover folio the following text is written: ‘This folded book belongs to Phi Nan (‘elder ex-monk’) from Ban Tha Khòì whose name is Nan In Prayan Nòi, also called Nan Un Saeng, along with all his siblings.’ (In Thai transcription: พับลูกนี้เป่นของพืหนานบ้านท่าข่อยพืขัยัน ชื่อหนานอินประหญาน้อย คือว่าหนานอุ้นแสงก็ว่าแล พืนองทั้งหลาย เหย้ แมนแล). At the middle of the volume we find the following paratext: “In Phraya wrote [this manuscript] in the eighth lunar month, on the fifteenth waxing day, the third day [of the week as] the Mon [say], a *kot san* [day as] the Tai [say].” The contents include diagrams filled with numbers and texts, namely:

1. *Yanta* (‘magic spells’) to be written on mulberry paper or golden plates which are buried according to the cardinal directions of a house. Thus, the people living in that house would live in peace and happiness without any harm or danger.
2. *Yanta* to be written on palm leaves curled up to be carried in one’s pocket. They are believed to ward off all kinds of danger, as well as evil ghosts and demons.
3. *Yanta* to be written on textile bags carrying precious objects or amulets and objects possessing magical power. These magic spells are believed to be auspicious and bring good fortune to the bag’s owner.
4. *Yanta* to be written on cloth to be carried in one’s pocket for warding off various kinds of danger and for bringing good luck.
5. *Yanta* to be written on cloth to be worn by ill children so that they may quickly recover.

Besides these, there are diagrams telling the names of the days according to the 60-day cycle (Tai direction days) and predictions concerning thunder storms.

This manuscript was donated by Assoc. Prof. Anatole Roger Peltier to the Office of Arts and Culture, Chiang Mai Rajabhat University, in 2018.

CMRU ARP.067

This manuscript, written in Tai Lü language and Tham Lao script, comprises eight bi-folios written on both sides (including the front cover folio). The name of the scribe is not mentioned, nor is the year when the manuscript was produced. The content of the text is related to the offerings of alms on the occasion of the ordination ceremony of novices (งานบวชสามเณร) and the ordination ceremony of monks (งานอุปสมบทพระภิกษุ). Furthermore, the manuscript contains verses of Tai Lü songs (คำขับ) performed at various traditional festivals. The content of these songs pertains to the proper ethical behavior of Buddhist laity.

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CMRU ARP 094

Written in Tai Lü language and Tham Lü script, this manuscript comprises twenty-five bi-folios written on both sides (including the front cover folio). The multiple-text manuscript comprises the following texts:

1. *Kham Su Ma Khrua Than*: Asking for forgiveness in the offering of goods to be donated to the Sangha and blessings related to the benefits derived from such donations. The attainment of Nibbāna is identified as the donor's final goal.
2. *Kham La Phra*: Farewell words of laypersons expressed to monks after having listened to the preaching of a sermon at a Buddhist temple. The Three Gems are invoked and blessings for merit-making acts shall ensure the well-being of the donor. The attainment of Nibbāna is identified as the donor's final goal.
3. *Kham Wen Than*: Praise for the Three Gems and Blessings for the donation of gifts.
4. *Kham Klao Wen Than Maha Chat*: Praise of the Three Gems and blessings for the donation of gifts on the occasion of the traditional festival listening to the *Vessantara Jataka*, which records the Buddha's existence as Prince Vessantara, immediately preceding his rebirth as Siddhattha Gotama.
5. *Kham Wen Than Khamphi Tham*: Blessings for the sponsoring of the making of Buddhist scriptures.
6. *Sitthat Òk Buat*: Story praising the ordination of Prince Siddhattha, who persistently practiced the Dhamma until he became Lord Buddha after his enlightenment.
7. *Kham Wen Than Khao Suk*: This bilingual Pali-Tai Lü text pertains to blessings for the donation of food to monks.
8. *Kham Wen Than*: This bilingual Pali-Tai Lü text refers to donation of various objects to the Sangha, such as money and utensils for monks (*aṭṭhaparikāra*), pulpits, monk's abodes (*kuṭi*), temple halls (*vihāra*), pavilions (*sālā*), bridges and wells, Buddhist scriptures, and Buddha statues.

This manuscript was donated by Assoc. Prof. Anatole Roger Peltier to the Office of Arts and Culture, Chiang Mai Rajabhat University, in 2018.

CMRU ARP.Tai.Nüa.001

This manuscript is titled *Paet Laeng Òk Yòt* (แปดแล้งออกยอด) but also known under the alternative title *Kalae Òk Nò* (กาแลออกหน่อ); it is a Jataka tale about the accumulation of merit of the Bodhisatta in his previous lives and his rebirth as Buddha Gotama.

This manuscript comprises eighty-four bi-folios written on both sides (including the front cover folio). The text consists of two parts. The first part is written in Tai Nüa script (*Lik To Ngòk*) with the exception of the final lines written in Pali language and Tham Lan Na script: *Sādhu nibbāna paccayo hontu niccam niccam dhuvam dhuvam* (May this be a condition for us to reach Nibbāna, constantly and forever.) The second part (twenty pages) is written in Shan script.

This manuscript was donated by Assoc. Prof. Anatole Roger Peltier to the Office of Arts and Culture, Chiang Mai Rajabhat University, in 2018.

CMRU ARP.TAI.001

This manuscript, titled *Kham Sòn Rüang Khan Ha* ('Didactic Poems on the Fifth Khandha'), comprises twenty-nine bi-folios written on both sides (including the front cover folio) in Shan language and script. The front cover folio (recto) mentions the name of the sponsor, a man called Saeng Hüang, but the name of the scribe is not stated. The manuscript must have probably been written before the year CS 1300 (1938/39) because on the front cover of the folio it is noted 'in the year CS 12xx' with the last two digits left vacant.

This manuscript was donated by Assoc. Prof. Anatole Roger Peltier to the Office of Arts and Culture, Chiang Mai Rajabhat University, in 2018.

CMRU ARP.TAI.006

This untitled manuscript comprises 187 bi-folios written in Shan language and script on both sides. Both the front and the back-cover folios have been lost. The content of the recorded text is about the canonical twenty-five Buddhas (the twenty-four previous Buddhas and the Gotama Buddha of the present age. This story is called *Buddhavamsa*). The names of the scribe and the sponsor(s) are not mentioned.

This manuscript was donated by Assoc. Prof. Anatole Roger Peltier to the Office of Arts and Culture, Chiang Mai Rajabhat University, in 2018.

CMRU Ms. 1

This manuscript of sixty-two bi-folios titled *Sumaṇadevo* (Sumanathewo) and written in Tai Lü language and Tham Lü script states on the recto side of the front cover folio: '*Sumaṇadevo* has seven *phuk* (chapters). [The writing] was finished in [CS] 1285, at the time of the [forenoon?] horn, on the fifth waxing day.' (สมมณเทโว มี 7 ผูก แล 1285 (ตัว) ยามแตร วุทธิจាំเร็นขึ้น 5 คำ) The lunar month is not given. The year of writing corresponds to BE 2466 or 1923. The name of the scribe is not recorded.

Sumaṇadevo is a homiletic text pertaining to the teaching of the Buddha to his disciples and adherents at different occasions; for example, the teaching of the story

of *Piṇḍola Bhāradvāja*,²⁴ the teaching prohibiting Buddhist monks from claiming to possess supernatural powers, and Buddha's teaching to King Bimbisāra (Phimphisān).

The colophon records the year of writing (CS 1278 or 1916) and expresses three wishes: "The manuscript was donated to the Three Gems in the *rwai si* year, CS 1278 (1916/17). May it support the Teachings of the Buddha to last until the end of 5000 years. May it be a condition of supporting me indeed to attain Nibbāna. *Idaṃ me dānaṃ parisuddhaṃ nibbāna paccayo hontu me niccaṃ nibbānaṃ paramaṃ sukhaṃ yācāmi*. Thus, I ask for the three kinds of happiness, namely happiness in the human world, happiness in heaven, and happiness in the crystal city (*wiang kaeo*), the summit of the Great Nibbāna." (ลัทธิหังทานแก่แก้วเจ้า 3 ประการ ในรายสปีสนั้นเป็นปีรายสปี สักกราชได้ 127(1)8 ด้ว แล คำชัวร์พุทธศาสนา 5 (พัน) วสา ก็ขอหือเปนกะใจค้ำชูข้า ติราบต่อเทเข้าสูนิพพานแท้ดีหลีแต่ ๑ อิทึ เม ทานึ ปริสุทฺธิ์ นิพพานึ ปจจุโย โหบุตุ เม นิจึ นิพพานึ ปรมึ สุทฺธิ์ ยาจามึ ๑ ด้งนี้ ขักจ็ขอเอาสุข ๓ ประการึ สุขอันมีในเมืองคนแล เมืองพ่า สุขอันเปนที่แล สุขอันมีในเวียงแก้วยอดมหาเนรัพพานแท้ดีหลีแต่ แลแล)

This manuscript was donated by Assoc. Prof. Anatole Roger Peltier to the Office of Arts and Culture, Chiang Mai Rajabhat University, in 2018.

CMRU Ms. 2 and CMRU Ms. 3

This manuscript is written in Tai Khamyang language and script. On top of the recto page of the front cover folio the words '*Disangpani Tai Khamyang*' are written. Disangpani is the name of a village in upper Assam, a state in northeastern India and Tai Khamyang is the name of a Tai ethnic group whose ancestors migrated from the Burmese Shan areas to upper Assam more than two centuries ago.

CMRU Ms. 2

Though the manuscript of thirty-four bi-folios is mostly written in Tai Khamyang language and script, there are some Pali passages written in Burmese script. The text is from the Mahāvagga section of the Vinaya Piṭaka pertaining to the monastic discipline of Buddhist monks, the ordination of monks and the chanting of the Pāṭimokkha and the behavior of monks during the Buddhist Lent retreat. The colophon at the end of the manuscript records the year of writing as CS 1286 (BE 2467 or 1924). The manuscript belongs to the collection of the Institute of Arts and Culture, Chiang Mai Rajabhat University. There are no records about how the manuscript was acquired.

CMRU Ms. 3

The manuscript comprises fifteen bi-folios. The recto page of the front cover bi-folio bears a text written in Assamese language and script. The main text, probably written in Shan (Tai Yai) language and script, concerns a section of the *Suttanta Piṭaka* related to teachings attributed to the Buddha or his close disciples. At the end of the manuscript, following the main text, the year '1979' is written in Arabic numerals indicating most likely the year when the writing was finished.

²⁴ According to the earliest Indian Buddhist sutras, Piṇḍola Bhāradvāja was one of four Arhats asked by the Buddha to remain in the world to propagate the Dhamma. Each of the four was associated with one of the four cardinal directions. Piṇḍola is said to have excelled in the mastery of occult and psychic powers. He was once rebuked by the Buddha for misusing his powers to impress simple, ignorant people.

Stab stitched binding

The Buddhist Archives, Luang Prabang

Nan Savaeng ms 1

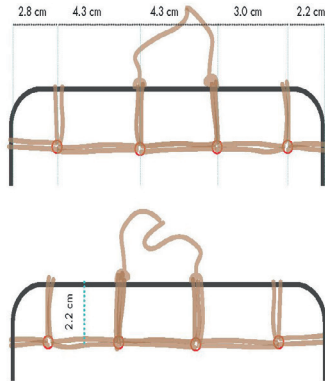


Figure 4. Stab-stitched binding of a manuscript from the Buddhist Archives in Luang Prabang, which is archived as Nan Savaeng ms 1. © Images by Agnieszka Helman-Ważny, sewing schemes by Dorota Helman.

Technology of binding

The surveyed stab-stitched manuscripts were usually produced locally for home usage, and this is the main reason why they have this form: to serve the specific purpose of being easily carried or hung on the walls or on the pillars of the traditional wooden stilt houses of the Tai. The rectangular format of the surveyed manuscripts measures from 23.5 to 59 cm in height and from 16 to 49 cm in width, and we did not observe repetition of any particular size. It suggests that the format was not standardized. Their leaves (bi-folios) are folded in half, thus their outer edges were all sewn together at just the end opposite the fold, which also prevents the ink from bleeding through the paper (similar to the Chinese stab-stitched manuscripts mentioned earlier; however, paper in Tai manuscripts of that type is usually thicker). In our sample we counted from eight to 187 bi-folios within the studied books. Usually bi-folios were bound at the top opposite to the folds (Figure 4); however, two manuscripts from the Chiang Mai Rajabhat University Library consisted of bi-folios folded on side edges that are still



Figures 5a, b. The holes are stabbed by a metal tool through which a cotton cord is then threaded. The technique is here demonstrated by Direk Injan from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.

sewn at the top (*CMRU ARP.Tai.Nua.001* folded at the right side-edge and *CMRU ARP.TAI.001* folded at the left side-edge). Most of such folded bi-folios were usually stabbed every 2.5 to 4 cm by a metal tool in a distance circa 1 to 3 cm from the edge of the binding (opposite the fold) (Figures 5a, b). That distance is subordinate to the size of the manuscript. The sewing process usually starts at the middle hole (or one of the middle holes) on the inside of the cover. Then, every time one would normally go around the spine of the text block, one should switch to the other side of the block and make sure the stitches are already done and are mirrored on the other side. The half-point sewing process is illustrated (Figures 6 and 7).

In the studied manuscripts we recorded four to thirteen stabbing points, depending on the manuscript size, and where the string is then pulled through to bind the book. However, the most typical numbers of pages were five and seven for manuscripts intended to be hung, and usually more for those which were wrapped in a roll and tightly bound by a strong cotton string protected by a layer of cloth (Figure 8). Such manuscript rolls would usually be stored under the ceiling of the owner's house (Figure 9).

In general the folios would be stab-stitched only after the writing of the text, folio by folio, was finished. An experienced scribe would leave enough space before the first text-line of a page to ensure that this line would still be fully visible after the binding. In some manuscripts the first line of at least some folios is hardly visible, providing evidence of the hypothesis that the writing precedes the binding. However, there are also cases where the binding precedes the writing, as in such cases several of the final folios are left blank.

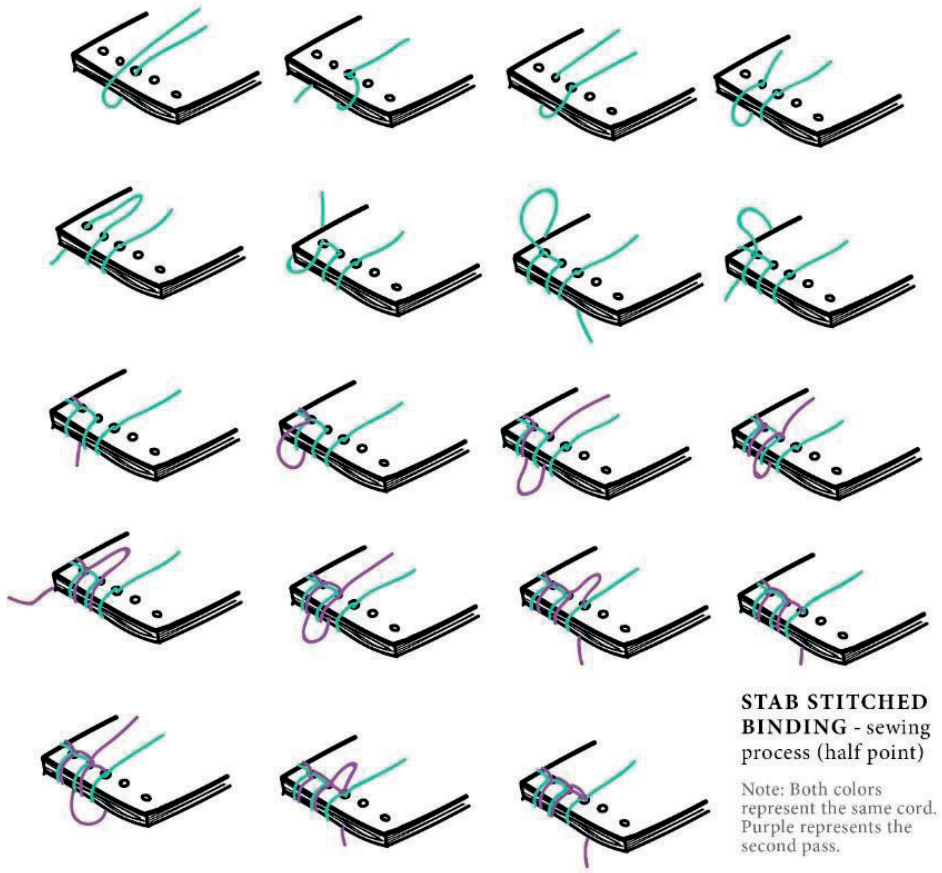


Figure 6. The scheme of the sewing process observed in stab-stitched books found in Laos and Northern Thailand. © Drawing by Olga Ważny.



Figure 7. Stab-stitched method with double-thread demonstrated by Direk Injan. © Agnieszka Helman-Ważny.



Figure 8. Manuscript *ARP.Tai.Nūa.001*, Chiang Mai Rajabhat University Library, showing a stab-stitched binding intended to be kept in roll. © Chiang Mai Rajabhat University Library in Thailand, photography Agnieszka Helman-Ważny.



Figure 9. The house of Nan Chai Saeng, Ban Nam Kaeo Luang, Mūang Sing, Laos where manuscripts were stored below the ceiling. © Volker Grabowsky.

Materials

Thread

In our sample the string was usually made with thickly-wound thread, sometimes doubled. Thin thread however has occasionally been applied as well. The thread was usually cotton twine, possibly a type also used for tying up palm-leaf manuscripts. The thread of a manuscript made of twisted paper was also sometimes used, as exemplified by manuscripts archived as *Nan Savaeng Ms 3* (cotton paper) and *DS 0062 00295* (Paper mulberry paper). Sometimes the stitching ended with a loop, so the manuscript can be hung on the wall, as can be observed in all of Nan Savaeng's manuscripts, as well as manuscripts archived as *DS 0062 00293*, *DS 0062 00294*, *CMRU ARP 060*, *CMRU ARP 067*, *CMRU ARP 094*, and *CMRU Ms. 1* (Figure 4). The manuscripts which were supposed to be hung on the wall usually had an odd number of stabbing places, so the hanging loop is exactly in the middle.

Covers

Some precious manuscripts were bound together with a cloth cover (which could be colored or patterned) as exemplified by manuscripts *CMRU ARP.Tai.Nüa.001*, *CMRU Ms. 2*, and *CMRU Ms. 3*. Independent of textiles, the covers used in our sample were usually larger than manuscripts folios. In his study of Tai Nuea manuscripts Wharton has observed the same feature.²⁵ Terwiel and Chaichuen have confirmed this also for Shan stab-stitched bound books which are called *pap kiñ* in the local vernacular, in contrast to the concertina-style folding books (*pap tup*).²⁶ If cloth covers are used, they are attached as part of the binding process at both the front and back of the manuscript or only at the back in some cases. The cloth covers are folded in over the spine on both sides to protect the edges of the folios when the manuscript is rolled (Figure 10). Covers are more common with larger manuscripts which are sometimes rolled for storage and often have floral patterns. An additional length of cotton cord is attached to these manuscripts to hold the rolled manuscript together instead of a loop hanger. This can be seen in the cases of manuscripts archived as *CMRU ARP.Tai.Nüa.001*, *CMRU Ms. 2*, and *CMRU Ms. 3*.

Paper

One of the most important features distinguishing these manuscripts is local *sa* paper made of the bast (*phloem*) of various types of mulberry tree. While until the early 1970s only the Paper mulberry tree (*Broussonetia papyrifera*) was grown in Northern Thailand and Laos, since the late 1970s Japanese mulberry trees, notably the *Broussonetia kazinoki* and *Broussonetia kurzii*, were introduced, but their share of the total *sa* paper production is still limited.²⁷ Despite the common assumption that the bound manuscripts

²⁵ Wharton 2017, 51.

²⁶ Terwiel and Chaichuen 2003, 21, 24.

²⁷ See Siriporn 2001; Aubertin 2004; and Chaiyapol 2013.

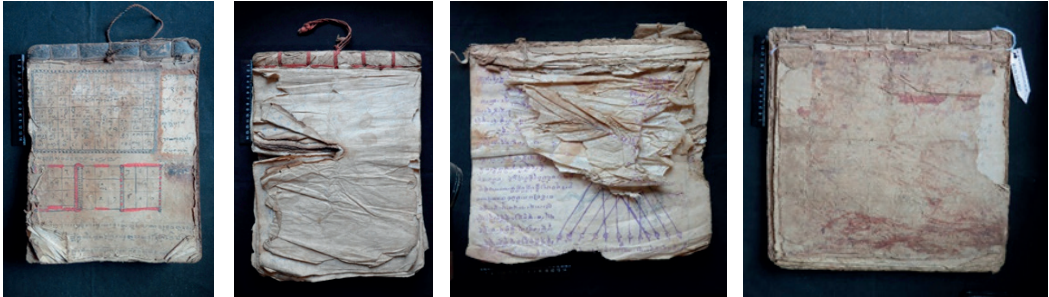


Figure 10 (opposite). Overview of the book covers of our samples.

1st line: *Nan Savaeng ms 1* from Ban Pak Chaek village, U district, Luang Prabang; *Nan Savaeng ms 2* from Ban Pak Chaek village, U district, Luang Prabang; *Nan Savaeng ms 3* from Ban Pak Chaek village, U district, Luang Prabang; *DS 0062 00292* from Vat Manorom Saththaram, Luang Prabang

2nd line: *DS 0062 00293* from Vat Manorom Saththaram, Luang Prabang; *DS 0062 00294* from Vat Manorom Saththaram, Luang Prabang; *DS 0062 00295* from Vat Manorom Saththaram, Luang Prabang; *BAD-13-2-021* from Vat Saen Sukharam, Luang Prabang

3rd line: *DS-0056-00640-017v* from Ban Mano village, Luang Prabang; *CMRU ARP.060* from Shan State, Burma. Office of Arts and Culture, Chiang Mai Rajabhat University; *CMRU ARP.067* from Shan State, Burma. Office of Arts and Culture, Chiang Mai Rajabhat University; *CMRU ARP.094* from Shan State, Burma. Office of Arts and Culture, Chiang Mai Rajabhat University

4th line: *CMRU ARP.Tai.Nua.001* from the Northern Shan area (border of Burma and China). Office of Arts and Culture, Chiang Mai Rajabhat University; *CMRU ARP.TAI.001*, Office of Arts and Culture, Chiang Mai Rajabhat University; *CMRU ARP.TAI.006* from Shan State, Burma. Office of Arts and Culture, Chiang Mai Rajabhat University

5th line: *CMRU Ms. 1* from Shan State, Burma. Office of Arts and Culture, Chiang Mai Rajabhat University; *CMRU Ms. 2* from Disangpani, Assam, India. Office of Arts and Culture, Chiang Mai Rajabhat University; *CMRU Ms.3* from Disangpani, Assam, India. Office of Arts and Culture, Chiang Mai Rajabhat University

were always executed on mulberry (*sa*) paper, we performed fiber analyses,²⁸ and were able to confirm that indeed other kinds of paper, such as industrial paper made of bamboo and other grass-type fibers, were also used. Our microscopic observation showed that out of eighteen samples seventeen were made of Paper mulberry (*sa*) and one was made of bamboo and other types of grass.

The long Paper mulberry fibers were well preserved. This was observed in all samples and is illustrated (Figure 11). As visible in Figures 12–13 below, the fibers are characterized by thick walls, narrow, slightly irregular lumens, irregular cross-markings, blunt and rounded fiber ends and a transparent membrane enveloping the fibers (Figures 12–13). Ilvesallo-Pfäffli presented micrographs of the fibers separated from the inner bark of this fast-growing tree, highlighting the transparent membrane enveloping many of the observed fibers.²⁹ In early stages of the process of pulp beating, the membrane, which indicates a primary wall enveloping the fiber, is disrupted, becoming clearly visible.³⁰

²⁸ The fiber analysis was conducted by Agnieszka Helman-Ważny, the Centre for the Study of Manuscript Culture, University of Hamburg. An Olympus BX51 Transmitted-Reflected light microscope with polarized light was used for fiber identification. An Olympus UC30 camera and Olympus Stream Software were used for photographic documentation and image analysis separately. A range of magnification from 40× to 400× with both plain and polarized light was used. The paper samples were immersed in distilled water in a small beaker and boiled for between ten to twelve minutes. The water was decanted and the samples were drained. About 0.2g of paper pulp was placed on a microscopic slide and separated into a fine suspension of individual fibers. The fibers were then observed with water solution using polarized light. The selected samples were then stained with two drops of Herzberg staining reagents (zinc-chlorine-iodide) and observed through an optical microscope. The color of the resulting stain depends on the lignin content of the fiber and helps to distinguish the species and morphological characteristics of the fibers, as well as other cells and elements in the paper pulp. The results were compared to reference samples collected earlier by Agnieszka Helman-Ważny and to available fiber atlases.

²⁹ Ilvesallo-Pfäffli 1995, 348–349.

³⁰ Helman-Ważny 2006, 3–8.

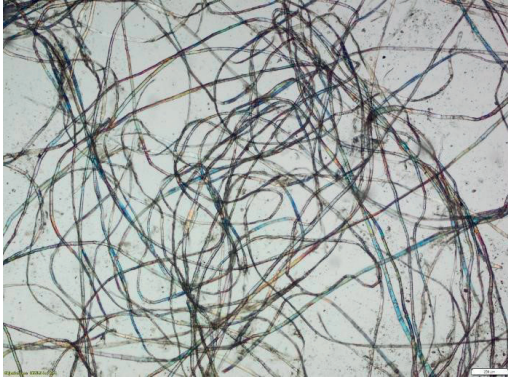


Figure 11. Well-preserved Paper mulberry fibers observed under the microscope at 40× magnification in the manuscript archived as *DS 0062 00294* from the Buddhist Archives in Luang Prabang. © Agnieszka Helman-Ważny.

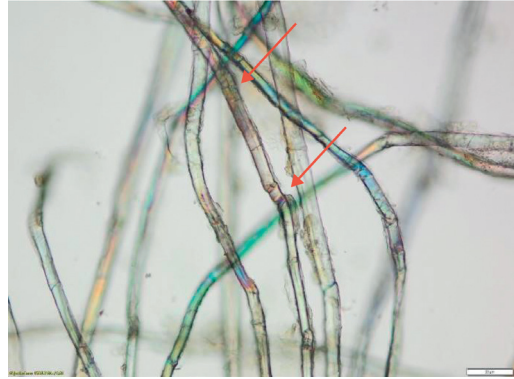


Figure 12a. The thick-walled fibers of Paper mulberry enveloped with transparent membrane observed at 200× magnification in manuscript archived as *CMRU ARP.TAI 001* from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.

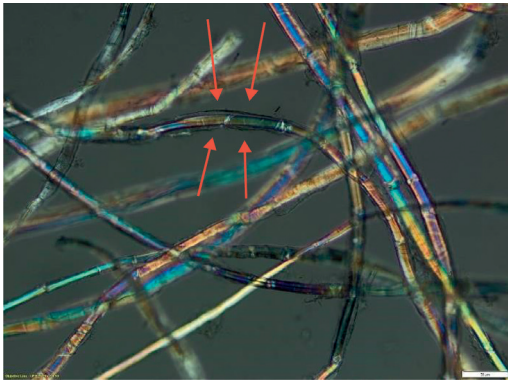


Figure 12b. The long and slightly rigid bent fibers of paper mulberry enveloped by a transparent membrane observed at 200× magnification in the manuscript archived as *CMRU ARP.TAI 006* from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.



Figure 12c. The fiber of Paper mulberry enveloped by a transparent membrane after being treated with Herzberg stain observed at 400× magnification in the manuscript archived as *CMRU ARP.TAI 001* from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.

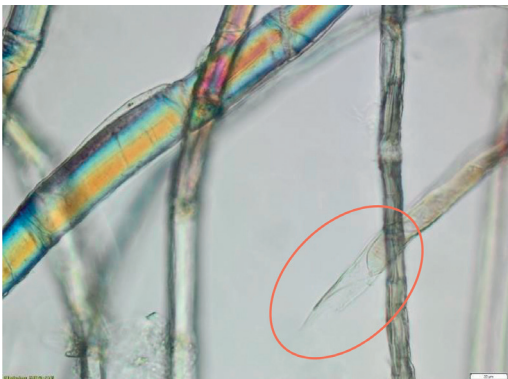


Figure 13a. The Paper mulberry fibers, cross-markings and a natural rounded fiber end enveloped by a transparent membrane observed under the microscope at 400× magnification in the manuscript archived as *DS 0062 00294* from the Buddhist Archives in Luang Prabang. © Agnieszka Helman-Ważny.



Figure 13b. The natural blunt end of a Paper mulberry fiber after treatment with Herzberg stain observed under the microscope at 400× magnification in the manuscript archived as *BAD 13-2-021* from the Buddhist Archives in Luang Prabang. © Agnieszka Helman-Ważny.



Figure 13c. The natural fiber end enveloped by a transparent membrane also with natural ending, observed at 200× magnification in the manuscript archived as *CMRU ARP.060* from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.



Figure 14. The 'knot' of other fibers stained violet among Paper mulberry-based pulp observed at 40× magnification in the manuscript archived as *CMRU ms 1* from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.

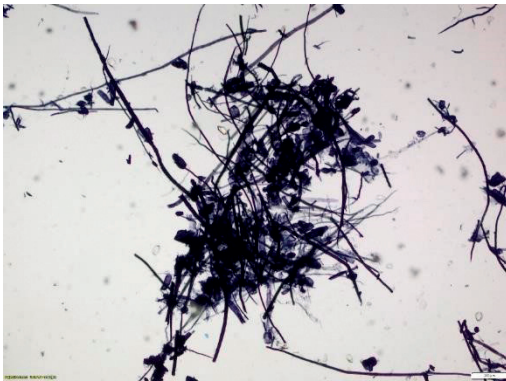


Figure 15. The bamboo and grass-type pulp observed at 40× magnification in the manuscript archived as *CMRU ms 3* from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.



Figure 16. The wide bamboo vessel observed at 100× magnification in the manuscript archived as *CMRU ms 3* from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.

As stated above, despite the majority of fibers identified as paper mulberry, we also identified minor amounts of other unidentified fibers in the pulp. These fibers can, for example, be seen in the Paper mulberry pulp in the manuscripts archived as *CMRU Ms. 1*, (Figure 14). Furthermore, the paper of the manuscript archived as *CMRU Ms. 3* from the Chiang Mai Rajabhat University Library does not contain any mulberry paper, as it is composed of bamboo and other grass-type fibers (Figures 15–16).

The Paper mulberry fibers are almost unligified. Detailed data for the inner bark of Paper mulberry, also regarding the parameters of its chemical pulping, are available in the research report published in Thailand by Wikhan and Buapun in 2001.³¹ Both a low content of lignin (3.32%) and a high content of holocellulose (71.03%) in the inner bark are worthy of note. Thanks to the low lignin content, the cooking process of the paper mulberry inner bark can be run under mild conditions with regard to the admixture of alkali and cooking time.

³¹ Wikhan and Buapun 2001, [http://posaa.kapi.ku.ac.th/Document/PDF/FinalRep2001_V2/Full_2A-2-1\(3\).pdf](http://posaa.kapi.ku.ac.th/Document/PDF/FinalRep2001_V2/Full_2A-2-1(3).pdf) (accessed 3 October 2020).



Figures 17a, b. The paper sheet formation method with fixed mold made with a plastic screen attached to a wooden frame observed in Say Namkhan Company in Luang Prabang. It is the floating method characterized by the pouring of paper pulp directly on the sieve in carefully measured scopes (similarly to a technique widely used in the Himalayas). © Agnieszka Helman-Ważny.



Figures 18a, b. The paper sheet formation method with a fixed mold made with a plastic screen attached to the wooden frame in *Sa* Paper & Umbrella Handicraft Factory, Chiang Mai. Considering the technology, it is the dipping method characterized by the paper pulp being derived from all the volume of the water tank (opposite to the above technique observed in Laos when the pulp is poured directly onto the sieve in carefully measured scopes). © Agnieszka Helman-Ważny.

Besides identification of raw material for paper production, the next important material feature that allows for the characterization of paper comes from the technology and tools used during paper production. Generally speaking, there are two types of mold used in papermaking: the floating mold and the dipping mold. Both molds are additionally characterized by the type of sieve with which they are equipped. The floating mold is placed on the surface of the water and paper pulp is poured into the sieve within the frame of the mold (Figures 17a, b). With the dipping mold, however, the pulp is mixed with water before the mold is dipped into it (Figures 18a, b). As a result, paper made with a floating mold on which the pulp is poured is usually thicker, and the fibers are more unevenly distributed in the sheet of paper compared to paper made with a dipping mold, when the pulp is mixed in the full volume of the water tank. This is an important distinguishing feature between the different methods of papermaking.³²

³² For more on papermaking technology, see Hunter 1978; Pan 1998; or Tsien 1985.

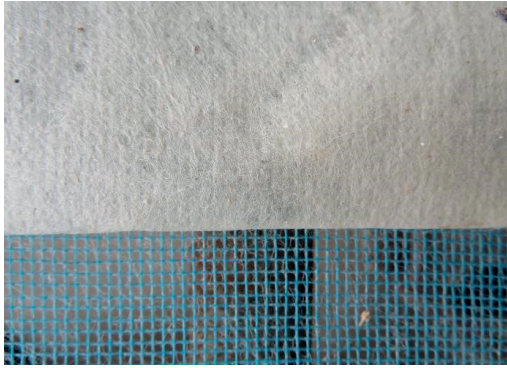


Figure 19. The sieve print left on the paper made using a plastic sieve attached to the wooden frame. The photograph was taken in a papermaking factory near Chiang Mai in 2020. © Agnieszka Helman-Ważny.



Figure 20. Texture of paper showing the print of a papermaking sieve in the manuscripts from the Buddhist Archives in Luang Prabang archived as *Nan Savaeng ms 2*. © Agnieszka Helman-Ważny.

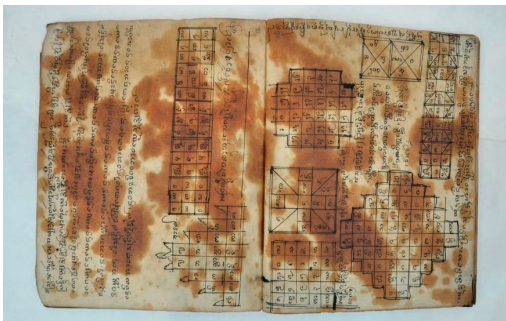


Figure 21. Paper treated with insect repellent, leaving brownish coloration observed in the manuscript archived as *CMRU ARP.060* from Chiang Mai Rajabhat University Library. © Agnieszka Helman-Ważny.

In addition, a fixed sieve made of woven cotton, hemp or flax textile is often attached to the floating mold, while a movable sieve, made from bamboo, reed or another kind of grass, is attached to the dipping mold. The different sieves leave clearly different imprints on the paper. A textile sieve leaves faint woven patterns (sometimes barely perceptible) and a movable sieve leaves a laid lines pattern (bamboo sieves leave regular laid lines; reed or other grass sieves leave irregular laid lines). The chain lines, being the impressions of stitches that tie the strips of bamboo, reed or other grass together, are sometimes visibly perpendicular to the laid lines.³³ At some point when plastic started to be used in the region, possibly in the middle of the 20th century, the textile sieve of the fixed mold was replaced with a plastic sieve, which is more durable and resistant to microorganisms (which meaningfully prolongs the time that it can be used in a humid environment) (Figure. 19). Its specific print left on paper after it has dried on the screen can be observed later in manuscripts (Figure 20), and if we know the date when it was first used we can also date the manuscripts accordingly.

The paper of some manuscripts from our sample was treated with various insect repellent substances such as the oily resin collected from the wood of the *Yang Na* tree (*Dipterocarpus alatus* Roxb. ex G. Don). It resulted in brownish coloration observed in these manuscripts (Figure 21).

Conclusions

In its general concept, the stab-stitched method of bookbinding documented in Tai manuscripts from Laos and Northern Thailand is similar to that commonly used in

³³ Helman-Ważny 2016, 11.

East Asian books; however the technique of sewing with a double thread, a loop (stitch started in the middle), or its rolled form are rather unique elements of Lao and Tai book culture. Interestingly, this format in East Asia has been commonly associated with printed book culture, and in our sample it was used to bind manuscripts. It should be noted here that we also observed some variation within Tai bookbinding in our sample. There were two main types, depending on the size of these manuscripts. One type was usually smaller and contained a loop in the middle which allowed for such manuscripts to be hung on the wall. Manuscripts of significantly larger size were usually stored in the roll form. Both different dimensions and materials were used and the function of manuscripts characterized by this binding created an unique aesthetic. The function is also conjunct with the type of text and forms how the specific manuscript is supposed to be used.

The relationships between function, type of text, style of binding and format is also clearly seen in our sample. Studied stab-stitched manuscripts contain incantations, horoscopes, astrological or medical texts. They all tend to be rather informal, being used to keep notes, such as for the calendar, as a record of weather, or as ritual guidelines. These manuscripts were produced in the geographical region inhabited by communities with shared cultural traditions, beyond the political state borders. The Tai Lü—in their Yunnanese homeland as well as in neighboring areas in Burma, Laos and Northern Thailand—are, along with the Tai Nüa (‘Chinese Shan’) and the Shan (Tai Yai), one of few major Tai ethnic groups where the stab-stitched binding dominates. These bound books are called *pap hua* in the vernacular, a term that is also used in Northern Thailand to refer to the sewing of the folios at their ‘head’ (Tai: *hua*). The villages in Pak U and Nambak districts, located in a rural area of Luang Prabang province in Northern Laos where our studied stab-stitched manuscripts were found, are all inhabited by Tai Lü, whose ancestors migrated from the Laos-Yunnan-Burma borderlands generations ago. It is the manuscript culture of the Tai Lü, rather than that of the mainstream Lao, which is most famous for the production of such sewn mulberry paper manuscripts. In the Tai Lü and the Tai Nüa inhabited areas in Northern Laos the tradition of making such stab-stitched bound manuscripts is still alive, at least among Tai Lü communities, as is the case in the Tai Lü heartland of Sipsòng Panna (Yunnan) and Müang Sing (Lao province of Luang Namtha).

The manuscripts in our sample also contained particular materials typical of this format. The paper in the examined books was of similar thickness: thinner than in leporello books. The manuscript leaves were constructed of folded sheets of paper that had been handmade through the use of a papermaking mold constructed of a wooden frame with a textile or plastic sieve spread onto it. Some manuscripts were treated with insect repellent substances, which left brownish spots on paper. Our microscopic study showed that a majority of the studied manuscripts, however not all, were composed of Paper mulberry fibers. Local people by tradition commonly associate the stab-stitched manuscript format with *sa* paper. However, our study showed that besides *sa* paper, other types of paper were used for producing the stab-stitched manuscripts. Both detected materials and technologies have the potential to help in dating and finding the place of origin of manuscripts, especially when these pieces of information are combined

with information derived from the text. However, further research on the history of technologies applied during book production could help to achieve better precision in provenance studies of these manuscripts. It would be helpful to find the dates when some materials started to be used by craftsmen (such as plastic screens on papermaking molds), or when materials other than mulberry fibers were used.

Acknowledgements

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Interviews

- Nan Savaeng, son of Mai Saengkham, the local healer from Pak Chaek village, by telephone on 21 August 2020.
- Nan Pan, the ceremonial master from Pak Chaek village, by telephone on 21 August 2020.