Silk-*ma* Mixed Woven Textiles in East Asian History

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Abstract

Mixed woven textile (*交織物*) is a textile woven with yarns of two or more different fibres, in which each yarn contains only one type of fibre. Silk and *ma* (*麻*, a Chinese character used to name mainly bast and leaf fibres) are two kinds of the earliest fibre materials used in East Asia. They were opposite in properties, usage and social status in ancient East Asian society where cultures shared the same origin and social hierarchy was extremely rigid under the influence of Confucianism. However, they were woven into silk-*ma* mixed woven textiles as early as 2355±45 BP in China, as attested by the discovery of archaeological fabric fragments woven with silk and ramie-hemp threads. Archaeological artefacts and ancient documents of silk-*ma* mixed woven textiles are seldom discovered or recognized, most probably not because of their rare existence in history but because of the lack of precise identification. This paper will share historical evidence of silk-*ma* mixed woven textiles in the Chinese mainland, the Korean peninsula and the Japanese archipelago, summarize their features and reveal the possible reasons for their elusive presence.

Keywords: archaeological textiles, silk, bast fibres, mixed woven textile, East Asia

Introduction

Mixed woven textile (*交織物*) is a textile woven with yarns of two or more different fibres, in which each yarn contains only one type of fibre (*K. Sarkar et al., 2021*). Silk and *ma* (*麻*) are two kinds of the earliest fibre materials used in East Asia. Generally, when silk is mentioned in literature or oral communication, it mainly refers to silk filaments of *Bombyx mori*. When *ma* is mentioned in East Asian languages, it is a common name for a group of plant fibres with similar characteristics, mainly referring to bast and leaf fibres. Silk and *ma* were opposite in properties, usage and social status in ancient East Asian society where cultures shared the same origin and social hierarchy was extremely rigid under the influence of Confucianism. Silk fibres are long, fine, smooth, elastic and bright while *ma* fibres are usually short and coarse with dull colour and low elongation. Silk is normally used for making high-class fine textiles while *ma* is commonly used for ordinary clothing or wrapping materials.

In ancient East Asian society, silk could only be used by rulers and aristocrats while *ma* was more used by masses of civilians. However, these two materials were woven together into silk-*ma* mixed woven textiles as early as 2355±45 BP in China, as attested by the discovery of archaeological fabric fragments mixed woven with silk and ramie-hemp thread (*The Museum of Hubei Province, 1989*). This evidence record is not easily found because these silk-*ma* mixed woven textiles were categorized as a specific ancient fabric name *Sha* (*纱*), which hides the feature of mixed weaving, and under an ambiguous category of *Simazhipin* (*丝麻织品*), textiles of silk and *ma*, which is confusing whether the textiles are made of silk or *ma* or both.

Archaeological artefacts and ancient documents of silk-*ma* mixed woven textiles are seldom discovered or recognized, most probably not because of their rare existence in history but because of the lack of precise identification and classification. Hitherto, careful identification and classification of silk-*ma* mixed woven textiles have only been seen in the Korean scholarship (*Park, 2009; Ree, 2019; Sim, 2016; Yoon, 2011*). This paper will share historical evidence of silk-*ma* mixed woven textiles in East Asia collected through the years, summarize their features and reveal the possible reasons for their elusive presence.
1. Archaeological Silk-\textit{ma} Mixed Woven Textiles in East Asia

1.1 Silk-\textit{ma} Mixed Woven Fabric Fragments Unearthed from the Tomb of Marquis Yi of State Zeng (2355\pm45 BP), Central China

Among the textile fragments excavated from the Tomb of Marquis Yi of State Zeng (2355\pm45 BP) in Central China, 26 pieces of plain fabric woven with silk and ramie-hemp threads were identified. The largest one of the 5 examined fragments measures only 9\times5 cm. These mixed-woven fragments have silk and \textit{ma} threads arranged alternately in the warp with a density of 30/cm on average, and silk threads in the weft with an average density of 25/cm. Raw materials of the silk threads are mulberry silk filaments and that of the \textit{ma} threads are mainly ramie with hemp fibres mixed in occasionally. Among these fabrics, the more intact pieces can be recognized as small bags. They were sorted out from string instruments but were too small to pack them. Therefore, they were presumed to be used for packing strings of the large instrument \textit{Se} (瑟, an ancient Chinese large stringed musical instrument)(The Museum of Hubei Province, 1989, p. 437).

![Silk-\textit{ma} mixed woven fabric fragments](image1)

Figure 1. Silk-\textit{ma} mixed woven fabric fragments unearthed from the Tomb of Marquis Yi of State Zeng (2355\pm45 BP), Hubei Province (Images: Pan Bingyuan and Hao Qinjian, reproduced from The Museum of Hubei Province, 1989)

1.2 \textit{Ma}-silk Mixed Twined Shoes (2200-1600 BP) Unearthed from Northwestern China

A pair of shoes was excavated from the Yingpan Cemetery (2200-1600 BP) in Yuli County, Xinjiang Province in Northwestern China. The vamp of them has light brown plied \textit{ma} threads in the warp, red and yellow silk threads twined regularly in the weft direction. The warps are S-twisted Z-plied 2-ply threads and the wefts are untwisted silk filaments. The vamp’s fabric density is 11\times84/cm. Materials for the warp and weft threads in and under the shoes are \textit{ma}. Two coarse threads are woven inside the middle of the shoes to form a longitudinal coloured pattern, of which the yellow one is made of \textit{ma} and the red one is made of wool (Zhou & Li, 2002).

![\textit{Ma}-silk mixed twined shoes](image2)

Figure 2. \textit{Ma}-silk mixed twined shoes unearthed from the Yingpan Cemetery (2200-1600 BP), Xinjiang Uygur Autonomous Region (a) the shoes (b) part of the fabric structure (c) fragment of shoes unearthed from the same cemetery (Images: reproduced from Recent Excavations of Textiles in China, China National Silk Museum, 2002, pp. 70-71)
Another pair of shoes belonging to the Eastern Jin Dynasty (1600 BP) was unearthed in the Turpan area of Xinjiang Province, which is now collected in the Museum of Xinjiang Uygur Autonomous Region (Zhao, 1980). The vamp of this pair of shoes is made of *ma* in the warp and silk in the weft direction, which is a *ma*-silk mixed woven textile. It has a warp density of about 14/inch and a weft density of about 11/inch. The pattern of this shoe is simply in only red, blue and yellow.

1.3 Silk-ramie Mixed Woven Fabric on the Surface of a Bronze Mirror Unearthed from the Sonobe Kaichi Mound (1500 BP), Japan

The Sonobe Kaichi Mound (かいちこふん, 园部垣内古墳) is located at Sonobe Town, Kyoto Prefecture in Japan. It is dated back to the second half of the 4th century belonging to the Kofun period in Japan, based on its tomb form and relics excavated (“Sonobe Kaichi Mound 垣内古墳,” 2021). Among the relics, there is a bronze mirror with an inscription of a sacred beast, on the surface of which attached a silk-ramie mixed woven fabric (Junro, 1992, p. 193). Warp threads of this fabric are made of domestic silk filaments and weft threads are made of ramie. The fabric density is 54×35/cm.

![figure](image)

Figure 3. Silk-ramie mixed woven fabric on the surface of a bronze mirror unearthed from the Sonobe Kaichi Mound (1500 BP), Kyoto, Japan (a) the fabric structure (b) cross-section image of fibres in the warp direction (c) cross-section image of fibres in the weft direction (Images: Junro Nunome, reproduced from Junro, 1992)

1.4 Silk-ramie Mixed Woven Costume Discovered from a Copper Buddha Statue of the Koryo Dynasty (918-1392 AD), South Korea

A half-arm gown has been found in a copper Buddha statue built in 1346 AD at the Manjushri Temple, belonging to the Goryeo period (918-1392 AD) in the Korean Peninsula. The fabric used to make it was initially classified as ramie cloth but examined under microscopic analysis to be silk-ramie mixed woven cloth in recent years (Ree, 2019, pp. 1–2; Sim, 2016). The costume is now stored in the Sacred Treasure Hall of the Seodeoksa Temple in South Korea, with a fabric density of 27×31/cm. Untwisted silk filaments serve as its warps and spliced ramie threads as its wefts.
1.5 Silk-ramie Mixed Woven Fabric (1502 AD as Inferred) in the Wooden Guanyin Statue at Yuanguang Temple, South Korea

When an investigation was conducted in 2010 at the Wongwangsa Temple in Busan, South Korea, 7 pieces of silk-ramie mixed woven fabrics were discovered in a wooden Guanyin statue. These fabrics were presumed to have been placed in the statue in 1502 AD. One of them was identified that it has untwisted silk filaments in the warp direction with a diameter of about 0.02 mm and spliced ramie threads in the weft direction with a diameter of about 0.06 mm. The fabric density of it is 37×42/cm (Sim, 2016).

1.6 Silk-ramie Mixed Woven Costume Unearthed from the Tomb of Jin Qinzu (1461-1528 AD), South Korea

A large number of costumes including two silk-ramie mixed woven round-neck robes have been discovered from the burial of Jin Qinzu in Yeongju, South Korea. Both of the two robes have silk as warps and ramie as wefts, with a fabric density of 27×35 /cm (Culture and Tourism Division of Yeongju City, 1998, pp. 229–326). The average diameter of their warps is about 0.03 mm and of their wefts is about 0.05 mm (Sim, 2016). In the same tomb, there were also other types of mixed woven costumes, including 5 silk-cotton mixed woven costumes with silk for the warps and ramie for the wefts, and a ramie-cotton mixed woven costume with ramie for the warps and cotton for the wefts (Culture and Tourism Division of Yeongju City, 1998, pp. 229-326).
Figure 6. Silk-ramie mixed woven costume unearthed from the Tomb of Jin Qinzhu (1461-1528 AD), South Korea (a) a silk-ramie mixed woven costume (b) 100× image of the fabric (c) 200× image of the fabric (Images: reproduced from Sim, 2016)

1.7 Silk-ma Mixed Woven Skirt Unearthed from Xiong’s (1482-1537 AD) Tomb, Eastern China

A skirt unearthed from Xiong’s Tomb at De’an County in Eastern China was reported as a silk-ma mixed woven textile with silk for the warp and ma for the weft, with a very thin texture (Yu et al., 1994). The species of its ma was not mentioned and stays unknown. In addition, there was a silk-cotton mixed woven fabric on the surface of a jacket unearthed from the same tomb, which has silk for the warp and cotton for the weft.

1.8 Silk-ma Mixed Woven Fabric in a Costume Unearthed from Pingshan Shin’s Tomb, South Korea

A jacket excavated from the Shin’s Tomb at Pyongsan in South Korea has both silk-ma and silk-cotton mixed woven fabrics used for the lining (Mungyeong Saejae Museum, 2005, pp. 219-220). From the SEM image of the longitudinal sections of wefts in the silk-ma mixed woven fabric, the fibres are uneven in thickness and the tip is blunt and rounded, probably being hemp. The owner of the tomb, Shin, is Changshui Huang’s wife on the Korean Peninsula. The birth and death years of both Huang and Shin are unknown but it can be inferred from that of Huang’s elder brother Huang Yun (1523-1593 AD) that the tomb owner lived at the end of the 16th century.

Figure 7. SEM images of longitudinal sections of fibres in a costume unearthed from Pingshan Shin’s Tomb, South Korea (a) vertical section of the warp fibres (b)(c) vertical section of the weft fibres (Images: reproduced from Mungyeong Saejae Museum, 2005, p. 219)

2. Ancient Documents of Silk-ma mixed Woven Textiles in East Asia

Given that no records related to silk-ma mixed woven textiles have been found in Japanese historical documents, only relevant texts from ancient China and Korea are shown in this part. Considering the earliest identifiable terms for silk-ma mixed woven textiles are found in the historical records from the Korean Peninsula and most of these records involve exchanges with ancient China, this part will start with historical records of silk-ma mixed woven textiles in the Korean Peninsula and then go to corresponding records in ancient China.
2.1 Silk-ma Mixed Woven Fabric in Ancient Documents from the Korean Peninsula

The earliest name of mixed woven fabric can be seen in the documents of the Joseon Dynasty (1392-1910 AD) as Jiaozhibu (交織布) or Jianzhibu (兼織布). In *The Veritable Records of the Joseon Dynasty* (朝鮮王朝實錄, http://sillok.history.go.kr/main/main.do), 21 records of 6 terms referring to silk-ma mixed weaving can be retrieved, including silk-hemp mixed weaving (絲麻交織), hemp-silk mixed weaving (麻絲交織), silk-ramie mixed weaving (絲苎交織), silk-hemp concurrent weaving (絲麻兼織), silk-ramie concurrent weaving (絲苎兼織), ramie-silk concurrent weaving (苎絲兼織). 18 of the 21 records are written as tributes paid from the Joseon Dynasty in Korea to the Ming Dynasty in China. However, these records have not yet been found the same in ancient Chinese documents.

2.2 Documents About Korean Silk-ma Mixed Woven Fabric in Ancient China

It can be determined from records in *The Veritable Records of the Joseon Dynasty* (朝鮮王朝實錄) that the Ming Dynasty of China received silk-ma mixed woven textiles from the Joseon Dynasty in Korea for multiple times. Yet these textiles were not found in historical documents of the Ming Dynasty as they were in Korea. Comparing the documents of tributes sent from Korea to China recorded in Korea and received by China from Korea recorded in China, names might differ or be wrongly recorded due to cultural differences. If the term heungmapo (黑麻布) did demonstrate a kind of silk-ramie mixed woven fabric as examined by Ree Ji-won (J. Ree, 2019), documents about Korean silk-ma mixed woven fabric that can be found in ancient Chinese texts only include heungmapo (黑麻布) sent in late Goryeo Dynasty (918-1392 AD).

2.3 Silk-ma Mixed Woven Fabric in Ancient Documents of China

In ancient Chinese texts, there are a large number of names referring to various textiles. In most cases, the characteristics of the textiles, such as raw material, colour, yarn parameter or fabric structure, cannot be recognized or understood from those names. Moreover, one textile name may have different meanings at different times or places, making it hard to recognize silk-ma mixed woven textiles. In this paper, only names with descriptions that can be identified as silk-ma mixed woven textiles are listed, as shown in Table 1. One thing that should be noticed is that these names do not necessarily refer to the same thing in other documents.
Table 1. Records of silk-*ma* mixed woven textiles in ancient Chinese texts

<table>
<thead>
<tr>
<th>NO.</th>
<th>Name</th>
<th>Source Document</th>
<th>Latest Year of Appearance (AD)</th>
<th>Warp</th>
<th>Weft</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Shi</em> (織)</td>
<td><em>Tangyishu: Huhun</em> (唐律疏議·戶婚)</td>
<td>659</td>
<td>silk</td>
<td>ramie</td>
</tr>
<tr>
<td></td>
<td><em>Yupizhitongjiangang mu</em> (習批資治通鑑織目)</td>
<td></td>
<td>1722</td>
<td>silk</td>
<td>hemp</td>
</tr>
<tr>
<td>2</td>
<td>Silk-hemp mixed woven fabric (絲麻交織布)</td>
<td></td>
<td>1419</td>
<td>silk &amp; hemp</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Silk-ramie mixed woven fabric (絲苧交織布)</td>
<td></td>
<td>1419</td>
<td>silk &amp; ramie</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Silk-hemp concurrent woven fabric (絲麻兼織布)</td>
<td><em>The Veritable Records of the Joseon Dynasty</em> (朝鮮王朝實錄)</td>
<td>1419</td>
<td>silk &amp; hemp</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Silk-ramie concurrent woven fabric (絲苧兼織布)</td>
<td></td>
<td>1419</td>
<td>silk &amp; ramie</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Ramie-silk concurrent woven fabric (苧絲兼織布)</td>
<td></td>
<td>1467</td>
<td>silk &amp; ramie</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Hemp-silk mixed woven fabric (麻絲織布)</td>
<td></td>
<td>1423</td>
<td>silk &amp; hemp</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NO.</th>
<th>Name</th>
<th>Source Document</th>
<th>Latest Year of Appearance (AD)</th>
<th>Warp</th>
<th>Weft</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Concurrent silk fabric (兼緞)</td>
<td><em>(Hongzhi)Bamintongzhu</em> (弘治八閩通誌)</td>
<td>1505</td>
<td>silk ramie</td>
<td>silk or ma</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>(Zhengde)Songjiangfu zhi</em> ([正德]松江府誌)</td>
<td>1521</td>
<td>silk ramie or yellow grass</td>
<td>silk or ma</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Guangdongxinyu Huoyu</em> (廣東新語·貨語)</td>
<td>1696</td>
<td>ma silk</td>
<td>silk or ma (sometimes cotton)</td>
</tr>
<tr>
<td>9</td>
<td>Silk cloth (絲布)</td>
<td><em>Tongya Clothing</em> (通雅·衣服)</td>
<td>1671</td>
<td>silk &amp; threads from cloth (usually ma)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>(Gewuqingyan Fabrics)</em> (格物鏡原·布帛類)</td>
<td>1736</td>
<td>silk</td>
<td>cotton</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>(Ryu Kyu Zhilue Good)</em> (琉球國志略·物產)</td>
<td>1796</td>
<td>silk</td>
<td>ma</td>
</tr>
<tr>
<td>10</td>
<td>Fish freezing cloth (魚凍布)</td>
<td><em>Guangdongxinyu Huoyu</em> (廣東新語·貨語)</td>
<td>1696</td>
<td>silk &amp; ramie</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Spring cloth (春布)</td>
<td><em>Liuyangmalishu</em> (灝陽麻利述)</td>
<td>1898</td>
<td>ma cotton</td>
<td>ma silk</td>
</tr>
</tbody>
</table>

3. Features of Silk-*ma* Mixed Woven Textiles in East Asian History

Based on historical evidence, silk-*ma* mixed woven textiles in East Asian history are mostly mixed woven with silk and ramie, followed with silk and hemp or other *ma* threads, least with silk and blended *ma* threads. Both silk and *ma* threads can be woven either as warp or weft threads. Sometimes they are arranged alternately in the warp direction of a textile, along with the weft possibly composed of either silk or *ma* threads (see Table 1 and Table 2).

Archaeological silk-*ma* mixed woven textiles are mostly woven with silk as warp and *ma* as weft, used for clothing, Buddhist supplies or wrapping materials. Two of them used for vamp on shoes have *ma* threads in the warp and silk in the weft direction. Only the fabric inferred to be used as small bags unearthed from the burial of Marquis Yi of State Zeng has both silk and *ma* threads in the warp. This case with alternating silk and *ma* threads...
in the warp aligns with the description of “ma warp silk warp concurrent silk cloth (麻经丝经兼丝布)” in the Chinese historical documents, which might correspond to the ancient textile name concurrent silk cloth (兼丝布). This concurrent silk cloth (兼丝布) unearthed from the burial of Marquis Yi of State Zeng used silk for weft threads.

Table 2. Archaeological artefacts of silk-ma mixed woven textiles in East Asia

<table>
<thead>
<tr>
<th>No.</th>
<th>Site</th>
<th>Age</th>
<th>Warp</th>
<th>Weft</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>Tomb of Marquis Yi of State Zeng, Hubei Province</td>
<td>2400 BP</td>
<td>silk, ramie/hemp yarn</td>
<td>small bags probable for packaging strings</td>
</tr>
<tr>
<td>2</td>
<td>China</td>
<td>Yingpan Cemetery, Xinjiang Uygur Autonomous Region</td>
<td>2200-1600 BP</td>
<td>ma thread</td>
<td>silk</td>
</tr>
<tr>
<td>3</td>
<td>China</td>
<td>Turpan in Xinjiang Uygur Autonomous Region</td>
<td>1600 BP</td>
<td>ma thread</td>
<td>silk</td>
</tr>
<tr>
<td>4</td>
<td>Japan</td>
<td>Sonobe Kaichi Mound, Kyoto</td>
<td>1500 BP</td>
<td>silk, ramie thread</td>
<td>adhere to a bronze mirror</td>
</tr>
<tr>
<td>5</td>
<td>South Korea</td>
<td>a bronze Buddha statue of Koryo Dynasty</td>
<td>1346 AD</td>
<td>silk</td>
<td>ramie thread</td>
</tr>
<tr>
<td>6</td>
<td>South Korea</td>
<td>a wooden Guanyin statue of Yuanguang Temple, Busan</td>
<td>1502 AD</td>
<td>silk</td>
<td>ramie thread</td>
</tr>
<tr>
<td>7</td>
<td>China</td>
<td>Tomb of Jin Qinzhu, Yegong</td>
<td>1528 AD</td>
<td>silk</td>
<td>ramie thread</td>
</tr>
<tr>
<td>8</td>
<td>China</td>
<td>Xiong’s Tomb, Shaanxi Province</td>
<td>1537 AD</td>
<td>silk, ma thread</td>
<td>silk</td>
</tr>
<tr>
<td>9</td>
<td>South Korea</td>
<td>Pingshan Shin’s Tomb</td>
<td>late 16 centuries</td>
<td>silk, hemp thread</td>
<td>top lining</td>
</tr>
</tbody>
</table>

4. Possible Reasons for the Elusive Presence of Silk-ma Mixed Woven Textiles in East Asian History

Based on the historical materials demonstrated above, archaeological remains and historical documents of silk-ma mixed woven textiles are few, most probably not because of their rare existence in history but because of the lack of precise identification. This was caused by the absence of a well-defined, professional, and recognized terminology, and the resulting ambiguous classification of these textiles. Among scholars or in historical literature, there is no common or clear name for silk-ma mixed woven textiles, resulting in the lack of conspicuous research or discussion on them. In addition, the ambiguous classification or even no mention as important artefacts in archaeological reports makes it even more difficult to search for and find information about them.

Aside from the confusing categorizing of silk-ma mixed woven textiles from the tomb of Marquis Yi of State Zeng (The Museum of Hubei Province, 1989), there are similar problems in other cases. In the archaeological report of Xiong’s tomb in Eastern China, the silk-ma mixed woven skirt was classified into a category of ma fabrics but named ma-silk skirt (Yu et al., 1994). Concerning the silk-ma mixed woven shoes unearthed from Yingpan Cemetery in Northwestern China, it is only mentioned as Zhicheng (织成) footwear (Zhou & Li, 2002), which emphasizes the shoes making process but hides the information about the materials and features of mixed weaving. In the Japanese book The archaeology of fiber before your eyes: A compilation of photographs of fiber artifacts (目で見る繊維の考古学: 繊維遺物資料集成), silk-ramie mixed woven fabric unearthed from the Sonobe Kaichi Mound in Japan is categorized into both silk fabrics and non-silk fabrics (Junro, 1992), showing a fact that scholars are in trouble with the placement of silk-ma mixed woven textiles without any exclusive category for them.

Hitherto, specialized classification and research on mixed woven textiles are only seen in Korean publications. Scholars in South Korea would have listed a specific category of mixed woven textile (交織物) rather than ambiguously placing them in any pure textile with only one material if there were mixed woven textiles discovered(Buyeo National Research Institute of Cultural Heritage, 2007, pp. 140-151; Park, 2009). They have also conducted specific research on them so that it is easy to recognize not only silk-ma mixed woven textiles but also mixed woven textiles of other materials (Ree, 2019; Yoon, 2011). In China and Japan, mixed woven textiles
are often downplayed or neglected in archaeological reports, which is difficult to change if such textile finds continue to be downplayed or even unmentioned as important artefacts.

5. Conclusion

Archaeological evidence and historical documents of silk-ma mixed woven textiles in China, Korea and Japan are shown in this paper. Features of silk-ma mixed woven textiles in East Asian history are summarized in that they are mostly mixed woven with silk and ramie, followed with silk and hemp or other ma threads, least with silk and blended ma threads. Both silk and ma threads can be woven as either warp or weft threads in a mixed woven textile but in most cases, silk threads are in the warp and ma threads are in the weft direction. Sometimes they are arranged alternately in the warp direction of a textile, along with the weft possibly composed of either silk or ma threads. Archaeological silk-ma mixed woven textiles are mostly woven with silk as warp and ma as weft, used for clothing, Buddhist supplies or wrapping materials. Two of them used for vamp on shoes have ma threads in the warp and silk in the weft direction. Only the fabric inferred to be used as small bags has both silk and ma threads in the warp, aligning with the description of “ma warp silk warp concurrent silk cloth (麻经丝经兼丝布)" in the Chinese historical documents. Based on the experience of collecting historical materials, it can be inferred that the elusive presence of silk-ma mixed woven textiles is most probably not because of their rare existence in East Asian history but because of the lack of precise identification. This was caused by the absence of a well-defined, professional, and recognized terminology, and the resulting ambiguous classification of these textiles. Specialized classification and research on mixed woven textiles are only seen in Korean publications. Mixed woven textiles are often downplayed or neglected in Chinese and Japanese archaeological reports, which is difficult to change if such textile finds continue to be downplayed or even unmentioned as important artefacts.

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**Authors contributions**

Doctoral student Xiyao Zhang and Prof. Xiaomin Yang were responsible for study design, revising, and data collection. Xiyao Zhang drafted the manuscript and Prof. Xiaoming Yang revised it. All authors read and approved the final manuscript.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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