

Kumihimo: Materials Comparison

Noble Anne of Østgardr (they/them) - for Outlands Kingdom A&S Competition/Queen's Prize, April 1 2023

Short description of entry

- Kumihimo is a Japanese style of braiding which began in the Nara period, about 600 CE, and was used through the Edo period, 1600-1800 CE (Domyo). In this time frame, it was used in Buddhist temples, to decorate royalty, to hold together armor and swords/scabbards for samurai, and to hold together kimonos. (“みひもの歴史”).
- The project I'm exhibiting today is a comparison of braids created using a kumihimo technique with a wide variety of modern available fiber materials. One braid was made with each fiber. I share my qualitative notes on the process of creating the braids, as well as the similarities and differences between a historically accurate kumihimo braid and each of the recreated braids. The finished braids, all of which I made between when I began this long-running project in March 2019 and the time of this display in April 2023, are also displayed.
- I have previously covered some of this material on my competition entry “Introduction to Kumihimo” at East Kingdom Novice Day, July 20, 2019 - also available at <http://anne.loves.technology/anachronism/images/novice-day/kumihimo.pdf>. The historical context in my previous entry has been expanded with more information, and 7 of the 9 braids on display in this entry are new.
- Queen's Prize note: in accordance with the theme of “miniature”, the displayed braids can be considered to be “miniature rope”. (suggestion courtesy of THL Bryngerör)

Short description of entry	1
Historical context	2
Patterns for weaving	2
Historical fibers	2
Braids on display	3
My previous work and what I am doing differently now	4
Comparison table overview	4
Conclusions	8
Sources	8
Appendix 1: Photos of displayed braids	10
Appendix 2: Photos of tools	15
Appendix 3: Reference photos of extant kumihimo	16
Sources for Appendix 3	18

Historical context

Patterns for weaving

When I was first starting out, I found a lot of modern sources, like “Shelly’s Kumihimo Links”, that refer to a 16-strand braid as “Kongo gumi.” That site provides links with instructions on how to braid, but doesn’t provide any historical context or source for the name. Some modern secondary/tertiary sources on kumihimo, like Tada via the Kumihimo Companion, say that there are many types of braids made on a loom called a marudai, as well as braids on other types of looms. “Kongoh gumi” is used as the Japanese name for a specific braid, in addition to there being other braids with different names in that family, possibly with different patterns. I don’t own a copy of that book, unfortunately, so I can’t yet verify my conjecture that “kongoh gumi” is a specific pattern as opposed to a family of patterns with the same technique.

Another source, “Taito City Culture Guide Book”, confirms that there are many types of braids of different complexities, and provides names for some of the techniques:

There are various traditional patterns for Kumihimo, including "Kikkogumi," "Kamakuragumi," composite braiding method called "Itsukushimagumi" that was dedicated to Itsukushima Shrine and used for "Heike Nokyo" sutra scroll, "Karakumi," "Kanmurikumi," "Naragumi," "Mitakekumi" and "Koraikumi." There are also about 20 major braiding methods. It is considered that there are hundreds of braiding methods if their offshoots and methods derived from the major ones are included. For the most complex "Ryomen Kikkogumi," 144 silk balls are needed, which is three times as many as the standard Kumihimo.

It’s worth noting that the “Heike Nokyo” pattern mentioned above was a flat braid and was likely not created on a marudai. A modern replica of this braid was created and photographed in 2015 (Tachibana Museum), and is shown below.



Another source, Raskin-Schmitz, writes: *Most Japanese marudai braids, both flat and round, are made with 8, 16, 24 bobbins.*

This source also notes that, traditionally, kumihimo patterns were kept a closely guarded secret.

Historical fibers

While I found a source (Kimonoboy) claiming that cotton production in Japan began in the 1600s, many of my other sources stated that kumihimo predates this by 1000 years, and that

silk is the standard fiber for kumihimo. Nettle is also a documentable Japanese clothing fabric; however, it was used for low-status purposes, unlike kumihimo (Edom).

Braids on display

All braids were created on foam disks with plastic clamshell bobbins. This is a deliberate departure from period materials. However, resulting braids should be quite similar overall, and in particular identical in woven structure, to a braid created on a marudai, with the following differences:

- It is much easier to transport the in-progress braids to and from events. Transporting an in-progress braid would likely not have been done in history.
- It is easier to tension the braids while weaving by pulling the threads through the slots in the disk. I use slightly more force when braiding kumihimo on a foam disk with slots than is appropriate for a marudai without slots.
- There may also be thinning of the threads as they are pulled through the slots repeatedly. When threads break, I generally tie them back together and keep going - this results in a lumpy braid at times and is likely not what would have historically been done.

The following materials and braids are on display, ordered roughly from least to most period fibers:

1. Wool/nylon sock yarn (75% wool, 25% nylon) (8-strand reddish brown variegated)
2. Mercerized cotton embroidery floss (28-strand rainbow)
3. 10/2 cotton (16-strand, green/white stripe)
4. Bamboo/silk blend (70% bamboo, 30% silk) (16-strand, lustrous white)
5. Hemp (16-strand, teal green/brown)
6. 16/2 linen (8-strand, lime green)
7. Nettle (8-strand, brownish white)
8. Reeled/spun silk embroidery floss (sometimes available on cones for weaving) (16-strand, yellow/black stripe)
9. Filament silk embroidery floss (8-strand, green/white stripe)

In addition to qualitative notes, I have rated each braid on the following criteria:

- Ease of access to material (available same day at chain stores / possibly available at some fabric stores / specialty or online only)
- Affordability of material (\$ - \$\$\$)
- Similarity of fiber to historical kumihimo (not historical / historical from a distance / historical upon close inspection)
- Overall similarity of braid to historical kumihimo (not historical / historical from a distance / historical upon close inspection)
- How much I enjoyed making it (1 - 3)

My previous work and what I am doing differently now

In my previous kumihimo A&S entry, I didn't exactly know what was historic, and so I was interested in creating braids with patterns I found appealing to my modern eye, and materials I had on hand or that were easy to find. In this entry, while I will not claim that my technique is much more historically accurate, I am focusing on figuring out which materials are the most appropriate to a modern re-creator in order to best approximate what would have been done in history.

Comparison table overview

	Ease of access	Affordability	Similarity of fiber	Similarity overall	My preference
Wool/nylon	Chain store	\$	Not	Not	2
Mercerized cotton	Chain store	\$	Distance	Not	3
10/2 cotton	Chain store	\$	Distance	Not	2
Bamboo/silk	Fabric store	\$\$	Distance	Not	2
Hemp	Specialty	\$\$	Not	Not	1
16/2 linen	Specialty	\$\$	Not	Distance	2
Nettle	Specialty	\$\$	Not	Distance	2
Spun silk	Specialty	\$\$\$	Close up	Close up	3
Filament silk	Specialty	\$\$\$	Close up	Close up	1

1. Wool/nylon blend sock yarn (75% wool, 25% nylon) (8-strand reddish brown variegated)

One of the first kumihimo braids I ever made! Completed in March 2019 with materials I had on hand.

- Ease of access to material: available same day at chain stores
- Affordability of material: \$
- Similarity of fiber to historical kumihimo: not historical. Nylon didn't exist in period, and it feels weird and slippery in a modern way, and also I don't think the dyeing method is historical.
- Overall similarity to historical kumihimo: not historical. It's a brownish cord that isn't obviously modern, but it doesn't feel or look right once you get moderately close.

- How much I enjoyed making it: 2

2. Mercerized cotton embroidery floss (28-strand rainbow)

This braid has seen heavy use attached to my SCA day bag so that I can identify it as mine. Completed in April 2019.

- Ease of access to material: available same day at chain stores
- Affordability of material: \$. I got a multipack of embroidery floss on Amazon.
- Similarity of fiber to historical kumihimo: historical from a distance. Mercerization of cotton did not exist until post-period - that's what makes it shiny - and Japan didn't get cotton until very late in period. Luster is somewhat similar to silk due to the mercerization though.
- Overall similarity to historical kumihimo: not historical. The pattern color choices I made were deliberately not historical. It is based on the Philadelphia LGBTQIA+ pride flag designed in 2016.
- How much I enjoyed making it: 3. I liked the colorway, and I liked learning a new technique to use more of the slots on the 32-slot disk.

3. 10/2 cotton (16-strand, green/white stripe)

I made several of these in 2019-2020. Green and white are the colors of the SCA group I lived in at the time.

- Ease of access to material: available same day at chain stores. Look for crocheting cotton.
- Affordability of material: \$. I purchased one cone of each color, well over a lifetime supply, at \$20 a cone. It's of course possible to buy much less for lower cost.
- Similarity of fiber to historical kumihimo: historical from a distance. Japan had non-mercerized cotton by the end of SCA period though they probably weren't making kumihimo with it and kumihimo predates that time. It's not obviously modern though.
- Overall similarity to historical kumihimo: not historical. It's clearly not lustrous like silk.
- How much I enjoyed making it: 2. Threads have thin spots with a tendency to break.

4. Bamboo/silk blend (70% bamboo, 30% silk) (16-strand, lustrous white)

I bought this yarn for this test, while looking for silk yarns in the NYC garment district. The multi-ply nature of each strand is not historical for kumihimo. Completed some time before/in January 2021.

- Ease of access to material: possibly available at some fabric stores
- Affordability of material: \$\$
- Similarity of fiber to historical kumihimo: historical from a distance. Modern cellulose is used in tencel embroidery floss, which is often used in the SCA to mimic silk as it's similarly shiny. The bamboo/viscose in this yarn is similar. The overall luster is appropriate to that.
- Overall similarity to historical kumihimo: not historical. The multi ply nature of each strand makes it very bulky.

- How much I enjoyed making it: 2. I enjoy using bulky threads that work up quickly even though it's not period.

5. Hemp (16-strand, teal green/brown)

I bought this yarn for this test, from Miriam's Yarns and Fibers on Facebook. Completed sometime before my first blog post containing an image of this braid, which was posted in January 2021.

- Ease of access to material: specialty or online only
- Affordability of material: \$\$
- Similarity of fiber to historical kumihimo: not historical. The hemp is very rough, and silk is very smooth - so it is immediately visually distinct.
- Overall similarity to historical kumihimo: not historical. It looks like rope, not kumihimo.
- How much I enjoyed making it: 1. The input thread was very very lumpy so the braid turned out lumpy, and it was scratchy and not pleasing in hand feel.

6. 16/2 linen (8-strand, lime green)

I bought this yarn for this test, from White Wolf and Phoenix, at Pennsic 2022. In progress at time of writing, March 2023.

- Ease of access to material: specialty or online only
- Affordability of material: \$\$
- Similarity of fiber to historical kumihimo: not historical. Linen is a plant fiber which is similar to nettle, which was used for clothing in period Japan (see below), though likely not for kumihimo. Silk is an animal fiber and it feels very different and is much more lustrous.
- Overall similarity to historical kumihimo: historical from a distance. It's a green cord of a plant-based fiber which is commonly known to have existed in period, but it isn't visually confusable with silk.
- How much I enjoyed making it: 2. I was surprised by the stiffness of the linen thread.

7. Nettle (8-strand, brownish white)

I bought this yarn for this test, from Miriam's Yarns and Fibers on Facebook. Completed in August 2021.

- Ease of access to material: specialty or online only
- Affordability of material: \$\$
- Similarity of fiber to historical kumihimo: not historical. Research shows that nettle was used for clothing in period Japan, though likely not for high-status kumihimo, as nettle was generally used for low-status clothes (as discussed in Edom). Silk is an animal fiber and it feels very different and is much more lustrous.
- Overall similarity to historical kumihimo: historical from a distance. Like linen, it's a cord handmade of a period fiber, but it isn't visually confusable with silk.
- How much I enjoyed making it: 2. It was easier to work with than the hemp which came in the same order.

8. Reeled/spun silk embroidery floss (or available on cones for weaving) (16-strand, yellow/black stripe)

Thread from White Wolf and Phoenix, at Pennsic 2022. Yellow and black are Caerthe colors. In progress at time of writing, March 2023.

- Ease of access to material: specialty or online only. Available from several SCA specialty stores though.
- Affordability of material: \$\$\$
- Similarity of fiber to historical kumihimo: historical upon close inspection. The luster is correct for silk, the reeled silk does look a bit different than filament but not that different.
- Overall similarity to historical kumihimo: historical upon close inspection. It loses some points for the format of the thread (plied rather than unplied), but not enough to knock it down to less historical.
- How much I enjoyed making it: 3 My favorite by far. It was very easy to work with, pleasant to hold, and smooth but stayed approximately where I expected it to.

9. Filament silk embroidery floss (8-strand, green/white stripe)

Thread from Miriam's Yarns and Fibers. In progress at time of writing, March 2023.

- Ease of access to material: specialty or online only. Very hard to find.
- Affordability of material: \$\$\$
- Similarity of fiber to historical kumihimo: historical upon close inspection This is as authentic as I can access without owning silkworms myself and using them to create the floss to a high authenticity standard.
- Overall similarity to historical kumihimo: historical upon close inspection (probably would've had more strands in period, judging by how thin the output of an 8-strand braid is)
- How much I enjoyed making it: 1. I found it incredibly difficult to work with, it tangled very easily. It was hard to get enough off the skein to braid with and it slid out of the slots/didn't stay where expected on a modern disk.

Conclusions

- I was surprised by how slippery silk was and how stiff the plant fibers I tried generally were.
- Since I do small-batch kumihimo and know I will continue doing it for a while more, and since I have the budget, I will use spun silk for my kumihimo projects moving forward, which I really enjoyed working with. I expect to use other fibers which are less expensive for larger weaving projects.
- For someone on a budget or just getting started, I'd recommend mercerized cotton embroidery floss. It's not period but it's quite easy to find and doesn't look and feel all that different. I would not recommend wool yarn as it looks and feels pretty different.
- I would not recommend any of the plant based fibers for kumihimo as more than a curiosity, though I'm glad I tried it to find that out.
- I would not recommend filament silk even though it is in theory the most authentic - it's hard to find and hard to work with - not worth the effort for me. I might use up the rest of my filament silk on a proper marudai with weighted tama and see if using period tools makes it more natural to use.

Sources

“Comprehensive Treatise of Braids I: Maru-dai Braids by Makiko Tada“ The Kumihimo Companion. Retrieved July 2019.

Website with tables of contents for kumihimo books; this page is for a book from 1999. Secondary/tertiary source.

<http://www.kumihimocompanion.com/bookpages/book004.php>

Edom, Gillian. “Use of Nettle Fibre in Japan.” Journal of Weavers, Spinners, and Dyers #214, June 2005. Retrieved March 5, 2023, from

<http://www.nettlesfortextiles.org.uk/wp/wp-content/uploads/2018/07/The-Use-of-Nettle-Fibre-in-Japan.-Gillian-Edom.pdf>

“History”. Domyo. Retrieved July 2019.

Kumihimo history from a still-active kumihimo factory and shop. Secondary source with no sources cited.

<http://domyo.co.jp/en/history/>

“How to do Karakumi: Early Period Japanese Flat Braids” by Fujinami no Kaede. Retrieved July 2019.

Arts & Sciences report by another SCAdian on a related type of Japanese braiding, done on a different type of loom than mine. Secondary source, sources cited.

https://sayyidajahanara.files.wordpress.com/2014/06/how-to-do-karakumi2_rdv.pdf

“Japanese Kumihimo, the Art of Silk Braiding” Juliana L. Raskin-Schmitz. Retrieved July 2019.

German site with summary of kumihimo history. A secondary source which cites primary sources in pictures.

<http://www.englisch.kumihimo.de/html/history.html>

“Shelly’s Kumihimo Links.” Retrieved July 2019.

Link roundup with initial instructions on how to do kumihimo braiding on a foam disk. Tertiary source, cites sources but doesn’t offer historical context.

<http://nwfolk.com/kumihimo.html>

“Short History of Japanese Textiles.” Kimonoboy. Retrieved July 2019.

Online store for Japanese folk textiles, history page on use of cotton. Secondary source, doesn’t cite sources.

https://www.kimonoboy.com/short_history.html

Tachibana Museum. “Japanese Braided Cords” by Nishioka Samurai’s Armer & Braiding Studio. Google Arts & Culture. Retrieved March 5, 2023, from

https://artsandculture.google.com/story/”japanese-braided-cords”-by-nishioka-samurai’s-armer-b-raiding-studio/_gUh8e97r03CLw

“Taito City Culture Guide Book.” Retrieved July 2019.

An English-language Japanese city guide for the city Taito, which contains the Domyo kumihimo factory and store; contains some history on kumihimo. Does not cite sources on history.

http://www.taito-culture.jp/craft/kumihimo/english/page_01.html

“みひもの歴史” / “History of Kumi String.” Retrieved July 2019. Japanese-language informational site for a kumihimo museum, contains a timeline of kumihimo history in Japanese eras.

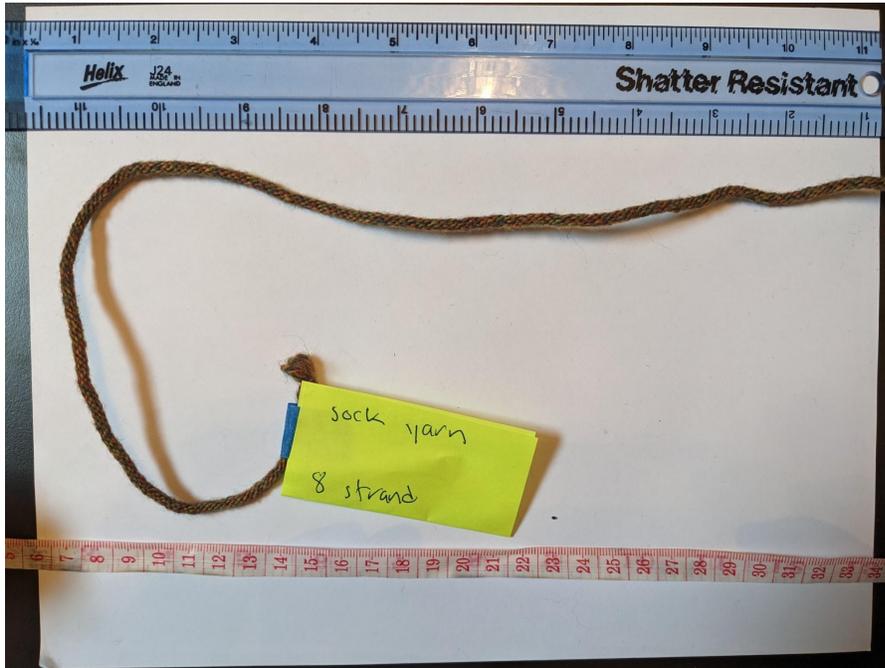
Translated with Google Translate. Secondary source at best, doesn’t cite sources, but I trust it more because it’s a museum.

<http://www.kumihimo.or.jp/igakumihimo/kumihimorekishi/index.html> via

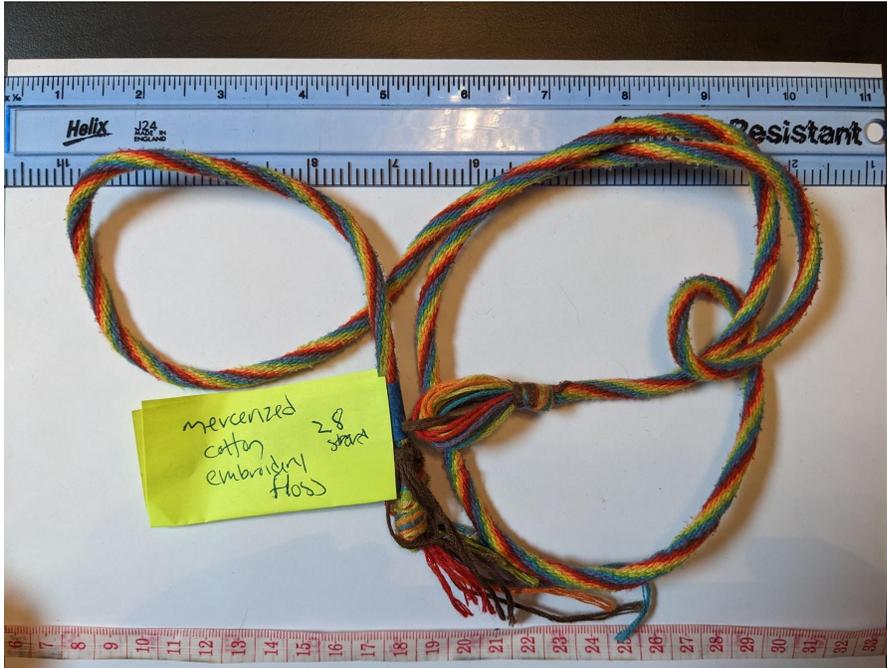
<https://translate.google.com/translate?sl=auto&tl=en&u=http%3A%2F%2Fwww.kumihimo.or.jp%2Findex.html>

Appendix 1: Photos of displayed braids

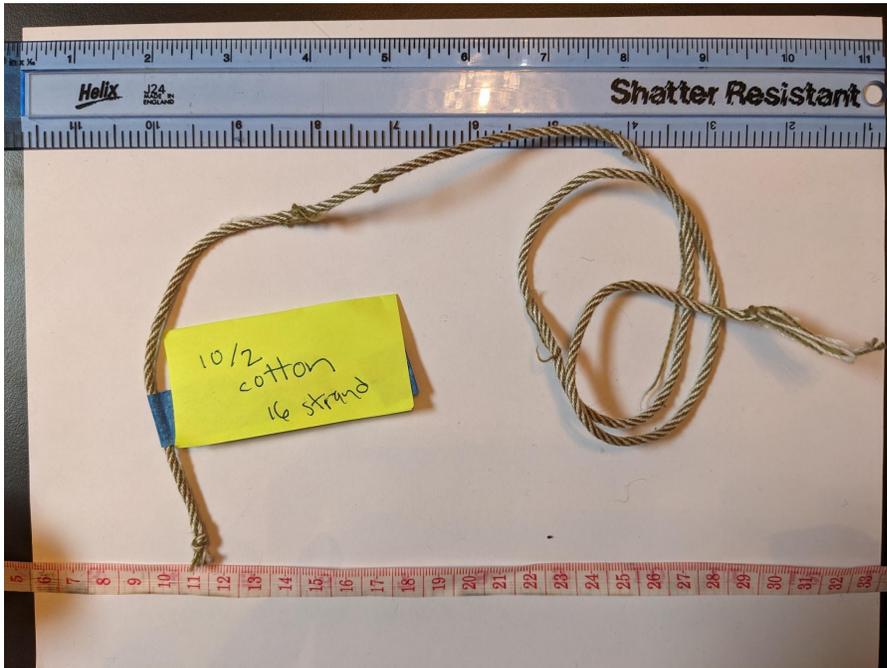
1. Wool/nylon blend sock yarn (75% wool, 25% nylon) (8-strand reddish brown variegated)



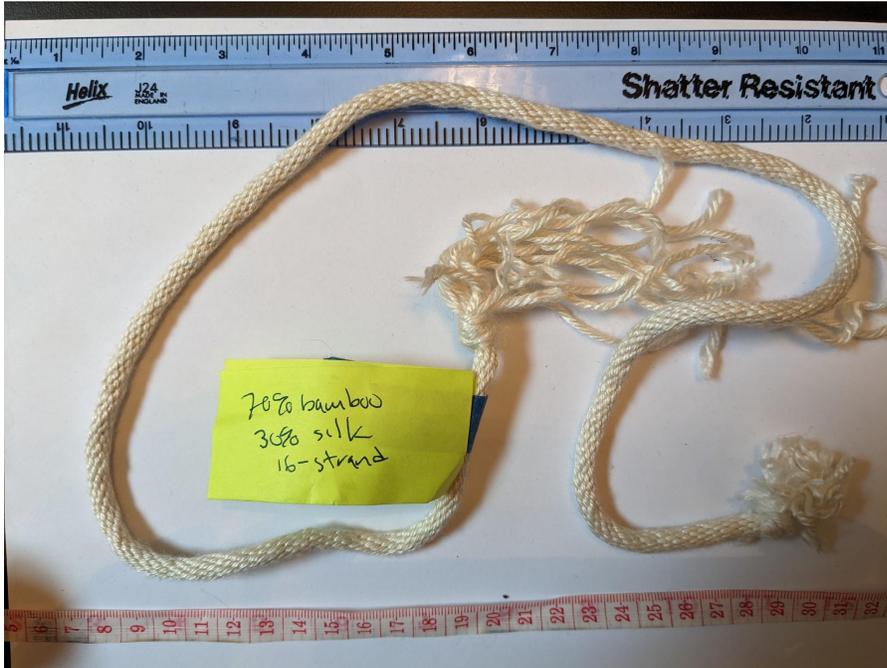
2. Mercerized cotton embroidery floss (28-strand rainbow)



3. 10/2 cotton (16-strand, green/white stripe)



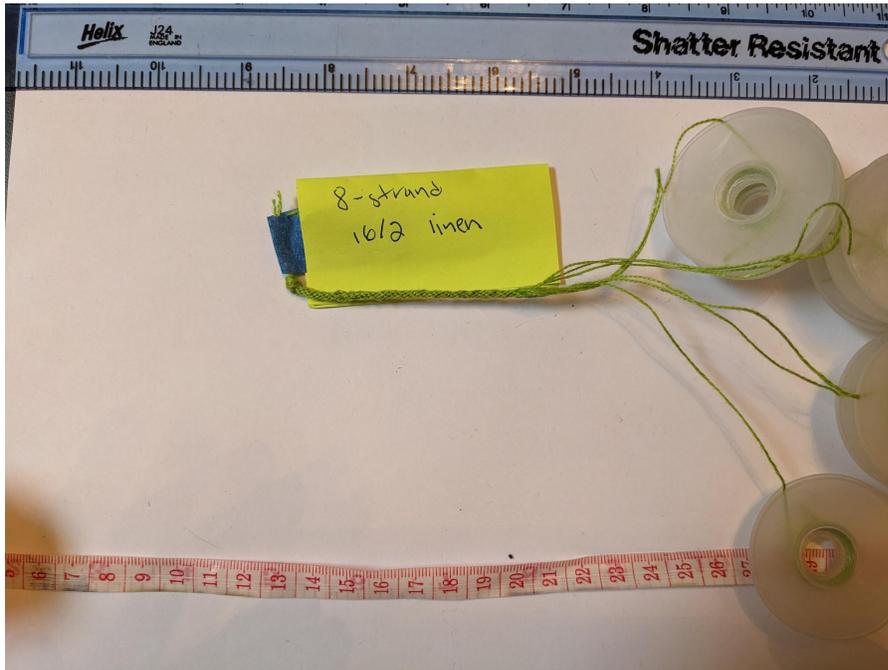
4. Bamboo/silk blend (70% bamboo, 30% silk) (16-strand, lustrous white)



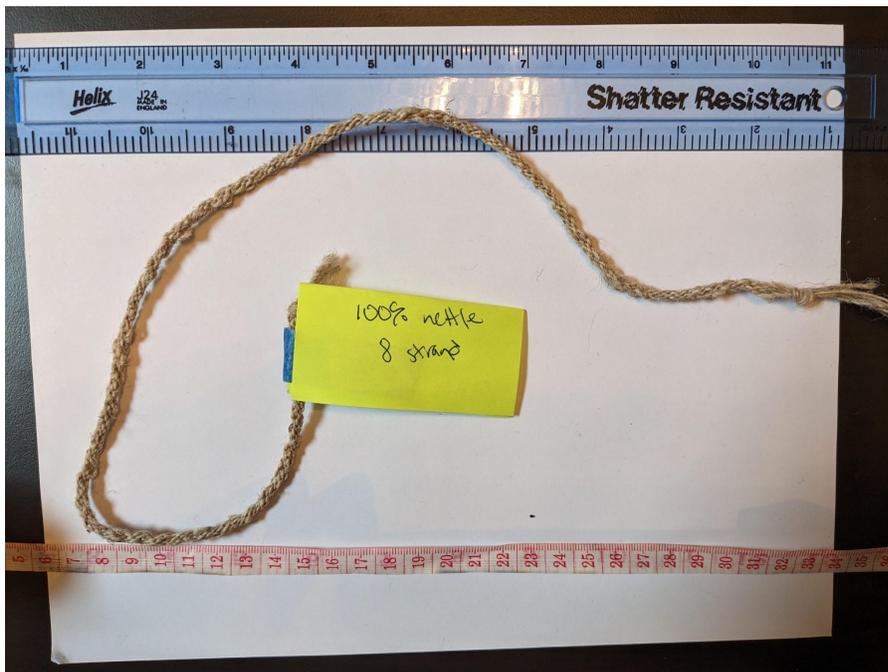
5. Hemp (16-strand, teal green/brown)



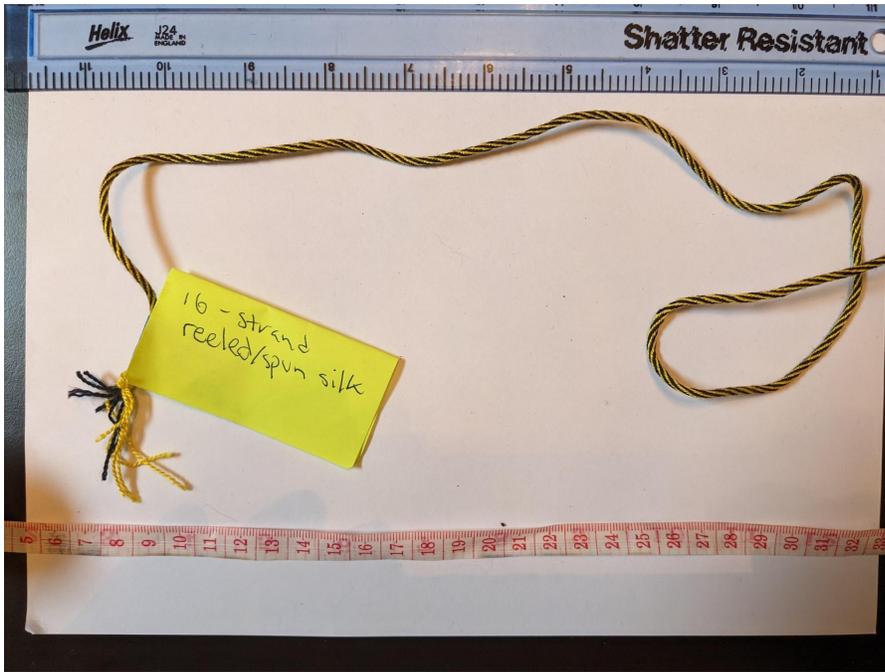
6. 16/2 linen (8-strand, lime green)



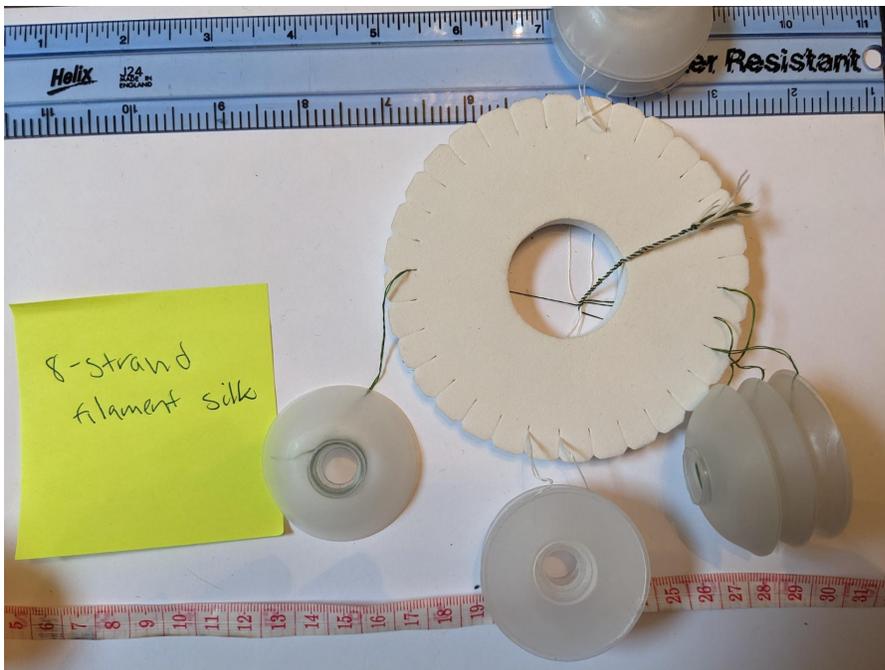
7. Nettle (8-strand, brownish white)



8. Reeled/spun silk - embroidery floss (or available on cones for weaving) (16-strand, yellow/black stripe)



9. Filament silk - embroidery floss (8-strand, green/white stripe)

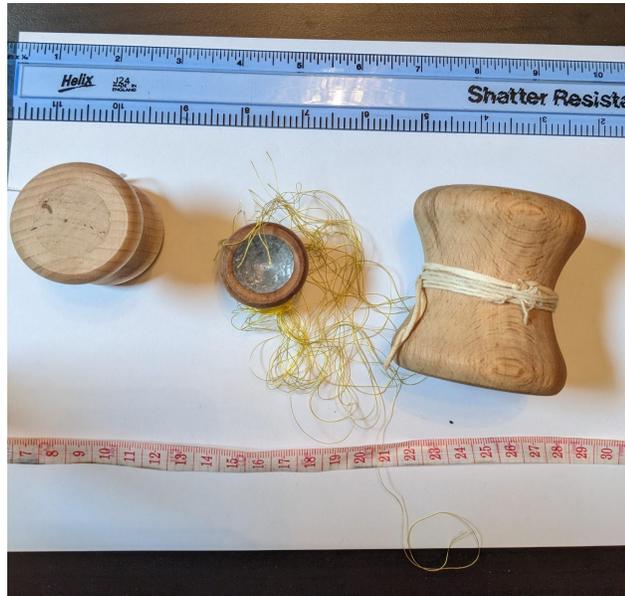


Appendix 2: Photos of tools

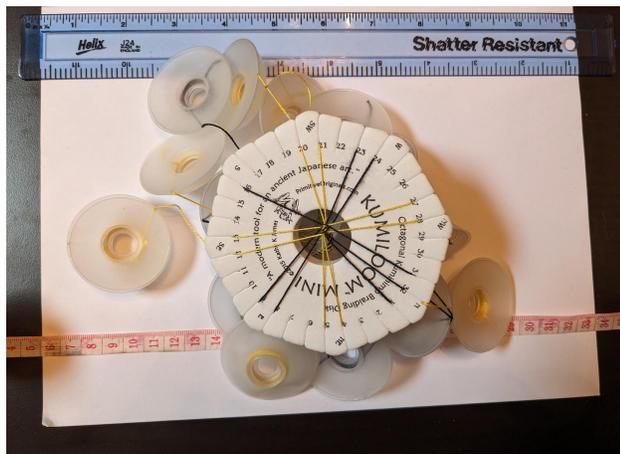
Historic tools include a marudai (loom) and tama (weighted bobbins). I have included photos of my tama and my tabletop marudai, which is likely smaller than a historic marudai. A modern foam disk and clamshell bobbin is also included, to the same scale, for comparison.



Marudai



Tama



Appendix 3: Reference photos of extant kumihimo



“Variegated silk cord, No. 10.” One of the “Treasures of the The Shosoin Repository”, a collection of Nara-period art (8th century CE) housed in a Nara-period building which was a Buddhist temple before coming under the ownership of the Japanese government in 1884. This cord is not specifically dated on the website, and the repository collections came from several sources from 752-950 (Imperial Household Agency, *History*), but I believe it to be an extant piece of kumihimo created using a similar structure to the kumihimo I create today - note the diagonal striping.



The sleeves and cuirass on this armor in the British Museum date from the Momoyama period (late 16th century).

The museum web entry does not specify whether the cords are original to the armor. Assuming they are, this is another example of kumihimo in period. However, similar armor was sometimes re-laced well out of our period of study - a similar cuirass in the Metropolitan Museum of Art is noted as being re-laced in the 18th century.

Sources for Appendix 3

“Cuirass of a haramaki | Japanese.” The Metropolitan Museum of Art. Retrieved March 5, 2023, from <https://www.metmuseum.org/art/collection/search/22499>

“Helmet; pennant | British Museum.” The British Museum. Retrieved March 5, 2023, from https://www.britishmuseum.org/collection/object/A_OA-13545-a

Imperial Household Agency. “History of the Shosoin.” 正倉院 - 正倉院. Retrieved March 5, 2023, from <https://shosoin.kunaicho.go.jp/en-US/about/history/>

Imperial Household Agency. “Variegated silk cord, No. 10.” 正倉院 - 正倉院. Retrieved March 5, 2023, from <https://shosoin.kunaicho.go.jp/en-US/treasures/?id=0000014732&index=76>