Weaving a Sample for a Dress

Or Weaving a Pair of Winnegas

Lady Morwenna O Hurlihie

Crown's Arts and Sciences Championship AS LVIII (2024)

Someday, I will make a dress—a simple gusset and gore dress that clothed folks in Europe for about 1,000 years. I have been working on this project for years. I know what I need to do, all I have to do is actually do it.

To make this dress, I need about 8 yards of 24" wide fabric¹. To weave 8 yards of 24" wide fabric, I'm going to need to spin about 16,000 yards of yarn. I am trying to dedicate to spinning the four pounds of yarn this project requires. Having a deadline such as this competition is a wonderful thing.

And then a friend, Talan ap Gueiluirth, was given a writ to the Order of the Chivalry and all plans change.

I decided to gift him a pair of winnegas (leg wraps). I figured this would be a good sample for my dress project. My friend gets a gift, and I get practice for my project.

Project Specifications

These winnegas were an elevation gift, therefore I based the length and pattern on an existing pair of leg wraps Talan owned. The focus of the project was making the gift, not making an exact replica of an extant piece.

I needed two pieces of cloth ~4 inches wide and ~144 inches (4 yards) long. I would weave a 4 inch wide bit of fabric that was at least 8 yards long.

I chose a herringbone twill pattern because that's what I remember every pair of leg wraps I've seen at a vendor being.

I chose 36 ends per inch (epi) because I want to eventually make a medium quality fabric for my dress. At this time most of my research is focused on Early Medieval English. The common epi that sticks in my head is 12 ends per cm, which is about 30 ends per inch (epi). Epi is the number of threads in the warp direction within one inch.

In my reading over the years (without taking citations), I have it in my mind that "medium grade" fabric is in the 40 ends per inch range. If you look at most any of the fabric we buy today to make our garb, it's way over 40 epi, and closer to the 50-60 epi range, even for the 'coarse' fabrics we use. For whatever reason, I have focused on the 40 epi range. Thanks to a wonderful person at the Pennsic A&S Display who reminded me of shrinkage, I realized that I need to aim for weaving at about 36 epi.

Warp: 144 ends (4" x 36) at 9 yards (8 yards of warp, 1 yard of loom waste) = 1,296 yards of wheel spun Shetland wool.

Weft: Similar quantity of Gotland wool, also wheel spun.

Woven using 4 shafts of my 8 shaft Schacht Baby Wolf floor loom.

Hemmed using a bronze needle and leftover weft thread.

A SAMPLE FOR A DRESS 1 MORWENNA O HURLIHIE

¹ My floor loom has a maximum weaving width of 24".

My Personal Goals

The goal is very much for me to understand, in my bones, the process of making garments. We read about how folks made their own clothes, but just the words don't mean as much. I want to *know* what it means to "make your own clothes." I want to feel the thread and the fabric form under my fingers. I have done some basic hemming on my own fabric. I cannot express how fantastic it feels to take a stitch with thread you made yourself on fabric you also made.

This was a simple project, just 8 yards of 4 inch wide fabric. For all intents and purposes, this took me 100 hours of active tasks, and I cheated:

- I used mill prepared wool.

 I did not start from a raw fleece. I purchased fiber that was washed and combed or carded for me.
- I used a spinning wheel.

 As an early period persona, spinning wheels weren't invented yet. All yarn should be spun this on a spindle.
- I used a horizontal floor loom.
 As an early period persona, I should have used a warp weighted loom.

The working theory is that I'm practicing for my practice dress, because the first time I make a garment from handspun, handwoven fabric², I shouldn't be using spindle-spun, warp-weighted loom woven (which will be extremely precious). Therefore, for this practice, I can cheat. Also, unfortunately, I need to be practical. I have a day job, I have a house and cats to take care of, and I should probably eat every now and then. I also have other projects I enjoy working on such as gardening, canning, improving my kit, and getting sidetracked by other SCA projects.

Comparing to Extant Winningas

As mentioned previously, this project was to make leg wraps for a friend's elevation. All of my research on winingas has occurred after the project was completed.

What research I attempted to do was highly limited. There seems to be two books/articles that have the types of details I need, but they are either out of print or behind a paywall, and in German.³

Several blogs also referred to Wicklebander by Peter Beatson, which I was only able to find by using the Internet Archive's Way Back Machine. This article refers to several papers and seems to have a lovely summary of finds, thread counts and other details. I realize this is a summary of other research, but I haven't been able to procure the sources.

Several blog articles mentioned the oh-so-vague "finely woven herringbone twill" to describe the extant finds in northern Europe. On the plus side, the majority of the leg wraps found were woven to the width in a herringbone twill, so my draft choice was accurate. However, "finely woven" is so not helpful when you're trying to figure out exactly what we need to weave. The Wicklebander article includes *Table 1 - Published Viking Age*

-

² Hand spun, hand woven fabric behaves differently than anything you can purchase. It's more alive.

³ The books and articles in question are Hägg, I; Nyberg, G.G.; Schweppe, H. (1984). Die Textilfunde aus dem Hafen von Haithabu. K. Wachholtz and Hundt, H. (1981). Die Textil- und Schnurreste aus der frühgeschichtlichen Wurt Elisenhof vol. 4. Lang.

textiles identified as 'Wickelbander' which lists the thread counts. Warp thread range from 9-24/cm (21-61/in). Weft threads range from 5-18cm (12-46/in). The basic average⁴ has the warp thread count (or ends) at 18/cm (46/in) and the weft thread count (or picks) at 12/cm (31/in).

My weaving ended up roughly even. My weft thread wasn't as evenly spun as I had hoped⁵, so my picks per inch (number of weft threads per inch) ranged from 28 -42. The warp was set at 36 ends per inch but wove up around 38 epi.

These unwashed measurements actually match finds identified as from Milk Street (MLK-76) London, England (late 9th-10th cent.) which were 15x14/cm (38x36/in).

No weaving is complete until you wash it. All fabric needs to be finished to some level. Washing the fabric removes any size or spinning oil. It also evens out the weaving. Sometimes when weaving, the reed leaves visible gaps in the fabric. After you wash it, those gaps generally disappear.

I did not measure the finished wraps, but I've counted on the small scrap of sampling I kept. It seems to be about 14x14/cm (36x36/in). It seems that my fabric did not shrink much after washing.

It seems that the fabric I made was within period standards. If anything, it's a little coarse.

Fiber Choices

These were woven from wool from Shetland and Gotland sheep.

Shetland is a breed that technically existed in period. However, there's been 1500 years of breeding, so the wool may be different. Today, now that we have antibiotics and animal husbandry advances, Shetland sheep are bred for softness and color instead of lambing and sturdiness⁶. However, you can find breeders who are focusing on the primitive aspect of the breed, and that's what I try to look for when purchasing fiber.

I purchased the pound of mill prepared Shetland about five years ago for my first attempt at spinning for a garment. I worked on spinning it off and on for about a year. Unfortunately, in December of 2019 my father had a series of massive strokes that eventually led to his death in December 2020. This completely derailed all my project work, including not caring for my fiber properly. This led to a moth infestation that mangled the remaining eight ounces, and caused the loss of at least one bobbin of finished yarn.

But some yarn was spun, and it's a good test to confirm that what I'm spinning will actually work.

As Talan's arms are argent and azure, I decide to spin up some fiber that was dyed with indigo. In my first spinning session, my hands turned blue with the dye transfer. I was concerned that even if I rinsed the heck out of it, there would be continual dye loss. What would happen if he ever wore the wraps in the rain or dew? This was also a good choice as I only had two ounces of this particular blue, and that was nowhere near enough fiber for the weft.⁷

⁴ I did not take statistics, so I can do a basic average and that's about it. There's probably a better and more accurate weighted option based on discarding outliers and/or weighting counts that appear more often, but I don't know how to do that math.

⁵ When you're spinning around 0.5mm in diameter, small fluctuations can have a large impact.

⁶ See https://www.shetland-sheep.org/ the North American Shetland Sheep Breeders Association.

⁷ Some day I will remember to do project math at the right time. Honest. I promise.

To the stash I went. I have a lot of pretty modern space-dyed braids and bumps of fiber which were not appropriate, or gorgeous luxury fibers that would not hold up as fabric leggings meant to protect legs from the underbrush⁸. I also have a quantity of period-appropriate white fiber which would just be blah against the pale silver gray of the Shetland. I found a pretty dark silver Gotland. Gotland is not a period breed, but it is the breed they used to make the cloaks gifted to the Fellowship by Galadriel in Peter Jackson's Lord of the Rings. By this part of the project, I was looking at the looming deadline and finding a good enough fiber choice from my stash that I could start spinning immediately was more important than period correct choices.

As I wove, I came to the realization that four ounces would not be enough weft. There was panic, but back into the stash I went. Thankfully I had purchased another braid from the same vendor and probably the same sheep a different year.⁹

The end result is I had enough yarn for the project. You cannot tell when I changed yarn.

I spun everything as Z-twist (wheel goes clockwise), which is my default yarn. My memory of tables of twist studies in period finds is that a lot of early period northern European fabric was woven with a Z-twist warp and an S-twist weft¹⁰. Again, since I was focusing on a finished product, not an extant example, I didn't worry about changing my twist direction.

I did not measure how long it took me to spin all the yarn. However, a couple of years ago, I spun for a day (8-10 hours of nothing but spinning and watching movies). After that time, I spun only 880 yards of about 3 ounces of fiber. Using that measurement, and my vague ideas of how much time I spent spinning the Gotland, each four ounces was about 12 hours of spinning, so about 3 hours per ounce. I'm guestimating I had 6 ounces of warp and 6 ounces of weft, so about 36 hours of just making the yarn that I used 11.

Preparing the Yarn

For the warp, I knew I needed to add size. Weaving is incredibly mean to warp yarn. Every single thread is subjected to a lot of friction as it moves through the heddles and is beaten by the reed. A modern method of avoiding a large quantity of broken warp threads due to this abuse is to add a size. Size is basically a starch, such as a flour and water paste or gelatin mixture that you soak the warp in. The starch takes a quantity of abuse instead of the warp threads. I used flax goop, where you cook a quantity of flax seeds in water until you get something the consistency of snot.

I know of no evidence of this being done in period, especially early period. However:

- The number of extant fabric finds are not numerous to get a good sample, and to the best of my knowledge, all extant fabrics are finished fabrics, meaning they've been washed.
- Natural sizes, such as flax goop, wash out.
- To the best of my knowledge, there are no "how to weave" instructions written down anywhere to document whether or not size was used.

⁸ Cashmere, alpaca, Pygora, etc. are beautiful fibers, but definitely not the right choice.

⁹ See earlier footnote about needing to remember to do math. There's a reason I should.

¹⁰ My research focus is England pre-the Battle of Hastings in 1066, and a bit of Viking as there's some overlap.

¹¹ I actually spun the full eight ounces, so I actually spent more time spinning during this project. But I'd always rather have more yarn than I need.

Many cultures may even have had a mystique around weaving, having it be a female sacred space, where you purposely didn't write it down, because it was important magic.¹²

I'm relatively positive flax goop existed in period, as I believe it was used as hair gel by the Romans. Whether it was used in weaving in period is outside of anyone's knowledge. I know that I needed the safety net of a size on my warp to not have warp threads constantly breaking. I at least used a period possible size, instead of using hair spray.

I soaked two pre-existing skeins of my Shetland yarn in some flax goop. I then hung it to dry. After it dried, I put it on my swift and wound the yarn into a ball. (I tried winding a warp straight from sized warp on a swift for a different project and it did not go well.) I then wound a nine yard warp of 144 ends.

When you are weaving, you need add a quantity of length to your warp as "loom waste". When you're warping your loom, you need to tie the warp to the loom, so there's some amount of warp used up in knots. There's also some distance between where you tie on and where you can actually weave—minimally from the full extension of the warp apron to about halfway between the castle/heddles/shafts and the fabric bar. The actual amount you need depends upon your loom, but in general, add a yard to your warp to account for loom waste and any shrinkage.¹³ Therefore, to end up with at least 8 yards of finished fabric, I needed a nine yard warp.

For the weft, after spinning my first four ounces of Gotland, I wound a quill (small bobbin used in a modern boat shuttle) straight from the bobbin and started weaving. I had done this when I wove the medieval draft for the Laurel's Challenge without issue.

In general, when weaving with singles, you want a high twist yarn. The high twist makes the yarn stronger and more resistant to breaks. I now generally spin a really high twist yarn. This fresh yarn was way too twisty to work with easily.

Therefore, I needed to wash the weft, even though that adds a day to the process due to the dry time.

To wash handspun yarn, you need to wind the yarn into a skein. When you wind the skein, it is a good idea to have the bobbin a distance from where you are winding. As you stretch the yarn across a distance, the twist can even out. Also, when you wind the skein, you should tie it in several places, which helps keep the yarn untangled as you wash it. The washing often sets the twist as well.

After this washing process, the weft behaved a bit better. It was still twisty, but not as crazy.

As I went through the process, I kept (re)learning that thinking you can skip steps (such as skeining and washing yarn) is a terrible idea and just causes more problems later.

Skeining four ounces takes about half an hour, because I don't have an automatic counter. I am counting as I wind, and I pause to tie a knot every 40 wraps, which increases the time¹⁴. For the project I spent about two hours winding skeins. Washing or sizing a skein also takes about an hour of active time, so I spent three hours (the Shetland I was able to size at one time, each braid of Gotland was spun at separate times, therefore washed

¹² See The Valkyrie's Loom.

¹³ When you weave, a quantity of length and width is lost to account for the threads going over and under each other. Also, the fiber itself often shrinks a bit when you wash it, which is a required part of finishing fabric. The amount of shrinkage depends upon the material you are using and the weaving pattern. A general guideline is ten percent.

¹⁴ I've gotten into the habit of measuring using an 18th century skein measurement where you use a 2-yard reel or niddy-noddy. 40 wraps around the reel is one knot, seven knots is one skein of 560 yards.

separately) preparing the yarn. Also, winding the sized skeins into a ball was another hour or so. Winding the warp took about 4 hours.

This part of the project took about 10 hours, not counting drying time (which adds 4-5 days to the project).

Warping the loom

Warping is a process. A lot of people who want to learn how to weave find warping terrible, and then give up on weaving. Warping is terrible, but you can't weave without it. Therefore, it is very important that you come to peace with it. It takes time, it is finicky, and you will make mistakes. Fixing the mistakes is just part of warping.

I warp "front to back". This means I sley the reed first: thread the warp threads through the reed, which spaces the threads evenly. I wanted 36 ends per inch, so with a 12 dent reed, I needed 3 threads per dent. With only 144 threads, this wasn't too onerous. (I can usually count to three.)

I then thread the warp threads through the heddles, putting one thread through one heddle. Once all the heddles for the pattern are threaded, you tie on to the warp beam (the back roller on the loom). You then start winding the warp through the whole assembly.

When I sleyed my reed, I did not keep the cross. When you wind your warp, you cross each thread. This keeps each thread separate and reduces tangling. Since I did not keep the cross, and my hand spun yarn is very high twist, the bundles of three warp threads quickly became a horrific tangled mess. The twist traveled up into the heddles and it was impossible to pull the warp through without breaking warp threads.

There were tears. It was also Christmas eve, so I walked away.

I have several reeds, because different dent counts work better for different setts. I took each warp thread out of its heddle, threaded it through a single dent of a different reed, and then rethreaded it through the heddle. This separation made it possible to wind the warp. I then had to re-sley my 12 dent reed to remove the spacer reed from the loom. It was a quantity of work and added an extra day, but the loom was warped with no more broken warp threads (and no more tears).

I really learned that keeping the cross is extremely important, especially with high-twist handspun yarn that's more "alive". Next project I will be using lease sticks.

I did not measure how long it took to warp, mainly because if I think about it too hard, I will just get discouraged. I spent at least 8 hours warping the loom, not counting tears and timeout time.

Weaving

As I chose a herringbone 2-2 twill for the draft, the pattern was threaded in, and I merely had to treadle in a 1-2-3-4 pattern. As I pushed through the project, my feet knew what to do after a while.

My major hurdle in this project is the dedication and endurance to actually finish it. I have the skills, I just have to actually do it. Unfortunately, I get discouraged easily in the middle of long projects. I am excited to start the thing. I am excited to finish the thing. It's just really hard to do the thing. On the plus side, I got to listen to audio books. In this case, having a hard deadline for someone else made it so I forced myself to work on it to completion.

When I weave with commercial yarn on my loom, I can advance 6-8" at once. When I tried that with my 0.5 mm in diameter handspun singles yarn, bad things happened. I think I had a one hour session with at least ten broken warp threads, which was very discouraging. After that, I realized that I had to work within a much smaller sweet spot, and only advance one inch at a time. I even used a guide to make sure I was only moving an inch instead of eyeballing it.

Every time I sat down to weave, I inserted a scrap of red thread to use as a measuring point. I could then measure how much I wove. I wove the length of the wraps and then kept going until I used up the warp. In the extra portion, I tried a tabby weave and a diamond twill, both patterns I could do with my existing tie up. With this yarn, a 36 epi does not make a good tabby. It is too tight so it becomes slightly weft faced. The diamond twill was pretty, but after the simple 1-2-3-4 treadling pattern it involved a lot more thought.

I did not measure how long I spent weaving. Again, part of me does not want to know, so I don't get discouraged.

I did measure that it took me about 7 minutes to weave one inch, once I was in the zone. To weave the leg wraps, I needed 294 inches (8 x 36 = 288 inches + 6 inches for a hem/shrinkage). This comes to 2,058 minutes of weaving, or \sim 35 hours.

However, I had at least 40 broken warp threads, which adds at least 5 minutes to fix. $40 \times 5 = 200$ minutes, or 3 hours and 20 minutes.

Then my cat helped, and just other random bits and bobs, I probably spent around 40 hours weaving.

This doesn't count the 2 hours I spent winding the quills (bobbins) with the warp thread. And again, I got to cheat here because I was using a cordless drill to wind my quills.

Finishing

No fabric is finished until you wash it. Washing removes any stuff on your yarn or warp. In this case I had size on the warp, and some cat drool. ¹⁵ The reed can sometimes leave odd gaps in the fabric, and washing removes those gaps. Especially for wool fabrics, the washing process can start to felt the wool fibers, which makes the fabric more cohesive.

In my case, I just soaked the fabric in hot water with Dawn dish soap, which is the same soap I use to wash fleeces. I did not agitate it much because I did not want to full (felt) the fabric that much. I also rinsed it in hot water.

I stretched the fabric back across the warping board to dry.

After the fabric dried, I cut off my sample. I then cut the remaining fabric in half to make my two leg wraps. I edged the cut ends of the fabric with a blanket stitch using leftover weft thread and a bronze needle. I then roughly stitched down the ends into a point, based on the pictures sent to me of Talan's existing wraps. I will admit I rushed the stitching more than I should have, but I was excited to finish the project.

Washing took about an hour of active time, as did the stitching.

¹⁵ If you hand prepare fiber, especially with combing, you might add some type of grease to keep the fiber in order. Combing can generate a lot of static, which makes wrangling to wool difficult. Norman Kennedy spoke of folks in the late 19th century using rancid butter, modern folks recommend using hair conditioner. Commercial yarn often has some sort of spinning oil that you want to wash out.

Assuming I can do math, this project took about 99 hours, and I didn't count the time I spent figuring out the draft, or digging through my stash, etc.

Next Steps

I made a garment in time for Talan's elevation. I got to see him wear them.

I got to make a serious swatch using my handspun yarn to make decisions about making fabric for a future garment.

I got to practice using my yarn to weave fabric.

I learned how long certain aspects of the project will take that are changing my future plans for my garment. Including:

- I should start sizing the warp sooner, as that will take a quantity of time, and up-sizing the quantity of size I need for the entire warp in one batch might not work.
- Keeping the cross and using lease sticks are really important.

This was an excellent practice, an excellent stepping stone as I work towards my eventual project goal.

Was this an exact replica of an extant piece? No, but it was never meant to be.

Did I learn a bit about making fabric? Yes, many things (that I tried to highlight in my descriptions).

Does this inspire me to continue spinning the remaining two and three-quarters of a pound of wool for the practice dress? Yes. It's going to be a lot of work, but it will be worth it. I just need to remember to not try to rush any part of the process.

All I have to do is actually do it.

Glossary

A collection of spinning and weaving terms for the uninitiated. All definitions are my own.

advance the warp Looms wrangle the warp so that you don't need a 40' room to weave a 36' long

warp. This means there is a small area where you can actually weave. Then you move, or advance, the warp so that the cloth moves out of the weaving area and

you get more warp to weave.

beam A part of a loom that rotates to wrap either warp or cloth around it. Beams have

some sort of mechanism that prevents them from rotating in the opposite

direction without some sort of intervention, such as rachet and pawl, or just a stick

that prevents rotation.

boat shuttle A shuttle that contains a bobbin or quill full of weft thread. As the shuttle is passed

through the shed, the weft thread automatically unwinds.

cards In fiber preparation, wire brushes used to separate out and align fibers.

cloth beam The part of the loom that the finished cloth is wrapped around.

combing In fiber preparation, using combs to separate out and align fibers. In the finishing

process of weaving, using teasel or wire brushes to raise a nap on the fabric.

combs In fiber preparation, long metal spikes in some sort of holder. The spikes can be in

a single row or multiple, but they will be evenly spaced. The combs can be hand held or clamped to a table. Depending on the process, the fiber, and the tool, you may move the combs through the fiber or you may pull the fiber through the

combs.

cross When winding containing many, many threads, you need to do whatever you can

to keep the threads from getting tangled. As you wind the warp, you make sure each thread crosses the other. This helps keep the individual warp threads

separate.

cut Sometimes called a thread. A single wrap around a skeining device. In 18th century

England, skeining devices produced a 2 yard cut.

dent A slot in a reed. A 10 dent reed has 10 slots per inch. This term is also used for rigid

heddles.

diamond twill A twill pattern that makes diamond shapes. You can set up for a threaded in

herringbone pattern, and also periodically reverse your treadling.

draft A weaving pattern. For floor looms, it is a combination of the threading, the tie-up,

and the treadling pattern.

ends per inch (epi) The number of threads per inch for the warp of your fabric.

felt When you take wool fibers and add water, agitation, and heat, the fibers felt. The

microscopic scales on the fibers connect with each other. With the correct materials you can felt fibers together to make a fabric without weaving.

flax goop A size made of flax seeds boiled in water. It has a snot-like consistency.

full A part of the finishing process of weaving. You wash the fabric and often agitate it

(or beat it with a stick) to help the fibers bind together. When working with wool fibers, the fulling process mildly felts the material. This process often causes a bit

of shrinkage.

gore Extra fabric, usually in a triangular shape, pieced into a garment to provide extra

movement or a larger skirt. They are generally only stitched to other fabric on two

sides. The third side is usually the hem.

gusset Extra fabric, usually shaped as a square or diamond, pieced in to a garment to

provide movement. Common locations are armpits or groins. They are generally

stitched in on all sides.

gusset and gore dress A common style of garment with under arm gussets and gores to add room in the

skirt. Similar to 'T-tunic' - the period way by Lady Muireann ingen Eoghain ua Maoil

Mheaghna http://forest.gen.nz/Medieval/articles/Tunics/TUNICS.HTML

heddle A part of a loom that can raise or lower a warp thread. In many looms (exceptions

are rigid heddle looms), one warp thread goes through one heddle. A shaft can

contain many heddles.

herringbone twill A twill pattern where after some number of repeats, you change the direction.

This gives a sort of V pattern. You can have a threaded in version, which is based on the threading in the heddles, or a treadled version where the warp has the same threading, but by reversing the treadling you create the V pattern.

horizontal loom A later period invention for wrangling your warp. In general, you have something

you can wind a long length of warp around, the warp then passes through some number of shafts with heddles that can raise or lower a set of warp threads. Then there is often some sort of implement that spaces the warp threads and also can be used to beat the weft so that it lies evenly. Then there is another thing that you

can wind the finished cloth around. The warp is horizontal to the floor.

knot 40 cuts or threads, or 80 yards. In the 18th century in England (and New England),

7 knots made a skein.

lease sticks When warping, sticks used to help keep the cross, and therefore assist in keeping

the warp threads untangled.

loom A tool that helps wrangle your warp threads to make weaving easier (if not

possible). A loom tensions the warp to help make the weaving more even, and often includes some mechanism to raise and lower warp threads so you don't have to pick out each thread individually. A loom can be a simple collection of sticks and

strings, or an impressive piece of engineering.

loom waste When weaving, there is a quantity of yarn required to tie the warp onto the loom.

This part of the warp is not woven, and is "wasted".

nap On fabric, fibers that raise up from the surface of the fabric. This could be

something like the fibers of velvet or just fluff pulled from the yarn, such as the

halo of angora

niddy-noddy A skeining device. Two sticks are positioned perpendicular to each other,

connected by a central stick.

picks per inch (ppi) The number of weft threads per inch of your fabric.

quill A bobbin that fits inside of a boat shuttle. Today they are usually paper tubes,

originally they were the hollow part of large bird feathers.

reed A part of the loom that spaces the warp threads. It is also used to beat the weft so

that it lies evenly/compacted. Reeds have some number of dents per inch. When purchasing reeds you care about whether or not the reed is sized correctly for

your loom, and the number of dents.

reel A skeining device. This device sits on a table or can be free standing. Many have

four or six arms that rotate. Wrapping around all the arms makes a cut or thread. Clock reels had a gear that rotated as the arms turn and device to make a click

after counting 40 rotations.

set the twist When you initially spin yarn, the twist is often not evenly distributed across the

yarn. "Setting the twist" is term for getting the twist to even out and "behave" in your yarn. A common method is to wash your yarn, which may or may not include beating your yarn against a table (thwacking), or hanging it to dry with weights.

sett When weaving, how your warp threads are spaced. The sett is how you thread

your warp through the reed to get a certain epi. You can do math, or look up a

threading on a sett chart.

shaft A part of a loom that contains heddles. The shaft can be raised (or lowered) by

some mechanism. (On some floor looms, they are attached to treadles)

shed When weaving, instead of guiding the weft over and under the warp threads

individually, there is usually some tool that makes some number of warp threads go up, creating a space between the raised and not raised warp threads. This

space is the shed.

shuttle A tool that holds a quantity of weft thread so that it is easier to pass it between

the shed.

size When weaving, a starch added to the warp threads to help protect them from

abrasion from the loom.

skein A method of storing yarn. Yarn is wrapped around something, making loops. These

loops are removed from the skeining device and twisted into a bundle. At certain points in history, a skein could have a specific unit of length, but that unit changed

over time and location. Modern skeins are usually sold by weight.

sley The action of threading the warp threads through the reed at the correct sett.

stick shuttle A shuttle that is usually a shaped flat stick that the weft thread is wrapped around.

The weaver needs to manually unwind the weft thread as needed.

S-twist When spinning, the yarn is made by the spinning tool spinning in a counter-

clockwise direction. If you look at the yarn, the twist follows the line at the center

of the S.

tabby weave The simplest weaving pattern of over one, under one. When running the weft

across the warp, you go over one, under one, over one, under one, etc. On the return pass, you go under one, over one. When you think of woven fabric, this is

the first pattern.

threading When weaving, which warp thread goes through which heddle.

tie-up When weaving on a modern floor loom, how you connect the shafts to the

treadles

treadle On a modern floor loom, a pedal that raises some number of shafts. This is often

configurable.

treadling pattern When weaving on a modern floor loom, what order you depress the treadles in as

you weave.

twill weave A weaving pattern (draft) where the weft (and warp) will go over or under multiple

threads. A 2-2 twill means you go over two, under two. The next row, you shift by one. This creates a diagonal pattern. There are many types of twill, with many

variants of under and over counts.

warp When weaving, the yarn that goes the long way on the loom. In general, the length

of the warp limits the length of fabric to be woven.

warp beam The part of the loom that the warp is wrapped around.

warp weighted loom

An early period tool for wrangling your warp. It is set up so the warp is vertical to

the floor. There is a beam at the top you wrap the warp around. The warp then hangs down and is tied to weights that provide the tension. There is at least one

shaft with heddles made of string.

warping The process of attaching the warp to the loom. All warp threads need to remain

untangled and under even tension. Each warp thread must be threaded through

the correct bits of the loom to make the required pattern.

warping board A tool to help you measure out your warp threads in a contained space. Most

warping boards are a set of pegs around a rectangle. You trace a pattern across these pegs with your warp, creating the cross as you wind your warp and measure

out the length.

warping reel A tool to help you measure out your warp threads in a contained space. A warping

reel is usually a sort of vertical cage that rotates. You wind your warp around it in a spiral pattern. There are pegs at the top and bottom to help you create the cross.

weft When weaving, the yarn that goes back and forth across the warp as you weave.

Sometimes called the woof.

winnegas Early period northern European leg wraps. There are many spelling variants.

Z-twist When spinning, the yarn is made by the spinning tool spinning in a clock-wise

direction. If you look at the yarn, the twist follows the line of the center of the Z.

Bibliography

American Wool Council. Wool Grades and the Sheep that Grow the Wool. Pamphlet.

http://d1cqrq366w3ike.cloudfront.net/http/DOCUMENT/SheepUSA/Wool Grades and the Sheep that Grow the Wool Scan.pdf

Beatson, Peter 'Wickelbander' NVG Mikligard – retrieved via the Internet Archive Way Back Machine 3 February 2024.

https://web.archive.org/web/20190831091309/http://www.miklagard.nvg.org.au/articles/legwraps1.htm

Crawford, Sally. Daily Life in Anglo-Saxon England. Greenwood World Publishing, 2009.

Dollberghe Andreas von, Rekonstruction Berni 2018. Album on Facebook.

https://www.facebook.com/media/set/?vanity=andreas.vondollberghe.1&set=a.112599752939767&paipv=0&eav=AfYJTC8FFQ8iPGPR9MrWmfqpW6uRfZIMYrWCVKMEe_a9nT9H4awcA4nQ-hmXHsLRf_A&_rdr

Fransen, Lilli, Anna Nørgård, Else Østergård, and Shelly Nordtorp-Madson. *Medieval Garments Reconstructed: Norse Clothing Patterns*. Aarhus: Aarhus UP, 2011. Print

Hoffmann, Marta. *The Warp-Weighted Loom: Studies in the History and Technology of an Ancient Implement*. Robin and Russ Handweavers. The Norwegian Research Council for Science and the Humanities, 1974. Print.

Østergård, Else. Woven into the Earth: Textiles from Norse Greenland. Aarhus: Aarhus UP, 2009. Print.

Owen Crocker, Gale R. "Dress and Identity" *The Oxford Handbook of Anglo-Saxon Archaeology*, edited by Helena Hamerow, David A. Hinton, and Sally Crawford, Oxford University Press, 2011, pp. 91-116.

Owen-Crocker, Gale R. Dress in Anglo-Saxon England. Woodbridge: The Boydell Press, 2004.

Petty, Christina. "Warp Weighted Looms: Then and Now - Anglo-Saxon and Viking Archaeological Evidence and Modern Practitioners." MP thesis, University of Manchester, 2014.

Price, Neil S. Children of Ash and Elm: a history of the Vikings. Basic Books, 2020.

http://www.ravelry.com/ Mainly the group "The Yurt" http://www.ravelry.com/ discuss/the-yurt/topics>

Rogers, Penelope Walton. *Cloth and Clothing in Early Anglo-Saxon England AD 450-700*. The Council for British Archeology, 2007.

Ryder, M. L. *Medieval Sheep and Wool Types*. Agricultural History Review. http://www.bahs.org.uk/AGHR/ARTICLES/32n1a2.pdf>

Saemundarson, Bjorn 'Winingas' https://bjornthisway.wordpress.com/2019/07/08/winingas/

Smith, Michèle Hayeur. *The Valkyries' Loom: The Archaeology of Cloth Production and Female Power in the North Atlantic*. University Press of Florida, 2020.

I'm not actually sure what these sites were, but they provided pointers to other information, or contained a summary of the books I couldn't get my hands on:

https://projectbroadaxe.weebly.com/viking-age-nordic-history/viking-age-fashion-leg-wraps-from-10th-century-haithabu-hedeby (this blog has zero contact information that I could find via basic navigation)

https://www.yumpu.com/en/document/view/12001743/leg-wraps-wickelbander-and-winningas-olvik-thing

Uncounted books, conversations, videos, blogs, etc. on spinning and weaving that I have been reading for decades and absorbing without taking any citations.