

Spinning and Fiber

Terminology

whorl – round stone, clay, metal, wood used to add weight to a spindle

spindle – a stick (wood, bone, etc.) used to twist fibers

drop spindle – a spindle used by suspending it in the air, may or may not have a whorl

high whorl – whorl is on the top half of the spindle

low whorl – whorl is on the bottom half of the spindle

hook spindle – a simple stick type spindle with a hook in the end.

combs – tools used to prepare fiber so that the fiber is parallel to the direction the yarn is going. Looks similar to a pair of rakes.

cards – tools used to prepare fiber so that the fiber is perpendicular to the direction the yarn is going

worsted – smoother yarn spun from combed fibers

woolen – fuzzy fiber spun from carded fibers. The yarn is generally softer and lighter than woolen.

warp – the thread that forms the base of the fabric. Goes front to back on the loom.

weft – threads that cross the warp. Goes from side to side on the loom.

ends per inch – The number of warp threads in an inch of fabric

picks per inch – The number of weft threads in an inch of fabric

wraps per inch – number of times thread/yarn can be wrapped around an inch.

distaff – tool used to hold fiber. Can be a stick, sometimes with a forked branch or more ornate top like a comb. The fiber is tied to it.

z-twist – refers to the direction a thread is spun. Fibers form Z shapes when you look at the single ply of yarn. Twisted clockwise.

s-twist – same as z-twist except forming an S shape. Twisted counterclockwise.

ply, plying – putting two or more single threads together to form a stronger thread/yarn.

single – unplied thread/yarn.

reel – medieval name for a niddy-noddy. In period the arms of the reel were parallel, not at 90 degree angles as the modern ones are.

skeins – the finished yarn, wound up and twisted into a neat bundle.

drafting – stretching the fiber out

drafting zone, zone, triangle – the triangle the fiber makes between where the loose fiber is held and where the twist is coming up to.

flyer – the part of a modern spinning wheel that "flies" around the bobbin and wraps the yarn onto it.

Time Line of Spinning Tools

???? – Rocks or hooked sticks

5000 BCE – earliest known whorls

2000 BCE – hooked high whorl spindles in Egypt

Middle Ages – low whorl spindles in Europe

500 to 1000 – probable first appearance of spinning wheels

1200's – first real evidence of spinning wheels

late 1200's – spinning wheels come to Europe
1475 to 1480 – earliest evidence of "flyer" wheels
after 1700's – foot treadles

Fiber Preparation and Processing

There are many many steps in the process from sheep to finished product. I'm only going to deal with those pertaining to spinning at this time.

Processing fiber in the Middle Ages would consist of some of the following processes:

willowing, washing, dyeing, blending, combing, carding, bowing, spinning,
winding (Crowfoot, pg 17.)

Here are some of my definitions and processes:

Scouring – washing the fleece so that there is little to no dirt or lanolin left in it

Picking – picking out twigs, straw, and such.

Combs – spiky teeth things. Prepared this way, the wool fibers are more organized and go parallel to the direction of the yarn. You get a lot more waste wool using combs than cards but the wool coming off of the comb is mostly of the same length and almost free of vegetable matter.

Cards – tools much like dog slicker brushes. In period they were used to process the wool left over after combing. This wool was then spun and used for weft. Leaves the wool fibers more disorganized than combs and the fiber is perpendicular to the direction of the yarn.

Fibers

Wool - anywhere, anywhen. There are extant articles of clothing whose fiber seems to be in the range of modern Merino. They also used double coated sheep and there are a few modern breeds that still have double coats.

Flax – anywhere, anywhen

Silk – the Vikings had it.

Cotton – only in the Medditerranian until after 1400

Goat – has been found in textiles in England.

Weasel or Stoat – found in felt in London (Crowfoot, p 15.)

Notes about Medieval Spinning

Wheel spun yarns were used for weft while drop spun yarns were used for warp.

Many period textiles were more finely woven than fabrics made of natural fibers today.

Combed wool was often spun from a distaff.

Spindles would have bumps near the bottom to hold the whorls on.

Wheel spun yarn was prohibited in Abbeville in 1288. In 1290 a Drapers Guild regulation at Speyer prohibited the use of wheel spun yarn for the warp but allowed it for the weft. The medieval wheel was more like a mounted spindle than a spinning wheel. It had no flyer until the late fourteenth century and was turned by a hand crank until the development of the crank and connecting rod in the early sixteenth century. Guild members felt that a finer stronger thread could be spun by the drop spindle, and this simple tool remained the preferred method until the fifteenth century.

Most medieval cloth was woven from tightly spun singles. Two ply yarn and thread was used for card weaving and some embroidery. Other crafts such as sprang, naalbinding, and knitting would probably use two ply yarn to avoid slant in the finished piece.

Textile Fineness:

This section is taken from *Crowfoot* since that book has tons of spinning and weaving details.

Existing woolen textiles found in London have an amazing number of threads per inch or centimeter. A sampling ranges from 14 to 19 warp ends per centimeter which works out to 35 to 48 warp ends per centimeter.

Other fibers go up from there.

It is much easier to spin that fineness of thread on a supported spindle. You get more twist and less weight hanging by the fiber.

References and Resources:

Books and Pamphlets

Twitchell, Linda. *Spinning With a Medieval Twist*. The Compleat Anachronist, 1996.

Crowfoot, Elisabeth, Frances Prichard, and Kay Staniland. *Textiles and Clothing 1150 – 1450*. The Boydell Press, 1992.

Websites

<http://kws.atlantia.sca.org/spinning.html>
<http://www.newyorkcarver.com/inventions3.htm>
<http://ealdormere.sca.org/university/distaff.shtml>
<http://www.cs.vassar.edu/~capriest/spindles.html>
<http://ealdormere.sca.org/university/spindlespinning.shtml>
<http://www.florilegium.org/files/TEXTILES/Fiber-Survey-art.html>
<http://www.florilegium.org/files/TEXTILES/textiles-msg.html>

Mailing Lists

spin-list@yahoogroups.com
sca-spinning@yahoogroups.com
spindlitis@yahoogroups.com
SCA_NaturalDyes@yahoogroups.com
SCAWeaving@yahoogroups.com
FiberCombing@yahoogroups.com

Appendix

Spinning Methods and Tips:

Sent to spin-list@yahoogroups.com

Washing and Skirting

Since the list is a bit slow the last couple days I thought it might be a good time to re-post my how-to on washing and skirting. There are other ways of washing wool which are equally effective, but this is what works for me.

The first step is skirting. That's the term for removing all of what my ultra-fastidious sister-in-law would call "yucky stuff". You spread the fleece out cut side down on something that will prevent it from picking up any more dirt. I like the sound of the skirting tables that have been described but I end up using an old army blanket spread on the grass outside. Hopefully the shaking open and spreading process dislodges any second cuts. You carefully inspect the perimeter of the fleece removing any dung locks, mud-caked areas, matted areas, etc. How much of the perimeter you remove depends on the breed, the conditions in which the sheep was raised, and how fastidious you are. Then you inspect the fleece generally and remove stray bits of manure, hay, shavings, etc. until the fleece is as free of contamination as you desire. Compost the skirtings or use them for mulch. Generally all the wool from the underside and rear end is useless. It is possible to do a first, light skirting to remove and dispose of all the utterly useless wool and then to do a second skirting with great care so that you end up with both a clean, heavily skirted fleece for best and a pile of moderately contaminated but cleanable wool for more intensive processing and less demanding projects. You can remove kempy areas in skirting or later during sorting.

The next step is sorting. After skirting you go carefully over the wool separating longer areas from shorter areas, finer areas from coarser areas, and in the case of colored sheep, shades of color.

To wash or not is a personal decision. Some spinners like grease wool right off the sheep, some like to wash in cold water to remove dirt but not grease, some like to lightly wash the fleece and leave some grease (how lightly and how much grease depends on the person), and others like to totally scour the fleece and add spinning oil later. If you are going to dye the wool before spinning you must totally scour it if you want even, predictable results. Once you have done some dyeing you may wish to break this rule to see what happens. I haven't yet but others have and have reported both success and disaster. (Now I have and my results were mixed. Its definitely a novelty trick to use when ease is more important than predictable results and when you could accept poor results if they occurred).

This is my method of washing. It is one of many that work and it suits me. It may or may not suit you. If you try one method and don't like the results try others until you are satisfied. I use hot water, as hot as my hands can stand. Hot water melts the lanolin away. I do not let it cool since then the lanolin re-deposits on the fleece. I use dish detergent rather than soap even though I have soft water. Specifically, I use any brand of antibacterial dish detergent that is on sale when I need a new bottle. I am not concerned with bacteria on the wool, its just that I am sensitive to many perfumes and dyes and happen to not be sensitive to the ones used in the antibacterial detergents.

I wash in my double kitchen sink since bending over the bathtub would hurt my back and I am not blessed with a double utility sink (rentals never have this kind of amenity). I first fill the sink with hot water then add enough detergent to make the water feel slippery. I try not to make suds. I add an intact section of fleece the approximate size of the sink to enough water that it is uncrowded, but not capable of excessive movement. I only let things soak for 10-15 minutes each so that the water can't cool excessively and am careful that temperatures match or that the next water is very slightly hotter. My sequence is pre-rinse, wash, rinse, vinegar rinse, rinse. A very dirty fleece gets a second wash as does wool intended for dyeing. I think that the pre-rinse and single wash get the fleece as clean as 2 washes when you are using very hot water and is less likely to cause alkaline damage to delicate fleece. Since I was washing Shetland when I worked this out damage and felting were great concerns. The pre-rinse melts out a good deal of the excess lanolin and removes a lot of the mud and sand. I'd like to have some nice washing baskets but I don't so I settle for gently lifting the fleece sections from below as I transfer them from sink to sink.

After the final rinse I either press them firmly but gently against the bottom of an empty sink, allow them to sit in an empty sink for an hour or so, or roll them in towels and step on them. It depends on what's convenient at the time. Then the sections dry in the shade on my webbed lawn furniture since I have no proper drying racks. I make sure that the wool is very well dried before doing anything else with it. You can damage almost dry wool by handling it and it can mold if it is stored away almost dry. Since wool is warm when wet it can be hard to tell. When in doubt dry it longer.

I hope this helps you even if you decide to use a different washing method or none at all. I'm one of the ones who feel that wool stores better in the grease. But then I live in a place where if you don't like the weather you can just wait a minute.

Mary Beth Voelker

From: SusanTillery
To: SCA-Spinning@yahoogroups.com
Sent: Sunday, June 09, 2002 9:55 AM
Subject: [SCA-Spinning] spindle weights and design

In addition to Thora's excellent article previously cited, here are some specifics for one particular site. The Coppergate digs in York have yielded a number of spindle whorls dating from the Viking age through the 15th century. There are tons of them, but here are some from the catalog at the back of *Textile Production at 16-22 Coppergate* (Walton Rogers, 1997)

#6571 - diameter 27.1 mm, thickness 20 mm, hole diameter 9.6mm, weight 18.2 g. (12/13th century)

#6572 - diameter 34.7 mm, thickness 25.1 mm, hole diameter 11.2 mm, weight 32.2g (12/13th century)

#6573 - diameter 28 mm, thickness 24.7 mm, hole diameter 10.2 mm, weight 23.3 g. (12/13th century)

Looking at cross sections of the holes, they seem to have funneled in and then funneled out again, although at least one seems to have been straight up and down.

There are many more - I only included a few from your 12th century period. Now, all these whorls were stone. The ceramic whorls at Coppergate seem to have been earlier. That certainly doesn't mean they didn't use pottery whorls, just that none were recorded. If you make one out of pottery, remember that the stone would have been heavier, so to get the right weight, you may need a larger whorl than the dimensions above. I made a couple from soapstone, and found I had to make them larger than the limestone originals I was basing them on to get the proper weight.

I hope this helps some.

Mairghread

Source Unknown:

You might want to consider one of the longer, courser wools for a strong warp thread...much like Lincoln. You will then need to soak the warp thread in a starch and let it dry before you use it...this will add quite a bit of strength to it.

It all depends on the type of rug you are wanting to weave. For a sleazy softly beaten peg loom job, almost any woollen spun 6 - 8 turns per inch (tpi) yarn will do. If however you are using a good strong loom and can put an iron hard tension on the warp and beat it to compact the weft to give a robust and good wearing rug, then the answer is very different. For the latter you need to use a long fibre, over 12cm staple, and worsted spin with a high twist to a 20tpi grist and then ideally three ply to a balanced yarn at 6tpi which set on the loom at 4epi. Between these two extremes is any warp for any rug, but the wearing qualities and feel will vary with the quality of warp you produce

Warp spinning

If you are a weaver at this point, think of what qualities you want in a warp: I want mine even in thickness so it won't catch in the heddle eyes or reed; even in elasticity so that when I wind the warp and put it on the loom, each advancing of the warp supplies the same tension on the threads, fairly smooth, so it passes it's neighbor easily at shed changes. Also resistant to abrasion so it stays together during beating, and for a rug, it has to be very durable as walking on it with the dust and dirt a floor accumulates, can tend to abrade delicate fibers. Also if a rug, the warp has to be very strong to take the slam of the beater for each shed and still stay intact.

Also think if the rug is going to be warp faced or weft faced or balanced. If it's weft faced, then the warp will be mostly hidden, so looks won't matter, just performance. If warp faced, or balanced, it will have to look nice besides. It also has to fit through the reed! I'd recommend a long sturdy fiber, spun worsted (if possible), tightly spun and well-plied, preferably 3 ply for a rug. If wool: 5 + inches long, flicked or combed, smoothed as it is spun. Chain-ply or Navajo ply weakens the yarn at each reversal, so you'd need to do a real 3 ply.

Message: 5

Date: Thu, 24 Jan 2002 09:02:16 -0700

From: Oogie McGuire

Subject: Re: Cats and looms

>what do you do if you have to
>keep the loom in the living room? A friend of mine with 3 cats and a
loom in
>her living room wants to know...

We've got 3 inside cats and my knitting, spinning and weaving is always all over. Only one of the 2 bathrooms in our house even has a door and there are no closet doors except for one small coat closet in the front entry.

Things I've found are important, clear the loom bench of cat toys like bobbins full of yarn, empty bobbins, tape measure etc. each time as the cats *will* decide to clear it for you, usually at 2 am. My loom bench has a sheepskin hide covering it and the cats must sit on it when I am not using it. I use pieces of paper bag rolled up to make the bobbins and so my empties are almost irresistible crunchy paper. Check the tension when you start to weave, the cats like to "adjust" it for you. Fix broken warps ASAP least they become chewed and harder to repair. *NEVER* leave yarn skeins hanging or they become midnight toys. Untangling a pound or more of yarn with 3 cats helping is guaranteed to drive you to drink. Assume that cat hair will be woven into the piece and plan accordingly. If it has to come out, spend the time to drape the loom with a sheet which will reduce the amount of hair you have pick out of the weaving later. When picking said cat hair out, do assume that the cats are sure you are wrong and will sit on the part you just cleaned, thereby depositing more cat hair on it. Solution is to do it all standing up with the piece draped about you and an admiring ring of cats making comments about the drape of the fabric and style of the folds and your athletic ability as you deftly move it around your body while keeping all pieces out of reach. I think olympic skating uses less muscles! Never leave stick shuttles with yarn on them on top of the loom or next to it or anyplace a cat can reach. They look too much like scratching posts. Stick shuttles with cat scratches snag delicate yarns.

If you are spinning wool in the grease, keep the unspun raw fleece boxed tightly. Cats will shred plastic bags to pull out dainty bits and hairballs comprised of equal parts of sheep wool and cat hair are especially gross when stepped on in the middle of the night on your way to the bathroom. Said grease yarn is also a treat. Keep it well out of reach of feline investigators. Cats want to be sure you are spinning evenly and will inspect the entire skein for you. One note, not entirely cat related but don't try to vacuum around the spinning wheel when you have very fine singles on a bobbin on the lazy kate. You cannot turn the vacuum off fast enough to stop the bobbin from unwinding at warp speed into the bowels of the vacuum. When you do finally get it shut off, extracting your yarn back out and trying to manually rewind it on the bobbin is guaranteed to cause your spouse to go into hysterical laughter. This brings the cats, who then think that you are finally playing with strings and help by flipping the bobbin off the lazy and batting it across the floor.

Assume that any knitting that is not bagged will be ripped out for you. The cats are sure you made a mistake several rows back and are only trying to help. Wooden knitting needles look like toothpicks. Cats like to pick their teeth. nuff said.

Can you tell that the cats and I are sometimes in disagreement on how to properly pursue fiber arts.

--

Oogie McGuire - oogiem@desertweyr.com
Weyr Associates - Multimedia and Web Authoring Services & Consulting
Desert Weyr - CMK Arabian horses, Dexter Cattle and
Black Welsh Mountain Sheep

Unknown source

WPI is a valid tool to use to assess the *thickness* of the yarn, quickly and easily, while spinning, or assessing a skein of yarn. None of the yarn is destroyed in the process. And it's much easier to convert to approximations of standard commercial yarns: 20 wpi and higher, laceweight; 18-20 wpi, fingering; 16-17, DK weight; 15-16, sportweight; 12-14, worsted weight; under 12, bulky weight.

What needs to be emphasized is 'approximations'. Even yards per pound is an approximation, but the biggest problem with it (other than the difficulty of doing it while you're spinning!) is that it doesn't adequately take into account the 'fluffiness' of a yarn. Wraps per inch will give the spinner a much better idea of the thickness of the yarn, even as she spins, than will yards per pound. And she doesn't have to stop, skein, wash, dry the yarn, then snip a yard or two into tiny bits :)