Wet Finishes for Yarn

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Photos by Joe Coca

Spin Off ePATTERNS

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Or, it all comes out in the wash . . .

BY JUDITH MACKENZIE MCCUIN

As in glass, the molecules in wool and other fibers are always in motion.

LOOKING AT A PIECE of beautiful handblown art glass, it's hard to believe that what we see is in constant motion. The windows in a bank building or supermarket are all actually flowing like water. We can't see it happen—it moves too slowly for the human eye to record it. But move it does, causing the ripples and waves found in old glass windows and sometimes causing art glass to fly apart as the glass moves in conflicting currents. What is true for glass is equally true for yarn. It's always moving, governed by one of the basic principles of textiles that all fiber will try to return to its natural state.

When we spin, no matter what method we use or what fiber we spin, we distort the natural order of the fiber. We do this primarily by introducing twist into the fiber, but we also, during the spinning process, elongate the fiber and straighten out the natural crimp structure. Once the spinning process is over, the fiber in the yarn tries to move back into its original shape. Our job as yarn designers is to decide how to keep the movement in the yarn to a minimum or use it to our advantage. We do this by using a number of finishing methods either to stop the untwisting of the fiber (setting the twist) or to increase the movement of the twist to force the yarn to open up and bloom (fulling). Sometimes we also try to prevent the crimp from returning by drying it under pressure (blocking). There are many variations and combinations of these finishing techniques, but they all have one thing in common—they use water to control and change the yarn.

What is wet finishing?

Wet finishing simply means that water is used to relax the crimp and set the twist. Wet finishing techniques range from something as simple as a gentle wash in soap and warm water to more complex methods involving agitation and extreme changes in water temperature. The end result of these techniques will depend on the type of fiber and spinning method you have chosen.

All yarns, whether they are tightly or loosely spun, whether they are woolen or worsted, lose twist when they enter water for the first time. It can be cold water or hot, plain or soapy—even water in the form of steam—and it can be after the yarn has been made into a garment or fabric. In all cases, twist will be released and redistributed. Also, when the yarn is supported in water, the tension it has been under in the spinning process is removed and the yarn relaxes, regaining much of its original crimp structure.

While there can be as many variations on wet finishing as there are spinners,

there are three main methods: soaking (twist setting), soaking and agitation (fulling), and drying under pressure (blocking).

What's right for your yarn?

The finishing technique will have a long-lasting effect on your yarn and the project you make with it. With so many options to choose from, how do you find the technique that is just right?

First, examine the fiber you are using. Fibers have a natural response to different finishing techniques. Some, like silk, respond with hardly any change at all. Others, like cashmere and angora, are astonishingly different after finishing.

Generally, fibers are divided for finishing into two main groups by the length of the staple (staple is the naturally occurring division of the fibers in a fleece) and the amount of crimp (the natural waves) per inch in the staple.

Long fibers (longer than 3 inches) usually have low crimp—fewer than seven crimps per inch. When you apply water, heat, lubrication, and agitation, these fibers tend to move toward the center of the yarn, becoming denser and stronger. Taken too far, these fibers would have a serious risk of felting. Luster longwools such as Romney, Lincoln, and

a) It is best to set the twist of these 1) mohair and 2) silk fibers (once spun up into yarn) in a simple warm-water bath because they both have very little crimp structure.

b) This qiviut was spun for lace. The one that was poorly dehaired 1) has loops because the long fibers didn't full. The second skein 2) comes from the same batch of qiviut fiber, but it was properly dehaired and spun.

c) 2-ply skeins of Rambouillet and kid mohair: 1) fulled, 2) not fulled.

d) qiviut 2-ply for lace. 1) This qiviut skein has been fulled and is rounder and softer, and the twist is more even. 2) This one has not been fulled.

a) 1) Wet spun singles and 2) a Möbius scarf, 50% fine Merino and 50% silk spun as a loose singles and then fulled in a top-loading washing machine. The Möbius scarf has been worn for about three years and shows none of the wear or pilling you would expect.

c) 1) This Turkish knot yarn needs to be blocked to make all of the layers of twist balance. 2) Now it will make a wonderful warp yarn.

b) Two fibers that do well fulled: 1) white Corriedale and 2) natural brown Shetland. These both have a fairly high crimp and will expand and soften during fulling.

d) 1) Before and 2) after: this silk yarn is just off the bobbin and set in warm water during the dyeing process—the twist is slightly released and evened in the water.

Cotswold are good examples of fibers that fit this description. Silks, bast fibers like hemp and flax, mohair, and type A pygora (the pygora fleece that closely resembles an ultrafine mohair) are also in this group. While there are other factors, such as the spinning method used, the finishing technique these fibers respond to best is twist setting.

Short fibers (2½ inches or shorter) commonly have a greater number of crimps per inch than seven, making them much more elastic. When you finish these fibers, they move away from the center of the yarn, allowing the ends of the fiber to stick out and creating a haloed surface. They generally regain much of their original crimp, which pushes the yarn open and gives it a larger diameter. Cashmere, yak, bison, qiviut, and angora are examples of fibers in this group. So are Merino, Cormo, Rambouillet and robust crimp breeds like North Country Cheviot, Dorset, and Southdown. As for the long, low-crimp fibers, the effect of finishing will be influenced by how the fiber is prepared and spun. Taking these factors into account, the technique that is most effective with these fibers is fulling.

There are, of course, exceptions to how fibers react. A good example is Polwarth wool. Usually well over 3 inches in length, Polwarth is very highly crimped making it a wonderfully elastic fiber. In spite of its length, Polwarth is generally in the second group of fibers, those that open up when they are washed. Another exception is silk noil. Definitely a short fiber, it responds more like a long fiber because it has no crimp structure and, therefore, no elasticity. During finishing, the silk noil fibers will move toward the center of the yarn, aligning themselves, and often causing the yarn to lose diameter and gain length. And then there are the fibers in no-man's-land—those that are between 2½ and 3 inches in length and fibers that have a crimp structure that conflicts with their length, long with high crimp and short with low crimp. Fibers that have had special treatments, such as superwash, Optima, and depigmenting, will respond as if they had no crimp (see page 6).

Fiber preparation is the next thing to consider. The more parallel the fibers are kept in the processing, the less they respond to fulling, and the better they will react with twist setting. Fiber preparations that keep the fiber parallel are flick carding, or using minicombs or English combs. All commercially prepared top has parallel preparation.

The more deliberately crossed the fibers are, the better they respond to fulling. Carding, either by hand or by machine, increases the number of crosses in the fiber, especially if the batt from the carder is rolled into a rolag or puni. Spinning from fiber that has been teased into a cloud will also increase the yarn's ability to respond to fulling.

The other factor to consider is the method of spinning. In worsted spinning, the twist enters yarn where the fibers are parallel. The more worsted the yarn is spun, the less likely it is to full, and the better it responds to twist setting. Yarns spun woolen-style have room to expand naturally and can be enhanced by fulling. Novelty yarns, which often consist of yarns of unbalanced or opposing twist, can be blocked to make them manageable.

Twist setting

Twist, like water, will always try to find its natural level. Twist setting uses water to allow the twist to move back and forth along the fiber, balancing underspun and overspun areas in the yarn. Depending on how tightly it is twisted and whether the yarn is plied, a certain amount of twist will discharge into the water. Placing a skein in water also allows the crimp in the fiber to be reactivated. The amount of crimp that returns depends on how the fiber was prepared and spun.

Tips

- **Weaving:** Weavers should wet finish their yarns after they have been woven. The interaction between the wet finishing and the weave structure melds the threads together producing wonderful cloth.
- **Differential Fulling:** Ply a nonresponsive fiber like silk or mohair with an extremely responsive yarn like fine Merino to create interesting textures (see figure a, page 76).
- **Accidental Fulling:** When this yarn spun from qiviut that was poorly dehaired was wet finished using the proper fulling technique, it created a textured yarn because the hair didn't respond and the down fibers did. While it's an interesting effect, it's not suitable for the yarn's intended use—to knit lace (see figure b, page 75).
- **Dyeing:** Putting yarn through the dyeing process can have an effect similar to wet finishing. If you are using a mix of dyed and natural colored yarn in a project, be sure to process the natural colored yarns the same as the dyed yarns—just leave out the dye (see figure d, page 76).
- **Handspun and Commercial Yarns Together:** Are you planning on mixing commercial yarns with handspun in a project? Make sure you wet finish the commercial yarns the same way as your handspun to ensure they will be compatible.
- **Felting after Knitting with Handspun Yarns:** Are you spinning for a boiled wool or felted project? This is the exception to the rule of finishing all knitting yarns. Like weaving yarns, the yarns for these projects need to be finished after they are knitted.

To set the twist in your yarn, make it into a skein. Use four figure-eight ties to prevent the skein from tangling. Fill a bowl with warm water and a good detergent like Dawn to speed up the wetting process. Just lay your skein in the water and leave it for several hours. When you leave your wool yarn in water with a wetting agent (the detergent in this case) the time and surfactant force the wool cells to expand. Give it a rinse to remove the soap, spin out the excess water, and hang it up to dry.

Fulling

Fulling uses extremely hot, soapy

Treated fibers

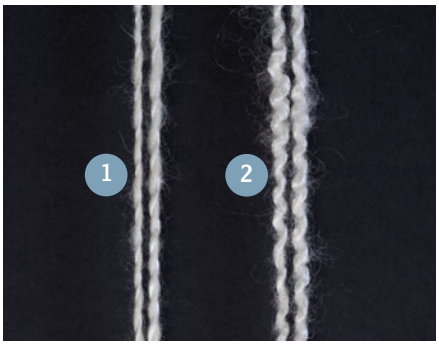
All of these treatments have similar effects on fiber. All make the fiber have a silkier hand, make the fiber more susceptible to dyes, and vastly reduce the fiber's tendency to felt. While Optima and the enzyme and/or chemical depigmenting processes are very new, mercerizing wool by burning away the outer cortex (the scaly part) with bleach or a strong alkaline like urine has been done for thousands of years.

Depigmenting is a chemical treatment that replaces the use of chlorine bleaches as a method of whitening a stained or colored fiber. It does less damage to the fiber than the previously used chlorine bleaches and so can be used on fine fibers such as yak and Merino without a noticeable change in the hand of the fiber.

Optima is a trademark name for a process that is used on fine wools to both remove the outer cortex (the scaly part) and stretch the fiber to its optimum length. It creates a long, fine fiber with little or no returnable memory, similar to silk.

Superwash, like Optima, is a trademark name that describes mercerized wool (that is wool that has had the scales removed by chlorine) or wool that has been treated with a polymer that coats the fiber and smoothes out the scale structure. Both of these processes leave the wool more lustrous and resistant to felting. Wool treated with any of the methods used to prevent it from shrinking during washing should still be dried without using a dryer.

water and agitation to force the fiber open and release both the twist and the crimp. The water should be too hot to put your hands into (in some cases the yarn is even simmered on the stove). The soap works both as a lubricant to make the fibers slip easily and as a surfactant (a wetting agent). The yarn is deliberately agitated. Use a sink plunger and vigorously plunge the yarn. This technique can be taken one step further by plunging the skein into cold water and then back into the hot, soapy water several times. In some instances, a top-loading washing machine and a dryer can be used to full yarn (see below). Rinse the skein well in warm water, and remove the extra water by gently squeezing down the skein. Hold the skein firmly by one end and give it a sharp smack or two against a table or counter. Turn it around and give the other end of the skein a smack. Hang it up to dry.



1) Before and 2) after samples of yarn texture created by differential fulling in a plied yarn—the silk singles buckles to create a loop because it doesn't full, and the Corriedale singles does full, and in doing so it gets shorter and wider.

Fulling adds to an otherwise fragile yarn's stability. The springy fibers that do so well in this technique lock together during the agitation, making the yarn stronger and reducing pilling. Yarns that have been fulled develop beautiful halos, making fulling a perfect choice for finishing fibers like angora. But fulling is not for all yarns. Silky yarns with low crimp and a loose twist can felt very easily and are not recommended for use with this technique.

Blocking

Blocking puts a wet skein under pressure while it dries. The amount of pressure can vary from that applied by a damp towel placed on the skein to drying the skein with heavy weights hung from it. You can also use a yarn blocker for drying multiple skeins of yarn under pressure. Blocking is used when the crimp structure is meant to be kept under tension and can produce a yarn where there is little or no elasticity. These yarns are used primarily in weaving, especially as rug yarns. Blocking is also used with novelty yarns where the opposing extreme twists can make the yarns difficult to use unless they are blocked.

Fulling a skein of Rambouillet in hot, soapy water with a plunger for extra agitation.

Block yarns only if you must. Blocking can cause damage to protein fibers, particularly wool. A wool cell is very fragile when it's wet, rather like a balloon full of water. Putting weight on it can cause it to rupture and damage the wool. Start out gently using a minimal amount of pressure, and increase it if you need to.

No matter what technique you think will best suit your project, always sample before you commit all your yarn to the process. Whenever possible, try several methods before you decide what works best. It is time (and yarn!) never wasted—as you try different approaches, your understanding of fiber and twist will continue to increase, helping you create the fabrics you want.

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