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FALL 2023

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Photos by Matt Graves

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paired with Border Leicester locks

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On the cover: Classic Carder's High-Sided drumcarder transformed left-over bits of wools, silks, and Tencel into this stunning batt.
Photo by Matt Graves

spinoffmagazine.com

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Rolag, lick-in, doff, knee—the language of carding delights me. And these are just some examples from English-speaking traditions; there are many more. These still-common terms give us clues about the longevity and evolution of the technology as well. *Rolag*, an old word derived from Gaelic languages, describes neat rolls of fiber produced by handcards. The

Oxford English Dictionary suggests several possible origins, and one connection might be *rolla*, which is an Early Irish word associated with rolls of parchment. Fascinating.

Licker-in connects us with a more mechanized era. Found on large-scale carding mills as well as the compact drumcarders we can use on our kitchen tables, the licker-in is a common term for a smaller drum that first engages the fiber with its carding teeth, passing the fiber within reach of the next drum. Whether you are spinning carded batts, carded roving, combed wool tops, or cotton sliver, that fiber encountered a licker-in along the way!

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A foundation cloth covered in bent metal teeth seems such a simple technology, but we continue to find new ways to make use of it in our fiber-prep pursuits! In this issue, **Roy Clemes** helps us take a closer look at carding cloth and how it is made, and **Eileen Hallman** explains how cotton is processed into the spinner-friendly prep called *card sliver*.

This issue is bursting with makers' voices! Two amazing fiber artists—**Kelly Knispel** and **Amanda Solomon**—both took on the same knitted project and had wild and wonderful results. Shetland spinner **Elizabeth Johnston** shares the history of the hap and invites you to make your own. Tips, inspiration, and color abound, and I hope this issue has you reaching for your handcards and dusting off your drumcarder.

Wishing you peace and perfectly filled bobbins,



Kelly Knispel's squishy rib, see page 30

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REVIEW BY ERIKA ZAMBELLO

Wellness for Makers

A Movement Guide for Artists

by Missy Graff Ballone

"THAT'S DEFINITELY ME," I thought as I started reading *Wellness for Makers*.

Ballone writes: "I have worked with thousands of makers, and I often hear 'I have terrible posture' or 'I'm just getting older.' Have you ever said something like this to yourself?"

I have! Many times, specifically about my posture and overly tight muscles. I assumed my back would always hurt, that the muscles in my legs would always pull and feel stiff. Given that I work from a laptop throughout the day and engage in hand-intensive fiber crafts—knitting, embroidery, quilting—pain in these areas as well as my wrists seemed inevitable.

From the beginning of the book, Ballone, an artist, massage therapist, and yoga instructor, pushes back on those notions and illustrates how we should think about our bodies and about movement

to reduce injuries and pain.

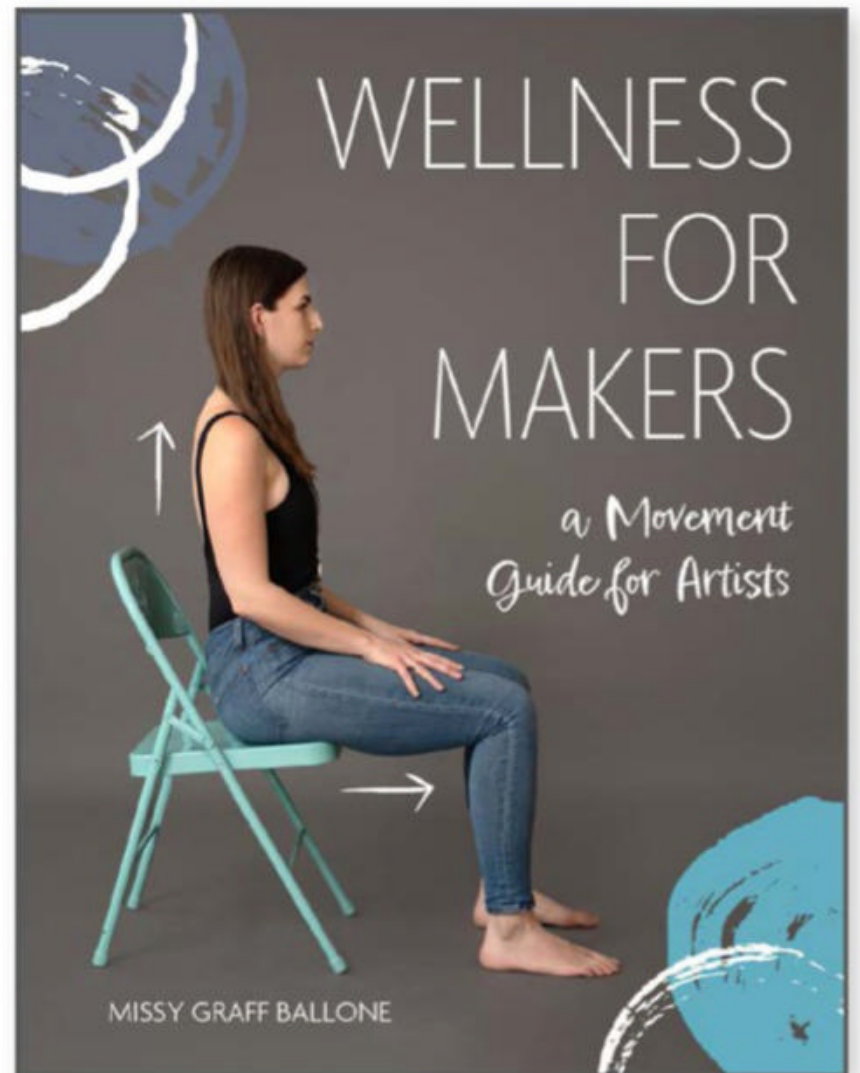
In addition to her narrative and explanatory text, Ballone uses helpful photography to showcase how not to hold ourselves and demonstrate the more beneficial neutral positions. As I went through the book, I followed her directions to notice how I cur-

rently carry my body: hunched over for sure, especially when on the laptop or working on a fiber-craft piece, but also with elevated shoulders and pigeon toes. It's no wonder I'm often sore by the end of the day.

Noticing our own holding and movement patterns is only part of

the work she encourages artists to engage in. While practicing more neutral stationary positions, we also need to move. For artists who work on their feet, movement is an obvious part of their practice. But how many among us in the fiber arts knit and spin in one place on the couch for an entire movie or sew and sew while hours slip by? *Wellness for Makers* includes multiple "Movement Break" pages that give examples of simple actions we can take to break up our habitual sitting or standing.

I consider *Wellness for Makers* more of a reference book than a "read through and you're done" type of work. I've already gone back to refresh my memory on active stretching techniques, for example. I hope to continue making time for the movement breaks that can stop some aches and pains before they start. ●



Atglen, PA: Schiffer, 2022. Hardcover, 128 pages.
ISBN 9780764363214

Reading List



Wardrobe Embroidery: *Knit & Embroidery Projects for Upcycling Clothes*
Warunee Bolstad
Salem, MA: Zakka Workshop, 2021



About Silk with Karen Selk
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Blending Board Sweater

SUZANNE BRUNGO REYES

Pattern and designer Flax from Tin Can Knits.

Fiber A variety that included Sheepspot Corriedale top, Frabjous Fibers Bluefaced Leicester and Lucky Baaahboo, Malabrigo Nube, dyed Romney and Lincoln locks, and Merino.

Fiber/preparation Blending board rolags.

Wheel system/spindle Lendrum double treadle, standard flyer.

Ratio 8:1.

Drafting method A short-backward draw letting in twist, keeping a thumb near the drafting triangle to monitor the fiber supply and adjust to different fibers in the blend.

Singles direction Z-twist.

Singles wraps per inch 24.

Ply wraps per inch 12.

Yards per pound 1,289.

Total yardage 1,539 yards.

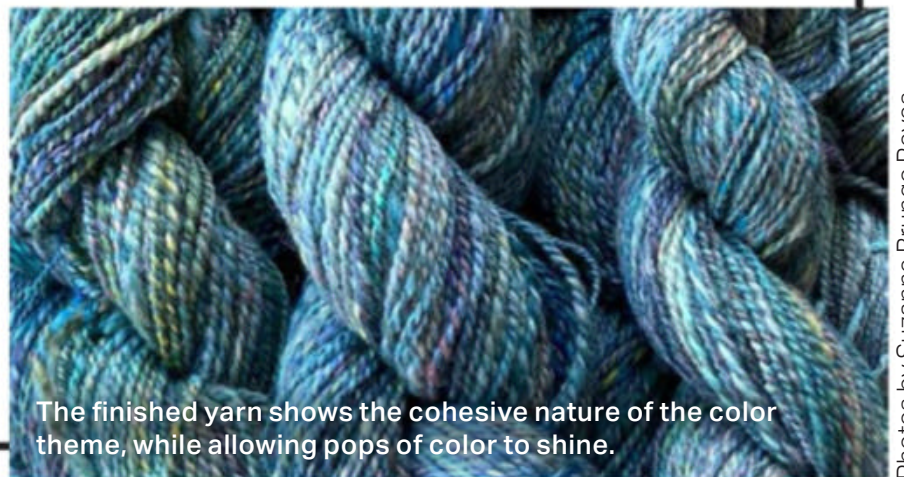
Yardage used 1,150 yards.

Yarn classification/weight DK.

Needles Size 4 (3.5 mm) and 6 (4 mm).

Gauge 18 stitches and 22 rows = 4".

Finished size XL (a size 42.3" sweater at my slightly different gauge of 4.5 stitches/inch).



The finished yarn shows the cohesive nature of the color theme, while allowing pops of color to shine.

Photos by Suzanne Brungo Reyes

I have been steadily knitting for almost 30 years. I picked up spinning in 2006, but I didn't spin regularly until 2018. I was interested in handspinning as soon as I heard a few women at my local yarn store back in the late 1990s discussing their spinning wheels. I fell in love with the idea of owning a wheel, but it was too costly for me at the time. Once I earned a little extra money doing some test knitting for a handspun/handknit designer, I decided that it would go to my first spinning wheel, my Ashford Traveller.

I was inspired to use my blending board to make rolags for a cohesive blended yarn to knit a sweater

I fell in love with using my blending board. Every time I sat down to make 16 to 18 rolags, I felt myself returning to childhood with that sense of wonder and joy in playing with color. Using my blending board is the activity that brings me the greatest sense of calm and focus.



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after taking an online class with Sasha Torres of Sheepspot. Her class not only taught the basics of making rolags using a blending board but also provided her method of blending for a “color story” that looks beautiful when knitting a larger project, such as a sweater. I followed her advice and was so pleased that my sweater ended up looking like the teal/blue color story I had in mind.

Using Sasha’s process for loading the board in a way that incorporates many breeds of wool as well as other fiber types, I created over 100 rolags. I fell in love with using my blending board. Every time I sat down to make 16 to 18 rolags, I felt myself returning to childhood with that sense of wonder and joy in playing with color. As a child, I used crayons and paint, but now I could recapture that feeling with my beloved fiber. All of these activities help me become mindful and present in my daily life, but I truly believe that using my

blending board is the activity that brings me the greatest sense of calm and focus.

To knit the sweater, I followed the Tin Can Knits Flax pattern, making slight modifications to work with my preferred gauge. The most challenging aspect was staying focused on completing the project since I needed over 130 rolags to spin enough yarn for a sweater. I had to take breaks every once in a while to stay motivated to complete the project, but I am so glad I did. I am so pleased with this sweater and have enjoyed wearing it often. ●

In addition to handspinning and creating rolags on her blending board, **Suzanne Brungo Reyes** enjoys knitting, weaving on a rigid-heddle loom, and crocheting. As a longtime community college teacher of English, she also enjoys introducing her students to the importance of incorporating creativity into daily life to strengthen reading, writing, and learning skills, while also enhancing overall well-being.



Creating batches of 16 to 18 rolags at a time helped Suzanne stay motivated and maintain consistency with her overall color theme.



Suzanne likes using a variety of burnishing brushes.

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Blending Board Workshop

with Sasha Torres

"The course was wonderful! Even though I've taken other blending board courses I learned many helpful new things." Betsy M.

<https://info/sheepspot.com/BBW>



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SMOOTH PREP

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① Leave fewer fibers behind and create larger batts with the Clemes & Clemes packing brush. This handheld brush—made in your choice of cherry, red oak, or walnut—has nylon bristles that diminish static as you tidy your batt. clemes.com

② The Natural Twist is known for luscious roving, and the Gold Rush collection is no exception with its smooth blend of Merino, mohair, and red eri silk. Shown in '49ers. thenaturaltwist.com

③ Use Mielke's Fiber Arts' nap riser brush to flick locks or clean fiber from your handcards. Held with two fingers or a thumb, this handy tool is made from fine, soft wire and measures about 1½ inches square. mielkesfiberarts.com

④ Dirty Momma Soap makes its Carding, Combing, and Spinning Spray in an enticing lavender scent. Just a little spritz will make combing and carding easier, plus it makes your hands soft for spinning. dirtymommasoap.etsy.com

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Photo by Matt Graves

Maker: Ginny Tullock of FatCatKnits
Where to find them: fatcatknits.etsy.com
Tool: Louët Classic Drumcarder

I love *the collaborative creative process* of dyeing and carding wool. I make a beautiful thing (braid or batt), which someone else then turns into another beautiful thing (usually yarn). They then further transform that into yet another beautiful thing (finished object of one sort or another). I feel so lucky to be a part of this process!

I make two types of batts. My regular batts are lightly textured, with a focus on draftability and a pleasant, smoother spinning experience. I start with my dyed

tops, then add two layers of mildly textured, colorful goodies: silk, bamboo, noils, sparkle, threads, and more.

My art batts are chunkier and will definitely *not* yield a smooth, even yarn. I start with dyed tops and add locks, dyed fleece, silk in many forms, and even yarn! These batts are great for all types of art yarn spinning: core spinning, slubs, super bulky, thick and thin singles, and so on. You can spin them the “regular way”, too, and get a beautiful yarn. ●

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SIMPLY SHETLAND



REVIEW BY MALYNDA ALLEN

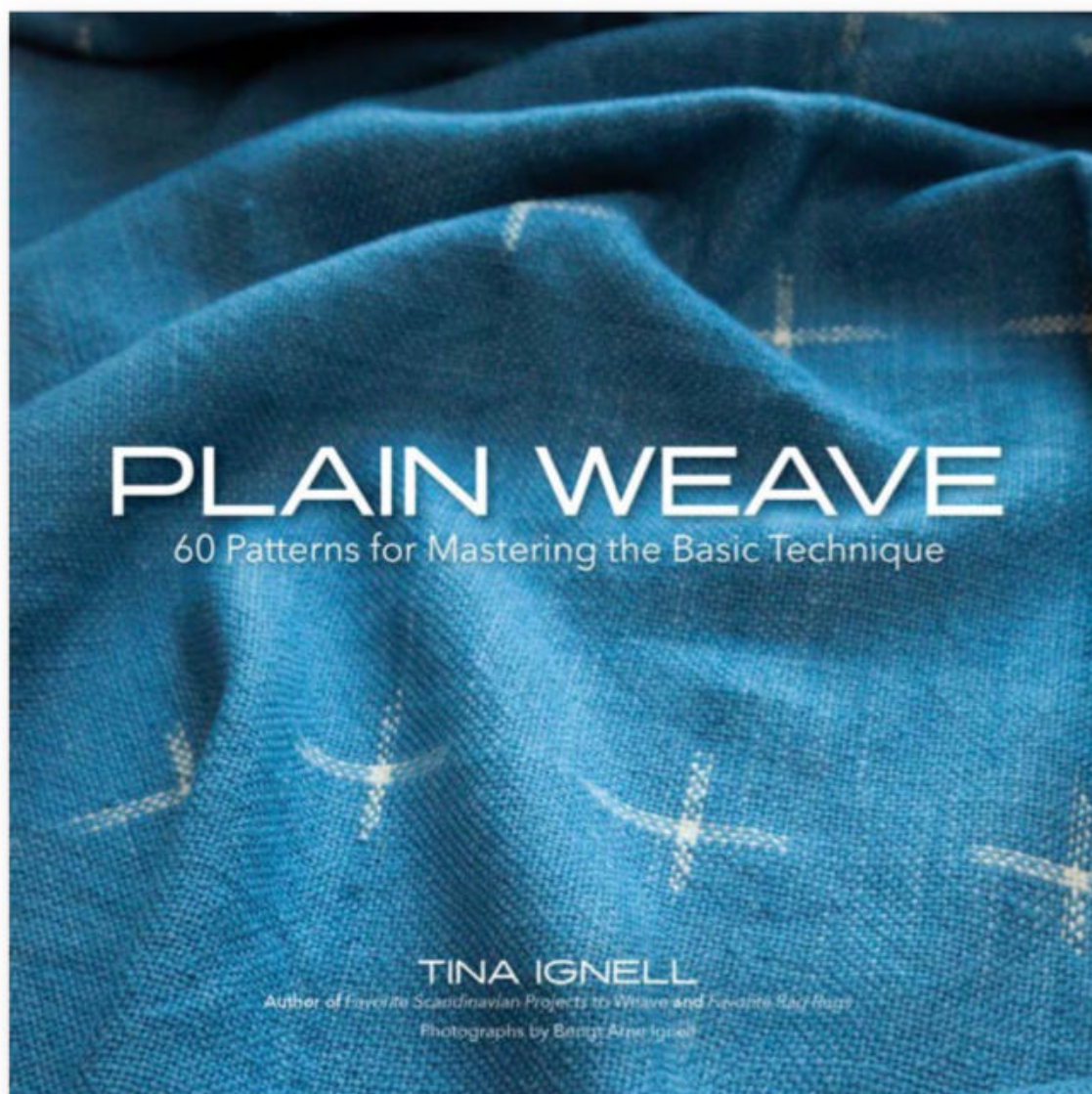
Plain Weave

60 Patterns for Mastering the Basic Technique

by Tina Ignell

SEVERAL YEARS AGO, I bought a simple two-shaft table loom. It is small, and I love it! I've even taken it on camping trips. However, because it has only two shafts, I have felt somewhat limited in my designs.

I need not feel limited anymore. Tina Ignell's book *Plain Weave* is about so much more than common plain weave. She covers just about anything that can be woven on two shafts, though she recommends four shafts for some patterns to give the yarn a little more room. With full-page color photos of each fabric, you can see the structure and yarns close-up. Collages at the beginning of each chapter show the variety of weaves possible within each category. This book won't hold your hand, but Ignell gives full instructions, in minimal words, for every project so that weavers can duplicate the fabrics if desired. Yarn details (including yarn substitutions), setts, heddle threadings, and basic charts for sleying reeds are provided as well as natural-dye recipes to create the rainbow of colors shown in the photos. You'll



North Pomfret, VT: Trafalgar Square Books, 2022. Hardcover, 196 pages. ISBN 9781646011360

find weaving tips and more detailed instructions at the back of the book, and these are referenced throughout. However, this book is meant to inspire more than to instruct. After all, it is plain weave!

Cotton, linen, wool, paper, rags, handspun, and even cardstock are used in the featured fabrics. Texture, colors, and block weaves abound. You'll find samples of ikat, flame-dyeing, and pleated fabrics. Chenille, pile weave, and fulled fabrics create unexpected results, and you're shown how to do them all. There are even a couple of gamps, but they are not all about color; some showcase textures and patterns! Panama weave (or basketweave and its variations) form stunning fabrics. The author

focuses on loom-controlled patterns and the creative use of yarns. She uses some hand-manipulated techniques for embellishment, such as soumak and knots, but these are more for accent or borders and do not fill the entire woven piece.

Full of inspiration, this book can be a valuable resource for pushing the limits of simple weaving. It will guide you on a journey to explore beautiful fabrics that can be produced with ease. Ignell proves that you do not need a complicated loom to make a wide variety of cloth. Reading *Plain Weave* has sparked many ideas that I am eager to try. My two-shaft table loom does not need to host boring projects any longer; I'm off to put something creative and beautiful on it! ●



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Photos by Matt Graves unless otherwise noted

Flick cards

Anatomy of Carding Cloth

Dissecting the Past, Present, and Future

ROY CLEMES

The burgeoning handspinning community of the early 1970s faced an existential crisis: without prepared fiber to spin, the movement would sputter and die. While a handful of now-household names had just begun making spinning wheels, fiber-prep tools were still rare and hard to come by. In 1972, my father began importing handcards from Finland and Sweden, but the supply was limited to a dozen pair every couple of months.

The carding cloth on these handcards had a split-hide leather foundation that was not nearly as durable as today's canvas and rubber combination. As such, they wore out quickly, which is why many older handcards have "R" and "L" designation to indicate which hand to use them in. Using these cards in the wrong hand, or worse, lending them to someone else would "hog out" the holes in the leather foundation, which would loosen the teeth and quickly lead to the cloth's demise.

After a lengthy search, my father found a source for carding cloth made in the United States and began making handcards and drumcarders of his own design. The rest, as they say, is history, as over the last 50-plus years, our family has made a half million pairs of handcards and tens of thousands of drumcarders. Along the way, we have learned a thing or two about the most important part of many fiber-prep tools: the carding cloth.

Flexible carding cloth is the technical term for the mass of tiny metal teeth covering the business end of handcards, drumcarders, and similar tools. More simply referred to as carding cloth but sometimes called card clothing, it is also used in myriad industries that are not textile related. Scrubbing the inside of gas and

oil pipelines, straining the skins out of tomato juice, and raising the nap on paint rollers and carpets are just some of the numerous applications. Accordingly, it is possible to order carding cloth made to a wide variety of specifications.

A CLOSER LOOK

Carding cloth is made of two components: foundation and teeth. The foundation is the base that holds the teeth in place. It is composed of multiple plies of woven white cotton canvas bound to a layer of vulcanized rubber. The number of plies or layers of canvas varies from two to six depending on the application. In the fiber-arts industry, vulcanized rubber is typically blue, gray, or red. Like most rubber products, this vulcanized layer has a limited lifetime, which can vary from a few years to a couple of decades depending on the quality of rubber used and how the item is stored. Subjecting carding cloth to heat and differing levels of humidity will speed up the aging process; tools with carding cloth should be stored in a

climate-controlled environment. When this rubber layer dries out and becomes brittle, the teeth will start to pull through the carding cloth and end up in the fiber being processed.

The teeth are made of round or oval wire from alloy or carbon steel. Wire diameter and teeth per inch (tpi) are chosen to fit each application, but we mostly see 72 to 120 tpi in the fiber arts, with wire diameter decreasing as tpi increases. To make the teeth, wire is drawn out to length, clipped, and bent into a U-shaped staple. The staple is driven through the foundation at a predetermined angle and, if required, the knee (bend in the teeth) is formed by an anvil. The foundation is advanced a few millimeters to the left, right, or down the line, and the process is repeated *ad infinitum*. Although one operator can oversee several machines at the same time, the manufacture of carding cloth is still a time-intensive and slow process. When a roll that is long enough to stretch the entire length of a football field has been created, it is cut off from the machine and a new roll is started.



Sheet cloth installed on a Clemes & Clemes flick card



Fillet cloth installed on a Clemes & Clemes drumcarder

There are two styles of carding cloth: sheet and fillet. Sheet cloth is made from one “sheet” of foundation that is the correct width to cover a handcard, flicker, blending board, or the drum of a drumcarder. Sheet cloth is made with teeth covering the majority of the cloth but with margins on the edges and at specified intervals where there are no teeth. The sheet is then cut at these intervals, creating a perfectly sized pad that is ready for installation. While sheet cloth is ideal for hand tools such as flickers, Lock Pops, handcards, and blending boards, it tends to create nepps in very fine fibers when installed on a drumcarder.

Fillet carding cloth is made of narrow foundation that is 1 to 2 inches in width. This is the style of cloth used in production carders in fiber mills and happens to be the only style this author uses in the production of his own drumcarders. Fillet cloth receives teeth from edge to edge, then goes through an additional grinding process, which sharpens each tooth to a point. Once installed on a drum, the sharpened points of the fillet allow for precision adjustment of the carder and greatly reduce or eliminate the creation of nepps in the carding process. The additional steps in creating and installing fillet do make it relatively expensive compared to sheet cloth, which is why it is only used on high-end drumcarders and in carding mills.


Flexible carding cloth is no longer made in the United States and is available from only a handful

Carding cloth is made of two components: foundation and teeth. The foundation is the base that holds the teeth in place. It is composed of multiple plies of woven white cotton canvas bound to a layer of vulcanized rubber. The number of plies or layers of canvas varies from two to six depending on the application.

of manufacturers in Europe and China. It has been replaced in some carding mills by metallic card clothing, which is essentially a band-saw blade on edge. While this style of carding cloth reduces maintenance and lasts longer in a textile mill, it is not suitable for the type of hand-operated tools found throughout the fiber-arts industry. As the use of metallic card clothing gains traction, it will become harder to find manufacturers of carding cloth made specifically for the fiber-arts community. Just as before, we will handle that existential crisis when we get there.


The next time you pick up a flicker or walk by a drumcarder, take a closer look at the carding cloth. See if you can pick out the nearly two dozen different specifications that went into creating it for that exact purpose. A millimeter here, a couple of degrees there, and that carding cloth could have spent its working life in a rug-hooking frame or removing excess fur from a beloved family pet. ●

Roy Clemes grew up in his family's woodshop and is the younger half of the Clemes & Clemes duo, making innovative, generational fiber-art equipment in the San Francisco Bay Area. C&C is known throughout the world for the thoughtfulness of their designs and quality of their craftsmanship. They regularly consult and instruct spinners, felters, fiber producers, and professional fiber artists in the art of fiber preparation. Roy is also the president of Lamtown Festival, the largest sheep and wool event in California.



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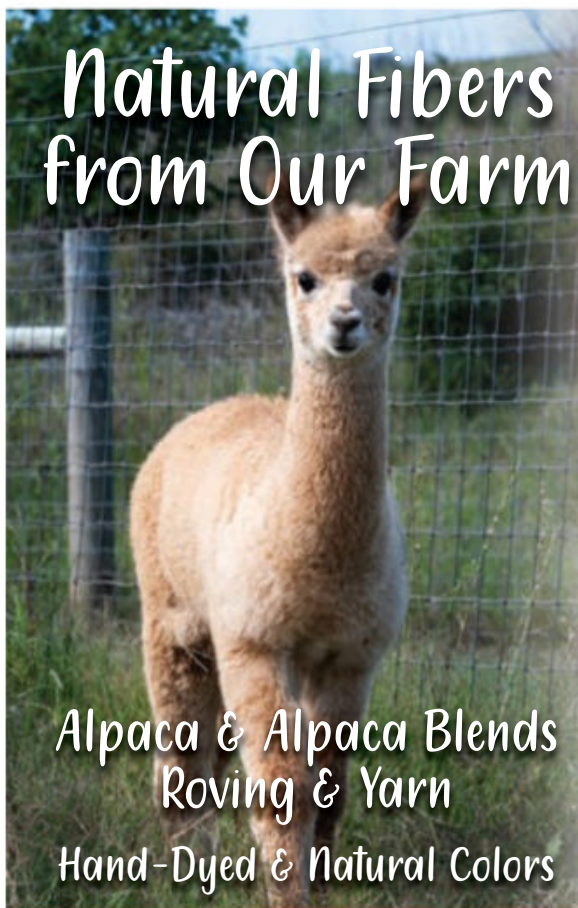

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Carding a True Neutral

A New Take on Spinning Handpainted Braids

MEAGAN CONDON



Tetrad samples: Frabjous Fibers Polwarth in Stained Glass. The original handpainted braid and "true neutral" carded batt (*left*) are shown with the fractal-spun yarn and swatch (*top right*) and the true neutral yarn and swatch (*bottom right*).

Photos by Matt Graves

You had to buy it. It spoke to you. You don't know what you'll do with it. If you are honest with yourself, it will probably sit in your stash for the next six years. I'm talking about that gorgeous one-of-a-kind indie-dyed braid you picked up at a fiber festival that won't pair with anything you already have. There are tons of ways you could spin it for different color effects: chain-ply, rearrange the colors, fractal-ply, or thread-ply. Did you know that you can also create a "true neutral"? This is a technique you'll likely want to add to your repertoire!

In design, a neutral color is one that appears to be "without color" or that serves as a constant background and universal complement that doesn't compete with other colors. Usually, we think of black, white, gray, and brown as pure neutrals, but there are thousands of near-neutrals that combine these pure neutrals with primary or secondary colors.

In the context of fiber blending and dyed braids, think of a "true neutral" as a color created when all the individual colors within a fiber braid are combined. The subsequent blend creates a harmony with every color in the braid. To test how a true neutral would behave with monochromatic, complementary, and analogous color relationships, I sampled three braids of handpainted Polwarth. First, I'll describe the technique and then share the results.

TECHNIQUE: LET'S BLEND!

First, choose a braid of handpainted combed top that has at least two colors. The colors can be from different hue families or simply tints and shades of the same hue. Split your braid in half lengthwise with the goal of having the same amount of fiber in each half. The first half of the braid is spun as is, from one end to the other. The resulting handspun singles might be striped, a gradient, or kind of random, but you need some nice color changes for the true-neutral effect to work well. The second half of the braid is where the magic happens; it's carded, then carded again . . . and again, until the batt is one consistent color.

For my samples, I used an Ashford drumcarder with 72 teeth per inch. I pulled one staple length of fiber from the tip of the braid at a time, which I then fed into the carder. Because I wanted a semiworsted

When all the individual colors within a fiber braid are combined, the subsequent blend creates a harmony with every color in the braid.

preparation to match the top I was using, I fed the fiber into the carder from the tips, rather than parallel to the drum. Feeding the fiber this way keeps the fibers fairly aligned and results in a more consistent finished yarn.

Less is more when adding fiber to the carder for a consistent blend. Adding only a little fiber to the infeed tray at a time permits the carder to blend the fiber more thoroughly and allows for more passes through the carder before the fiber starts to create nepps. Once you have applied all of the fiber to the carding drum, remove the batt and—one staple length at a time—send it through the carder for another pass. With my carder and the Polwarth, I was able to get five passes before it began to show nepps. The more passes you perform, the more homogenous your blend will be.

I then spun the homogenous batt into a singles yarn and plied it against the first half of the braid. I spun my samples on the Schacht Matchless at a ratio of 9:1 and aimed for about 10 wraps per inch so my samples would work up quickly.

COLOR BEHAVIOR

A true neutral expresses different color behaviors depending on its relationship with the original colors in the braid. For example, let's start with a monochromatic color relationship, which relies on the different tints, tones, and shades of a particular hue. The true neutral for monochromatic braids will trend toward the middle. With the Balsam colorway I sampled, the brightest and darkest greens were muted. The resulting fabric exhibited subtle stripes. The colors were softened, but the sample still included a great deal of variation and color depth.

An analogous color relationship is a group of colors that are next to each other on the color wheel. The



Analogous samples: Frabjous Fibers Polwarth in Spilled Ink. The original handpainted braid and “true neutral” carded batt (left) are shown with the fractal-spun yarn and swatch (top right) and the true neutral yarn and swatch (bottom right).

Spilled Ink colorway demonstrates this with a nice transition from reds to purples throughout the roving. When paired with its true neutral, an analogous braid will trend toward the middle hue—in this case, a warm purple. Again, the end result is subtle striping, though not as subtle as the monochromatic colors. The introduction of two or more colors creates a much wider variety of possible color combinations between the two plies.

A braid with complementary colors—one that includes colors on opposite sides of the color wheel—will result in some of the most complex color interactions. When you mix colors on opposite sides of the color wheel, they visually desaturate one another, resulting in what spinners often call “mud.” As a fiber artist, I am not usually aiming for muddy colors, but it can be useful with the true neutral approach. A neutral

helps colors that are displayed against it pop, while the neutral fades into the background. In handspinning, this means we can avoid unexpected or unpleasant sections of the plied yarn where complements were plied together or like colors pool and dominate the finished skein. A true neutral can give you more control.

The Stained Glass colorway (see page 24) I sampled is a tetrad complement. A tetrad is four colors arranged into two complementary color pairings, in this case magenta, green, blue, yellow-orange. Despite the muddy color of the neutral ply, the individual colors from the roving are fully visible in the samples and appear almost as bright as the original roving. The striping, like the first two samples, is soft and gradual.

Different color relationships will result in different looks, but there are some consistencies across the board.



Monochromatic samples: Frabjous Fibers Polwarth in Balsam. The original handpainted braid and "true neutral" carded batt (left) are shown with the fractal-spun yarn and swatch (top right) and the true neutral yarn and swatch (bottom right).

A true neutral will mute bright colors. If you want that neon orange in your braid to stay as neon as possible, choose a different technique. If you want to subdue the neon so it doesn't take over, give this technique a try.

A true neutral will soften harsh color shifts and pooling. If you like hard stripes, again, choose a different technique. If you want to soften and unify the colors in the braid, this technique works wonders!

THE COMPARISON

Trying to describe color interaction can be tricky, so I wanted to do a visual comparison between the true-neutral approach and another method. I chose to compare the true neutral to the fractal spinning method, since I find the two techniques have a similar goal—to unite the colors in a fiber braid.

Fractal spinning creates a self-striping pattern with smaller color repeats within the larger ones, ensuring that all the colors are distributed (see page 66). For my fractal, I split the combed top, set one half aside, and then split the second half into four subsections. After spinning the singles to roughly the same gauge that I used for the true-neutral samples, I created two-ply yarns.

In all three colorways, the sample sets show some distinctions. The fractal colors appear brighter, more defined, repeating stripes of color. If I had to describe the difference, it reminds me of how color depth works on a computer, where each color is represented as a pixel, or small dot of color. When those dots of colors are put together, they make a picture. The more dots and variety of color there are in a picture, the clearer the picture looks.

The fractal samples remind me of 8-bit color versus the neutral samples, which would be 16-bit color by comparison. An 8-bit image has fewer colors available for each given hue and often looks pixelated when compared to a 16-bit image because it doesn't contain the tints, tones, and shades needed to smooth the color transitions. Because the true neutral contains all of the color possibilities, it appears smoother in appearance, while the fractal has more dots of different colors next to each other, like pixels, that will blend together from a distance.¹

If you're looking for a brighter pop and less blending, the fractal color-handling method will give you better results. If you want a softer blend and longer color changes, give the true neutral a try.

Finally, I write about the true neutral in the context of fiber braids, but this technique works with chunky-blended batts, rolags, or any other preparation that incorporates color. As long as you can get a cross

section of all the colors used, you can create a true neutral. Keeping the colors in roughly the same proportions as the whole will give the most "neutral" neutral possible, but if it isn't possible to maintain proportions, you can still get a working neutral that will play off the colors in your fiber preparation. Like any other spinning technique, sample, sample, sample. Experiment and add this technique to your repertoire! ●

Notes

1. Tammy Marshall, "What Is a 'Bit'?" *Outdoorphoto* (blog), April 21, 2020, outdoorphoto.co.za/blog/what-is-a-bit.
2. Janel Laidman, "The Fractal Stripe: One Method for Controlling the Striping of Painted Roving," *Spin Off*, Summer 2007, 80.

Meagan Condon is a librarian and fiber artist with extensive experience. Her areas of focus are microscopy of fiber, breed studies, plant fibers, natural dyes, digital community, and the science behind textiles. You can follow her at luthvarian.com.

What Is Fractal Spinning?

Without getting too deep into explaining a separate color-handling method, fractal spinning is a method introduced by Janel Laidman in *Spin Off* Summer 2007.² In science and mathematics, a fractal is when a pattern recurs at an increasingly smaller scale. Each pattern unit has the same character as the whole.

Laidman applies this concept to fiber and instructs: "divide your roving in half. Spin one half of it as it

came. Spin the other half by stripping it lengthwise into smaller widths. Keep the sequence of each strip in the same order as the first half and spin them sequentially." The yarn created using this technique exhibits a self-striping pattern with smaller color repeats within the larger ones, ensuring that all the colors are distributed throughout the entire length of yarn.



Fractal swatch



True-neutral swatch

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Photos by Matt Graves

Kelly Knispel's riffs on Fisherman's Rib

Spinner's Squishy Rib

Scarves and Cowls

One of my favorite things about handspun handknits is how absolutely unique they can be to each maker. From color and fiber choice to prep and gauge, the series of decisions we make are left behind like creative bread crumbs.

For this special carding-focused issue of Spin Off, I asked two fiber artists I admire to design a project that combines a familiar stitch pattern—Fisherman's Rib—with their own process and aesthetic. Both of these artists create and sell their carded blends: Amanda Solomon of Melanated Boho Bae creates drumcarded batts and Kelly Knispel of Dakota Carding and Wool produces carded cloud. Both Amanda and Kelly are dyers, knitters, designers, and more. I hope you'll find them on social media or at fiber festivals to learn more about their work.

—Kate Larson

This handspun-friendly stitch pattern creates a robust fabric with a finished edge—great for a scarf or cowl. This familiar stitch can be found in stitch resources as the garter-stitch variation of Fisherman’s Rib. There are several variations of Fisherman’s Rib, and this version creates a reversible fabric that does not roll.

You can work this simple pattern using any handspun yarn: superfine to superbulky. Try swatching with several needle sizes before starting your project as the knit-1-below stitch creates a fabric that is shortened vertically and spreads horizontally. Once you have a fabric you like, count the number of stitches per inch (or stitches per centimeter) and multiply it by the width of your desired scarf or cowl.

Visit spinoffmagazine.com/spin-off-abbreviations for terms you don’t know.

Notes

- **K1-b** Knit one below by inserting needle from front to back in the center of the stitch below the next st, work as for knit stitch, dropping both sts off left needle.
- **Cowl variation** Use a provisional CO with scrap yarn to begin. When cowl is desired length, remove CO scrap yarn and place sts on a spare needle. Break working yarn, leaving a tail three times the width of the row and graft sts using Kitchener Stitch. If you wish to graft in pattern, Kitchener Stitch into the st below for each even-numbered st.

PATTERN (KNIT FLAT)

CO an odd number of sts.

Row 1 (WS) Knit.

Row 2 (RS) Slip 1, *k1-b, k1; rep from * to end.

Row 3 Sl1, *k1, k1-b; rep from * until 2 sts rem, k2. Rep Rows 2 and 3 to desired length.

BO all sts. ●



Fisherman’s Rib in glorious neons by Amanda Solomon



Kelly used two colors of her hand-dyed cloud to create a perfect fall scarf.

Once Upon an October Pumpkin Scarf

KELLY KNISPEL

I sampled several types of handspun for a Fisherman's Rib scarf: a fingering-weight, woolen-spun Cormo two-ply yarn; next, I sampled a bulky alpaca/longwool singles yarn, and, finally, a sportweight alpaca/mixed wool/angora three-ply (chain-ply) yarn.

In the end, I chose to spin and knit my scarf using a woolen-spun, three-ply, light worsted-weight yarn made by combining two color blends from my inventory here at Dakota Carding and Wool. The Comes October fiber blend contains a high percentage of dark brown alpaca fiber with highlights of rusts, purple pinks, and fiery orange dyed wool locks plus a touch of Firestar; this is a wonderful fall colorway. The Pumpkin Spice fiber blend of longwools and alpaca is a more solid orange colorway and provides a unifying color throughout the yarn. The drape and rich color saturation obtained by combining two color blends with this standard scarf shape are luxurious.

The palette of colors within a Dakota Carding and Wool blend are integral to the beautiful yarns and felted objects that result. Our dyed blends, Biotayarns, are made using a carding mill. The carded fibers exit the mill off the doffer in a thin web that is layered into bags as a carded cloud preparation. The wool you spin directly from this cloud makes a beautiful woolen yarn. Hand blending and sorting the colored fibers before the carding process determines how pronounced or homogeneous the colors will be in the final carded product.

SPINNING NOTES

I divided a 4-ounce bag of Comes October in half and then spun two bobbins, each half full, using a Schacht Matchless. I spun 2 ounces of Pumpkin Spice on a Louët S10. The fine (Z-twist) singles of both color blends were spun at about 25 wraps per inch (wpi) using a supported long draw. I then plied the three singles yarns together (S-twist) on a SpinOlution Mach II (8-ounce bobbin) at a ratio of 10:1. The final skein of yarn combined two plies of Comes October

and one ply of Pumpkin Spice in a 300-yard (274-meter) 5½-ounce (156-gram) skein. I wound the yarn on a niddy-noddy and gently soaked it in a warm water bath followed by a rinse and hung it to air-dry (with no added weight).

My plan was to knit a fairly narrow, long scarf. As the pattern tends to grow horizontally faster than it does vertically, I cast on 21 stitches onto size 4 (3.5 mm) knitting needles. The soft drape of the alpaca combined with the elasticity of the wools and pattern makes for a soft and stretchy material. The coloring of the scarf has variation but is not stripy. The addition of the third ply of the homogeneous Pumpkin Spice blend with the bold colors of the Comes October blend adds a marled continuity to the yarn. The Fisherman's Rib pattern created a fluffy ribbed scarf that lies flat and is completely reversible.

MATERIALS

Fiber Comes October (45% alpaca/30% Bluefaced Leicester/23% Border Leicester/2% Firestar nylon; Dakota Carding and Wool), 4 oz (113.5 g). Pumpkin Spice (40% Border Leicester lambswool/35% Bluefaced Leicester/25% alpaca; Dakota Carding and Wool), 2 oz (56.7 g).

Yarn 3-ply light worsted weight (905 ypp; 10 wpi), 288 yd.

Needles Size 4 (3.5 mm) straight. Adjust needle size if necessary to obtain the correct gauge.

Gauge 13 sts and 14 rows = 4" in patt.

Project CO 21 sts.

Finished Size 5½" × 78". ●

Kelly Knispel, a shepherd and fiber artist in South Dakota, is the owner of Dakota Carding and Wool, a custom fiber mill processing fibers into beautiful clouds for handspinning and felting. Pure and simple washing, dyeing, and carding make handspinning a variety of yarns a pleasure. Find her @dakotacarding on Instagram, and see her full range of spinning fibers, nature-dyed yarns, and fiber supplies at dakotacardingandwool.com.



Clockwise from top: Amanda's neon batt, exploratory swatch, and finished cowl created with core-spun yarns

Neon Pop Cowl

AMANDA SOLOMON

As I started working on this project, I decided to spin up a simple singles yarn in a bulky/superbulky weight. I always love a good rainbow or anything with neon pops in it. I enjoy the blend of natural and bright colors. Most of my batts have that kind of color scheme, no matter what I try to create! For this project, I knew that I wanted to stay true to what I love colorwise and what I love to create.

When I drumcard my batts, I love to mix textures and colors directly on my drum. Instead of passing all my layers through the lick, I only pass the base that I've dyed. This creates a smooth canvas on which to paint the rest of my fibers. Once my base is down, I gather a unique blend of washed farm fleece, sparkle, nylon, and sometimes yarn scraps and plant fibers!

All my farm fleece is sourced within the United States, usually purchased from the farmers themselves at shows or from trusted shearers that I've built relationships with. For this batt, the base fiber is a Corriedale blend from World of Wool that I enjoy spinning. Then, I layered on washed fleece from my stash, all purchased at shows over the years in my area. I also added faux cashmere, Angelina, and dyed Firestar to the mix of layers. My drumcarder doesn't get cleaned super often as I like having bits of past batts added to the new ones I make. Once all of these pieces come together and are painted onto the drum, I take them off and begin the spinning process.

SPINNING NOTES

Because of how I card, my batts are not even or smooth. You can see this in the way the singles come out—thick in some parts and skinnier in others. I don't force a desired texture or weight when I spin. Instead, I just enjoy the journey of making! A chunky art batt then becomes a just-as-chunky art yarn!

My first swatch was a simple singles yarn worked over 15 stitches, but I also wanted to explore core-spun yarn worked in Fisherman's Rib. I loved the result and spun up about 4¼ ounces (120.5 grams) of yarn for my project.

When designing my Fisherman's Rib project, I chose to do a cowl because it was the perfect simple knit to highlight the texture and colors in my handspun. Chunky core spun yarns can get heavy, and in large projects, can add a lot of weight you don't need. In this cowl, that weight feels like little to none!

MATERIALS

Fiber Textured Rainbow Art Batt (Corriedale/faux cashmere/Firestar/Angelina; World of Wool and area farms), 4¼ oz (120.5 g).

Yarn Singles, superbulky (200 ypp; 4 wpi), 50 yd.

Needles Size 19 (15 mm). Adjust needle size if necessary to obtain the correct gauge.

Gauge 5 sts and 6 rows = 4" in patt.

Project CO 10 sts.

Finished Size 7¾" wide, 23½" circumference. ●

Graduating with a degree in animal science, **Amanda Solomon** spent six years caring for animals on a 300-acre farm. It was then that she discovered her passion for wool and its uses. Amanda loves the use of texture and crazy bright colors. For that love, she created Melanated Boho Bae. MBB offers art batts, hand-dyed roving, and other supplies for the beginning or advanced spinner, as well as hand-dyed yarn. Amanda encourages creatively mixing textures of yarn within knitted clothing to create wearable one-of-a-kind pieces. Find her at melanatedbohobae.com.



What Is Card Sliver?

EILEEN HALLMAN

I started my business providing cotton to handspinners and weavers in 1995. At that time, there were many small labs that would work with me to make blends for spinners. Today, they are few and far between, but in the early days, I was able to offer intimate blends of cotton with silk, wool, cria, flax, and hemp, and I also had a number of striped slivers in various colors. At one point, I worked with a very small mill that humored me, but each time I called, he would ask, “What kind of a cockamamie thing do you want now?” Luckily, he ran them for me anyway.

The terminology for cotton preparations is different from that for wool; for example, “roving” in wool-speak is “sliver” when referring to cotton. “Top” is never used when referring to a cotton preparation. Handspinners seeking prepared cotton fibers are likely to encounter terms such as “card sliver” and “draw sliver,” but what

is the difference? I’ll walk you through the types of commercially prepared cotton so you can choose which one is right for your project.

COTTON PROCESSING

After cotton bolls are harvested, fiber processing begins with ginning, which removes the seeds from the cotton fiber. There are two types of gins: roller and saw. The saw gin is used for fuzzy seeded cotton, while the roller is used for smooth seeded cotton. I have seen it written that the saw gin is for “short cotton,” which was the designation for upland cotton when the long, smooth seeded Sea Island cotton was the only cotton being produced on a large scale.

You are probably familiar with handcards or drumcarders; what defines a card is teeth. For cotton cards, the teeth must be very closely spaced.



Industrially, the cotton carding machine has a large drum with teeth and a chain of revolving slats with teeth that cover the upper part of the drum. The machine is wide and makes a very fine batt that is then gathered, sent through a condenser, and coiled into a canister. This is **card sliver** (A).

Because the raw fiber that is fed in is arranged randomly, the resultant sliver is also somewhat random in orientation rather than a preparation of parallel fibers. The teeth straighten the fibers out a little bit but not perfectly. If you imagine the fibers arranged as any combination and percentage of the forms I, J, and U, both right side up and upside down, you can see that there is a lot of air space in card sliver. For this reason, card sliver is very forgiving and the easiest preparation for beginning cotton spinners to use. I tell my beginning charkha students that the air space in the preparation is their best friend. Consider that twisting is all about compressing the fibers together

so that you can control how well they slide against each other. This is true for all fiber and all spinning wheels, but the ratio of the charkha is so high compared to treadle wheels that this concept sinks in pretty quickly. Too much twist too fast brings the ability to draft to a screeching halt.

When blending cotton with other fibers or other colors at the carding machine, the result is called an intimate blend. You can identify these blends easily because there are no streaks or stripes of different colors or fibers; the component fibers are blended before the carded batt is condensed into a sliver.

Following carding, the sliver can be spun in a process called “open end spinning.” For the higher-quality ring-spun yarn, however, it needs further processing. The card sliver is drawn through rollers to help align the fibers, creating **draw sliver** (B). This is often also called a draw blend because as many as eight canisters of card sliver are fed into the draw

When cotton is prepared commercially, each stage of the process further aligns and condenses the fibers. All four fibers shown here weigh 100 grams: (A) card sliver; (B) draw sliver; (C) combed cotton; and (D) cotton roving.



frame at once. The canisters are from different carding runs, so this allows the mill to blend cotton from different bales to get a relatively uniform yarn. For those of us with wild imaginations, the drawing step also allows for different colors in the canisters, resulting in a striped sliver. The fibers in draw sliver are much more parallel than they are in card sliver, and the preparation has less air space, possibly half as much. The end product is coiled into a canister.

Draw sliver is sometimes combed, which also makes the fibers more parallel, but the combing is intended to remove the shortest fiber content. The short fibers are what create pills, so removing them makes for a very high-quality yarn that does not pill. **Combed cotton (C)**



From top: card sliver, draw sliver, combed cotton, and cotton roving.

Card sliver is very forgiving and the easiest preparation for beginning cotton spinners to use. I tell my beginning charkha students that the air space in the preparation is their best friend.

is dense, with little air space. This dense preparation can be more challenging for handspinners to spin consistently, so I recommend it for experienced cotton spinners. Mind, there is nothing wrong with thick and thin combed cotton yarn, but it is best to do it deliberately rather than by accident or happenstance.

Whether the cotton has been simply drawn or combed, the next process before ring spinning is to reduce and condense the sliver further into a preparation called **cotton roving (D)**. This preparation is sometimes called pencil roving because it is generally the diameter of a pencil. It also has a slight amount of twist in it and can be used as weft in weaving. So, cotton roving has twist and is very thin, whereas wool roving is more like cotton sliver. Cotton pencil roving is wound onto a large cylindrical bobbin that goes to the spinning frame. For this reason, cotton pencil roving is rarely seen in the realm of handspinning. The preparations that have no carriers (bobbins or cones) are much easier for handspinners to obtain.

WHERE SHOULD YOU START?

No matter your level of experience, there is a preparation for everyone. If you are just starting out, I suggest seeking out card sliver if possible. When you reach a comfort level with your rhythm and the quality of your yarn, graduate to draw sliver. From there, go on to try either combed cotton or roving. ●

Eileen Hallman has been spinning on the charkha since the mid-1980s. She has not only developed cotton fiber preparations, but tools and techniques for spinners and weavers as well. She has taught at conferences, guilds, and craft schools and has downloadable instructional booklets in her online store at charkha.biz.



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The Many Uses of Flick Cards

AMY TYLER

Amy's flick-card collection
(clockwise from top left):
Fricke, Ashford, Louët,
Clemes & Clemes, Schacht,
and Patrick Green

I value physical comfort in all my spinning activities, including fiber preparation. My motto: Don't hurt yourself. Advice on how to use different preparation tools abounds, but what techniques are comfortable or uncomfortable is not the same for all spinners. You will need to pay attention to how your body feels as you use fiber-prep tools. If a particular movement is bothering you, change your movement or change the tool.

ANATOMY OF A FLICK CARD

A flick card is in many ways similar to a handcard, except flick cards are typically smaller than handcards. And flick cards come as singles, whereas handcards come in pairs.

As with handcards, a flick card has a handle. The carding pad can be rectangular or square. Some flick cards are flat, some are curved, but they all have carding cloth on them. The teeth on the carding cloth can be long or short, closely spaced or widely spaced, and while typically stiff, they can become more flexible with use. The teeth are bent; they have a knee. The location of the knee along the length of the teeth varies among flick cards, but the teeth always bend toward the handle. So, when you use the flick card, you will move it in the direction of the handle.

It is important to use a flick card that is comfortable to you: one with a handle that is easy for you to hold, one with a card shape that is easy on your wrists, and one that suits the carding techniques you use. If you have the opportunity to attend a fiber festival or go to a fiber shop, try out various flick cards to see which one feels right for you.

My personal preferences have to do with the fact that I have small hands. The first flick card I purchased was made by Patrick Green (no longer produced). It's small and works very well for my small hands. I find the Clemes & Clemes flick card

As with the use of all fiber preparation tools, I recommend that you be up to date on your tetanus shot. Most flick cards do not have very sharp teeth, but an occasional scratch while flicking isn't unusual.

It is important to use a flick card that is comfortable to you: one with a handle that is easy for you to hold, one with a card shape that is easy on your wrists, and one that suits the carding techniques you use.

comfortable to use because of the handle shape and the balance of weight between handle and carding pad. Again, you should try different flick cards yourself and see which ones are the best fit for your use.

BASIC TECHNIQUE

Similar to hand combs, flick cards tend to leave the wool fibers in mostly parallel orientation. However, the "openness" of the flicked fibers and the amount of debris that can be removed depends somewhat on the technique used in flicking. There are two basic approaches to flicking. I'm going to call them "bouncing" and "brushing."

Bouncing: Take a lock of wool and hold onto the cut end. Place that lock on your leg or other firm surface. You will use the flick card to tap on the tip end of the lock until it is pleasantly opened. Some spinners stop there; they prefer to leave the cut end untouched so that they can easily determine which end is which. But you may want to also hold onto the tip end and tap on the cut end to open it up as well. I find that this "bouncing" technique works well with wool that has a less obvious lock structure.

Brushing: Take a lock of wool and hold onto the cut end. Place that lock on your leg or other firm surface. You will use the flick card to gently pull through the wool fibers—rather like brushing or combing your hair—opening up the locks in a smooth way. Start brushing just the very tips, then gradually work the flick card farther up the lock. You can also do this to the cut end.

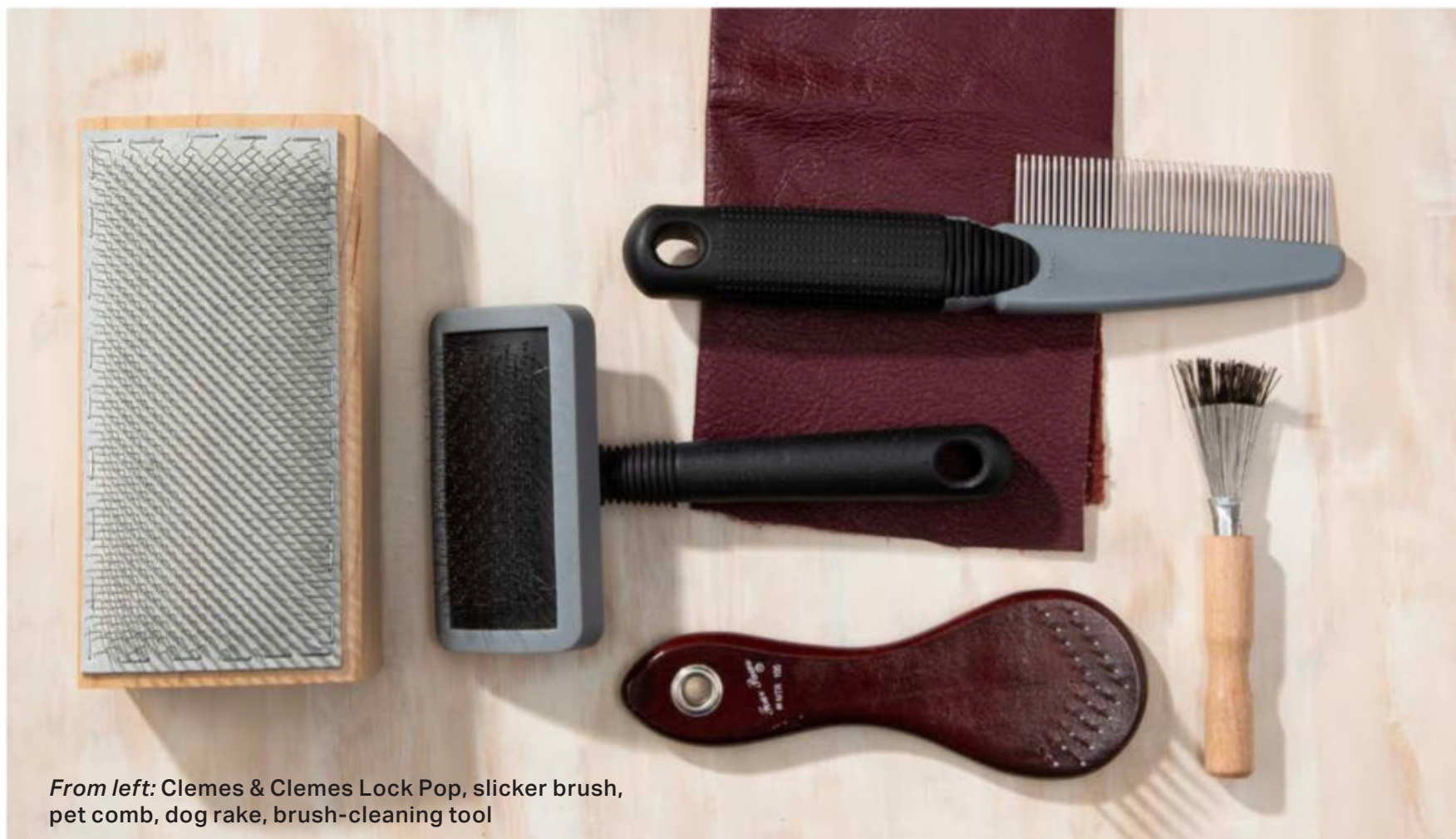
You can, of course, combine these techniques. Sometimes I'll start with the bounce technique, then switch to the brush technique. For the bouncing technique, you are applying the card to the fiber. For the brushing technique, you can either apply the card to the fiber or you can apply the fiber to the card by pulling a lock through the teeth of a flick card, a handcard, or a carding board.

USES OF A FLICK CARD

Flick cards are fiber-preparation tools. The flick card is used to open up locks of wool—either washed or unwashed—making them ready for your next step. That next step can be washing, carding, combing, or spinning.

Preparing Locks for Washing

So, you've bought a fleece, and you want to wash it



From left: Clemes & Clemes Lock Pop, slicker brush, pet comb, dog rake, brush-cleaning tool

Accessories and Alternative Tools

There are two accessories to a flick card that I recommend: (1) a piece of leather or a piece of very strong denim to use under the locks that you are flicking and (2) a cleaning brush or some other tool for cleaning out any debris left on the card.

Some spinners use other tools instead of or in addition to flick cards. Pet stores contain all sorts of fiber-worthy tools to try. For example, a dog rake is typically used for removing undercoats of dogs during shedding season. These useful tools can have one or two rows of very firm teeth (that are not bent), mostly in a straight line, although I prefer the version that has a V-shape alignment.

A pet comb is just that: a comb with very firm teeth. This tool works well for opening up cut and tip ends of locks. I think it is especially useful for preparing raw locks for washing. In that case, I prefer to dedicate a specific tool to just that task, leaving the other tools for clean fiber.

The most obvious pet-store tool that makes its way into spinners' stashes is a slicker brush, which looks very much like a flick card with bent teeth. The teeth, however, are more flexible than those on a flick card, and they are easier to bend or damage.

yourself. A flick card can be a tremendously helpful tool for opening up the tips of locks before washing. This is good for getting dirt out of the tips that might otherwise not come out in the washing process. Also, the flick card may help remove weak or damaged tips.

Opening up the cut ends can minimize felting during the washing process. Using a flick card is also helpful if you are concerned with maintaining lock structure when washing.

Preparing Locks for Drumcarding

If you've got a washed fleece that you want to card on a drumcarder, the flick card is an excellent tool for teasing open locks prior to drumcarding. The more open the locks are, the easier it will be to get a uniform batt.

Another carding tool that is useful for preparing locks for drumcarding is the Clemes & Clemes Lock Pop. It has a specialized carding cloth with longer teeth, which is attached to a wooden block that can be clamped to a table. Using the brushing technique, you can quickly open locks and leave debris behind.

Preparing Locks for Spinning Textured Yarns

There are many ways to spin locks into yarns that result in lovely texture. And a flick card is terrific for helping make these yarns.

For tail-spun yarns, the main purpose of the flick card is to open up the cut end of a lock, leaving the tip intact. You can then insert this teased cut end into the yarn during the spinning or plying process, leaving the tip end to hang out away from the center yarn as a textural feature. Or you can gently tease the whole lock and spin locks together willy-nilly.

You could gently tease a whole lock and insert it into a two-ply yarn during the plying process as an intermittent third ply. You can also combine roving and modestly teased locks to get some sweet texture. Using a flick card and a bouncing technique can help you control the amount of preparation you need.

Preparing Locks for Spinning Smooth Yarns

A flick card can also be used to get smooth yarns. In this case, try to maintain the parallel nature of the fibers, so you are creating a fiber preparation that is more like a



From left: washed Corriedale before flicking, Corriedale prepared with the bouncing method, Corriedale prepared with the brushing method, and Border Leicester brushed at the cut end only for lock spinning

combed preparation than a carded preparation.

Some spinners are particular as to the direction in which they spin their flicked locks. For example, you can always spin with the tips first or with the cut end first. I have not done the necessary experiment (comparison of these techniques) to determine how much of a difference direction of lock makes for the type of yarns that I create.

A flick card is a wonderfully simple tool with so many uses. In addition to versatility, a flick card is not as expensive as most other fiber preparation tools. I think a flick card is worth having in your arsenal of fiber-art tools. ●

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Amy Tyler lives in the beautiful northwest corner of the lower peninsula of Michigan. There she plays with fiber: preparing it, spinning it, and knitting items from the yarns she makes. She gathers and values good tools that help in all the steps of fiber activity. You can find out more about her on her website, stonesockfibers.com.



Photos by Steph Horak unless otherwise noted

Testing Teasel

A Stone Age Approach to Flax Processing

STEPH HORAK

To study the history of the flax plant and the linen derived from it is to discover the history of people. So valuable is this plant as food, fiber, and fodder that it has accompanied humans for millennia, and it was named by botanists to reflect its many utilities: *Linum usitatissimum* (flax, very useful).

My interest in flax began 18 months ago after finding a polished stone axe-head in Leicestershire,

Combing flax using the stiff teasel "upside down" on a piece of leather

England, dated to the Neolithic period (5,000–6,000 years ago). Seeing such a sophisticated and beautiful object challenged my assumptions about early human capabilities and prompted my interest in Stone Age technologies. More specifically, I became interested in the Neolithic era, when our early ancestors began farming, domesticating animals and crops, and settling in the landscape where I live in the English East Midlands. Flax was one of the first such domesticated plants.

Through archaeology and science, we can read fragments of the past and get closer to understanding how people lived. We can catch glimpses of the stories their lives held. The earliest example of a woven linen textile comes from a cave in the Republic of Georgia and dates to about 32,000 years ago.¹ The fragments were of wild flax and were dyed using plants in the local vicinity, suggesting the use of both advanced dyeing technologies and aesthetic codes. Generally, the survival of textiles in prehistoric archaeological contexts is extremely rare. Spindle whorls and loom weights

indicate that spinning and textile processing occurred but not specifically what fiber was spun.

For millennia prior to the industrial age, all parts of flax cultivation and processing involved the use of human hands and simple wooden tools, with little change to the technologies over time. It is reasonable to assume that some tools could have been used in prehistoric times that haven't survived. Bone combs may have been used for heckling (combing) flax, and the Romans used hedgehog skins for carding wool. However, until the widespread use of metal, it is probable that a heckling device was made of plants or thorns.²

The stiff teasel, a flowering plant native to the United Kingdom, is the perfect tool for heckling flax. It was used extensively in medieval woolen textile industries to raise the nap of woolen cloth before being trimmed. Several teasels were mounted to a wooden handheld cross or hundreds could be mounted to a huge mechanical teasel gig. Fuller's teasel was bred as a species for this purpose; being flatter, it could fit into the machines that accompanied the more industrious production of cloth.³

It is plausible that the medieval wool industry in England inherited the stiff teasel from earlier, prehistoric flax-husbandry techniques. Research indicates that the earliest domesticated sheep during the Neolithic era in the British Isles had very short fleeces not apt for spinning, so people would have favored other natural fibers.⁴

So, it is through the lenses of experimental archaeology and Stone Age technologies that I grew about 1,800 square feet (170 square meters) of flax with a view to processing it using only tools known to be available to prehistoric people and to also explore the suitability of the stiff teasel as a heckling comb. I wanted to understand how the materials could be approached and how intuitive the processes were to the uninitiated (me!). By processing the flax, I hoped to see what traces might be left behind for the archaeological record.

SCUTCHING: STONE PROCESSING

I successfully retted and dried bundles of flax and then processed them using only my hands, taking small bunches of stalks and crushing, breaking, bending, and



Courtesy of the National Wool Museum Collection, Australia

Stiff Teasels before and after use. Note how the unused teasel at the bottom is sharp and fresh compared to the softened, used teasel at the top.



Teasels were used to raise the nap on woven fabrics in the British wool industry for hundreds of years. This mechanized teasel gig has frames of teasel heads fixed to a round drum, which turned in the opposite direction to the flow of cloth. Teasel gig (2808), Rochdale, England, date unknown.



Scraping a bunch of flax using the flint stone

whipping until the majority of the outer stem (shives) had fallen. This left the flax tangled and still with some debris present. The slowness of each part of the process was frustrating, and it didn't take long to realize that using a scraping stone would speed things up. After some experimentation, I settled on a process that worked quite well.

A flint stone works best, but any lightweight stone with a long, blunt edge or corner works. Start by grabbing a bunch of retted flax that you can comfortably hold and grip with one hand. Break the initial stiffness of the stems by bending all along the bunch, then work the tip end first with the stone in your strongest hand. Wrap the root end of the bunch around your other hand a few times to ensure you don't comb out large bunches of fiber from the middle of the bundle as you

work. Scrape toward the tip repeatedly, clearing your working surface of shives as you go.

Release more of the bunch to work as needed and give it a shake and a whip to release debris. Turn the bundle so that this time you can work from the middle of the bunch to the root end. The roots can be snapped off by hand (time-consuming but most effective), and then the stem can be scraped to the end using the stone. The stone has the advantage of aligning the fibers well at this stage. You want to use the stone to remove at least 60 to 70 percent of the stem material that encases the long flax fibers before moving on to the teasel for finishing. During the scraping, 20 to 30 percent is combed out as tow (short flax fibers) that can be put aside for coarser spinning.

HECKLING: TEASEL PROCESSING

The stiff teasel grows in abundance in the UK countryside, and, being a biennial, the plants are best used after they have died following flowering in their second year. Cut a flower head, leaving a few centimeters of stalk. Run a piece of leather up and down the stalk to remove the irritating spikes, and snap off the basal leaves below the flower. Drape the scutched flax over your leg and, using the teasel "upside down" to create less friction, comb downward briskly but lightly

Flax is an easy plant to grow and even a plot of 10 square feet would provide enough material to experience this rewarding and transformative process simply using hands and tools from nature.



The finished strick of flax with the scraping stone, stiff teasel, and balls of tow



From bottom to top: ball of handspun yarn, homemade stone spindle, unfired clay spindle, and modern spindle

(see page 44). Turn the teasel the other way round for coarser combing at the root end of the flax. Large tangles are best pulled out by hand if they can't be combed through.

Work until there is no debris left. During the teasel combing, another 20 percent or so comes away as incredibly soft tow. The remainder of the bunch is a beautiful and lustrous strick of flax, and it is at this point in the process that I understand why people use the phrase "flaxen hair."

By the end of the teasel combing, the flower head is worn and soft and makes the perfect brush for finishing off and almost polishing the strick. It is, however, now redundant as a heckling comb.

SPINNING

I have been spinning the flax as singles yarns with a thigh-spinning technique and using a number of homemade and modern spindles. I achieve my finest thread on a stone spindle, as it is a good weight, but the fastest implement by far is the modern spindle.

Overall, I have found that once the fiber is prepared and dressed onto a distaff, it is relatively easy to get to grips with flax spinning due to the natural twist in its growth pattern and the innate impulse in our fingers to twist things. Getting the fibers to that stage, however, is a science that is not very intuitive.

Flax is an easy plant to grow, and even a plot of 10 square feet (about 1 square meter) would provide

enough material to experience this rewarding and transformative process simply using hands and tools from nature. From sowing the seeds to spinning the yarn, the slowness of it all creates a pause for thought to consider the heritage of ancient crafts and technologies and to counter fast fashion with its devaluation of cloth. ●

Notes

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Steph Horak is an artist, vegetable grower, and experimental archaeologist. Together with her partner, she is cofounder of the Prehistoric Workshop, which explores ancient agriculture and crafts. Visit laarc.uk to learn more.

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Photos courtesy of Brother Drum Carder unless otherwise noted

A fleet of new drumcarders about to head out of the workshop

Gabriel Berukoff

Co-owner of Brother Drum Carder

How did you get into your craft?

Growing up on a farm in the beautiful Pacific Northwest, my brother John and I were always building wood projects. We worked in construction with our father for 14 years, which was a great experience. When the construction business we shared slowed down in 2007, we weren't sure what we would do next. It was then that our sister, Hanya, who was a spinner herself, came to us with a problem—her old drumcarder needed some TLC. So, we refurbished the machine, and, intrigued by this hand-cranked wood and steel instrument, we decided to build our own.

How did you shift from hobby to business?

Our first drumcarder was made for a friend who did not like his carder. We made a few more carders for family and friends, and orders skyrocketed from there. We started out with small hand-crank wooden carders

and small motorized carders and from there just kept adding to the collection: extra-wide options, pickers, and now the industrial-type wool-processing equipment. Our dream has always been to have our own business doing something we love. We were surprised to find out how large the fiber arts community is and how much of a demand there was. We feel blessed to be able to offer our products and make a living from it at the same time.

What is your favorite part of the process?

I have always enjoyed woodworking, so the part of



Courtesy of Long Thread Media

being in the shop and using my hands to create a product that someone can enjoy is very satisfying.

What would you like customers to know about your work?

We knew Patrick Green and Paula for many years, and in January of 2017, we asked them about purchasing the company, but Patrick did not want his own name on any carder that he didn't personally make himself. We understood that and respected his wishes. We agreed to purchase all of the Pat Green inventory of carders, with the agreement that we would build them under our name. We are very proud to continue creating these products and take great care and pride in them. Our customers can be sure that they're built with every bit of care and quality that Patrick had put into them. The Roving Machine (Paula's Rover), the Power Picker, and the Supercard XL (Elsa Card) are available.

What are your plans for the future?

We are building more mill-type fiber-processing equipment. We want to eventually have a complete mill setup to offer. In 2020, our brother, Ed, joined the company with his engineering and CNC programming skills, and he has been heading the mill equipment. Currently, we have a large Cottage Carder in the works that produces both large batts and roving.

With today's technology and the modern fiber world in mind, we have made some updates to the Patrick Green products. We continue to work hard and listen to our customers, continually improving our equipment.

Visit brotherdrumcarder.com to see more of Gabriel, John, and Ed's work.

We love the makers in our community! Is there a dyer, toolmaker, fiber producer, or mill we should feature? Tell us about your favorite makers—large or small—at spinoff@longthreadmedia.com.



The Brother Drum Carder Swinging Wool Picker is based on Pat Green's famous Triple Picker. See page 82.

The Classic Shetland Hap

Woolen Warmth and Shades from the North Sea

ELIZABETH JOHNSTON

Elizabeth starts a hap by knitting the narrow lace edging first, followed by the “quarters,” and then the center. She created this hap using handspun Shetland wool in natural color wool and hand-dyed indigo.

The hap is a warm, knitted textile created by generations of Shetland knitters before me and, hopefully, many generations to come. Exactly when haps were first knitted and used in Shetland is unknown. We do not know what the early knitted shawls may have looked like, but they have evolved into the classic hap we have today.

The hap is sometimes referred to as a “retro” garment, but if it needs a tag at all, “historic” would be a better descriptor. However, the hap is still in use today, so neither word is really correct. It is a historic garment, yet its design and its uses have changed through time. The design we have now has become, for the meantime, our classic hap.

In Shetland today, a hap is used to wrap round a baby to keep it warm. And that is what the word means—to wrap up warmly. However, until about one hundred years ago, a hap was a typical woman’s outdoor garment—in fact, worn in place of a jacket. Its use as such began to diminish as more clothes were available in shops and households had more cash money to spend.

Traditional haps were knitted in a single color and are beautiful as such, but often they were—and still are—worked with “color in the quarters” to create shaded haps. Our flocks include white but also any shade of gray—from a very light gray to Shetland black (black with a hint of brown)—and any shade of moorit

(a Shetland word for brown) from fawn to a dark brown. Our shaded haps were knitted with a palette of these natural colors through the quarters. Today, with the natural and chemical dyes we can use, the color possibilities in shaded haps are endless.

Speaking of Haps

In Shetland dialect, the archaic meaning of the word hap as a noun is “a covering of some kind”; as a verb, it means “to cover up” or “wrap up warmly.” On Shetland today, the meaning has not changed. Various resources tell us that *hap* is perhaps of Norse origin. This fits perfectly for a Shetland word as the Shetland dialect originates from Norn, which traces its roots back to Old Norse.¹

The word *hap* has become somewhat synonymous with the word *shawl*. However, haps and shawls are used differently, and the words originate in very different parts of the world. This is why Shetlanders

The construction of a Shetland shawl is the same as for a hap; the only difference is that our shawl is knitted with more complicated patterns in the design and is not—and never has been—an everyday outdoor garment.

would not use the term *hap shawl*, as is often used outside of Shetland.

Today the word shawl describes any shape of garment used to wrap round the shoulders. The original shawls were squares of woven cloth, and the word comes from the Persian word *sha-l*.² They would have been similar to cashmere shawls and Paisley shawls. Over time, a knitted square of fabric has also become a shawl. From a square, it has evolved to be a wrap of any shape. That is just evolution. The construction of a Shetland shawl is the same as for a hap; the only difference is that our shawl is knitted with more complicated patterns in the design and is not—and never has been—an everyday outdoor garment.

But Back to Haps

Haps start with sheep and their wool. The Shetland sheep is a primitive breed that has not been improved—that is to say, they have not been selectively bred to produce fleece of one quality as most other breeds have been. The breed, therefore, produces a range of fleece qualities, often in a single fleece. The qualities of fleece that an individual sheep grows are determined by its parents, the terrain it grazes, and the climate in the area. Thus, there are variations between those sheep grazing on the tops of the hills, eating heather and heathland grasses, and those grazing on greener pastures at lower levels in the landscape with more shelter from severe weather.

Originally, the yarn used in haps was handspun. Spinners made use of the different fleece qualities to create yarns for different types of garments and fabrics. Knitting yarns were produced as two-ply yarns. The



Mother and baby, each wearing a hap, circa 1910 in Hamnavoe, Shetland. Photo by J. H. Smith



Herring station at North Ness, circa 1890s (A00013). Photo by A. Abernethy

Courtesy of Shetland Museum and Archives

handspun yarns for knitwear were (starting with the finest): “fine lace,” used for a range of fine lacework; “lace,” the equivalent of our laceweight today; “spencer,” a little thicker and for underwear; and “hap,” a little thicker still and a yarn for—you guessed it—hops.

Commercially spun yarn from our sheep only became available—gradually—in the late 1800s and early 1900s. The mills spun the range of traditional yarns that had been handspun and also introduced a jumper-weight yarn. Later, the mills produced yarns such as DK, chunky, bulky, and Aran, which are terms that would be perplexing to many spinners of the past. Unfortunately, spencer- and hap-weight yarns are no longer spun, but jumper- and laceweight yarns still work well for haps.

Babies are still wrapped in haps. I knitted a hap for each of my children, each grandchild, and a great-grandchild. Most of these I knitted from my handspun yarn. My children will tell anyone, “You need a hap for a baby!” With a hap knitted in wool, babies can be wrapped up tightly or more loosely and always have room to move. Hands can be tucked in to keep warm

or to stop tiny fingers scratching little faces. They are great for strollers and car seats to keep babies warm or draped over as a sunshade. New babies will always feel as if they are being held when wrapped in a hap. The use of baby haps has not changed through time.

The way women use haps has changed over the last hundred years. It used to be an outdoor garment, and in a time when many worked on the family croft, it was worn while doing all sorts of outside work. Many women worked in the herring industry, gutting, salting, and packing the fish, and there are photos showing them wearing knitted haps and woven shawls. But a hap was worn as a woman’s jacket and not only as workwear, so there are also photos of women in haps just out shopping.

A woman’s hap is larger than a baby hap, as it is wrapped round the body. The square is first folded into a triangle, then placed over the shoulders. The ends or corners then cross over in front, go round the waist, and are tied in a knot at the back. The folded triangle is essentially a fabric on the bias, so the back

of the hap can be pulled over the head easily to give better cover. However, there are also old photos of haps worn just as headscarves.

Versatility keeps haps in use today. They are an accessory, a big scarf wrapped around your neck to keep you warm on a winter's day; a generous shawl for a long flight; a light layer in a shower of rain; a comforting blanket when you are ill; a colorful throw draped on a sofa or a bed—the list can go on.

Shetland Wool and Color

Shaded haps have color in the *quarters*, which refers

to the four knitted sections of a square hap that lie between the lace edging and the center. The old shell pattern forms a wave in the quarters, and adding color in the wave highlights the pattern beautifully.

The colors in the quarters can shade or contrast. In the past, this was mostly done with the natural sheep colors and shaded, light to dark or dark to light, into the center of the quarter, and then the colorway reversed in the second half of the quarter. Today, we are not limited to natural colors; we can use any color we want. The stripes used to be quite simple, usually with three garter ridges (2 rows = 1 garter ridge) in

Photo by Matt Graves



Knitting belts, or maakin belts, are used with double-pointed needles of varying lengths. Shown: knitting belt by BobNWeave and jumper-weight yarn by Jamieson & Smith

Maakin on Shetland

I thought I would give you a few of the Shetland knitting terms we still use today. You'll see that stitch markers are not on this list; we don't really use them. Some of us may use a piece of thread in the knitting but not on the needle. (Oh, and using "needle" sounds so wrong to me! It should just be "wire.")

- **Wires:** double-pointed knitting needles
- **Maakin belt:** knitting belt
- **Lay up:** cast on
- **Loops:** stitches
- **Cast up:** wool forward, yarnover
- **Intaks:** decreases
- **Riggies:** garter stitch
- **Open work:** lace
- **Spret:** frog, rip out
- **Grafting:** Kitchener stitch
- **Dressing:** washing and blocking



Courtesy of Shetland Museum and Archives

each color. Today, we can mix the number of garter ridges any which way and vary the colors to shade and contrast. The finished look, however, should be balanced: light and dark colors and bright or dull colors used relatively evenly through the quarter. I use a mix of natural colors and naturally dyed color in my haps, and I vary the number of garter ridges in each color.

The yarns and the use of haps may have changed, but the content of the yarn remains the same: wool. Created with wool, knitted in garter stitch, and designed with repeating holes in the lace patterning, these all contribute to the properties of the hap. Its first purpose is to be warm, but it can also keep you cool. Wool can absorb quite a lot of moisture without becoming damp, so wool worn next to the body helps to regulate body temperature.

Because haps are knitted in garter stitch, the spaces in between the ridges and the spaces made by the lace pattern create the insulation that gives warmth. The gauge is also loose enough that, when blocked, the ridges of the garter stitch lie almost flat, still leaving

that space but also opening up the knitted stitches, which adds to the hap's insulating properties. A square hap folded in half, as often used, only intensifies the insulation and thus the warmth. Yarn spun from carded rolags—woolen-spun yarn—increases the warmth of the hap. Yarn spun from combed wool—worsted-spun yarn—will give a hap a different drape when worn but is more typically used for shawls.

On the Needles

Haps are square, but some are now knitted as a triangle—a half hap. The construction for both full and half haps is mostly from the outside, but in a few areas in Shetland, haps were worked from the inside. The way it was done depended on who taught you. I learned to work from the outside.

Haps knitted from the outside start with the lace edge. It is the slowest part to knit, and I like getting that part done first. The shawl then consists of four sections, now referred to as borders but which were also called quarters (as in, there were four!). Despite

Haps are square, but some are now knitted as a triangle—a half hap. The construction for both full and half haps is mostly from the outside, but in a few areas in Shetland, haps were worked from the inside. The way it was done depended on who taught you.

being called quarters, they are worked two at a time. As each part of the hap is knitted flat, all the stitches are knitted—there are no purl stitches in the hap.

Within the construction, there are no cast-ons and no cast-offs. The start of the lace edge is a provisional cast-on—done any way you prefer—and from there, stitches are picked up from the long inside edge of the lace, and the quarters are knitted on from those stitches. The center is worked from one of the quarters. The center is then grafted to the other three quarters. As there is no cast-on or cast-off, the construction makes a perfectly fluid fabric for a hap (or a shawl).

A triangle shawl can be worked in the same way, the lace edge first, with stitches picked up along the long inside edge for two quarters, which are knitted at the same time. The center continues on from the stitches of the two quarters.

The size of a hap varies; baby haps are the smallest, and women's haps can be any size. The sizes were counted in scores, with a score being a count of 20. The old shell pattern is either a repeat of 19 or 20 stitches, so it fits nicely as a count of scores. A small baby hap would be 5-score, and a larger one would be 6- or 7-score. For a woman, a 5-score hap would be a good size just wrapped around more like a scarf or over the head—a head square. A 7-score hap fits neatly around the shoulders, and depending on your chest size, an 8-, 9-, or 10-score hap would wrap right around and tie at the back as worn in the past.

Double-pointed needles were—and mostly still are—the preferred choice for all Shetland knitters. When all the stitches are picked up on one long double-pointed needle, it does look as if it is too much for that one needle. However, before we start knitting those stitches, we pass a strong thread through the outside hole in each lace point, draw that tight, and attach the end to the band of the knitting belt, keeping all those stitches on the needle and under control. With this style of knitting, the right-hand needle is held in the knitting belt, and with that thread fastened to the belt as well, all the weight of the hap rests on the belt, leaving the knitter's fingers free to knit stitches. As in all things, it takes practice to become familiar with knitting using the knitting belt.

I find it irksome to see the lace pattern and the shawl sometimes called *old shale*, which is incorrect. This term came from the name being written as *auld shale*, *auld* meaning *old* and *shale* meaning shell, but should probably have been spelled *shael*. The name of the pattern is the old shell and is often called the hap shell. We have various shell patterns: the old shell, the new shell (or razor shell), and the cockle shell, but the old shell was the one used in haps; hence the pattern was referred to as the hap shell.

I hope this gives you insight into the historic, retro, iconic, or classic garment—however you envisage our Shetland hap—and that you perhaps knit one for yourself. ●

Notes

1. Laurie Goodlad, "What Is Shetland Dialect?" *Shetland: Islands of Opportunity* (blog), February 18, 2021, shetland.org/blog/shetland-dialect.
2. "Shawl," *Oxford English Dictionary*, 2nd ed. (1989).

Elizabeth Johnston is a Shetland spinner and knitter. She learned much of her craft as a child, observing and learning from family and friends. She uses these age-old skills, handed down through generations, to turn Shetland fleece into beautiful soft yarns and knitted Fair Isle and lace items in her business, Shetland Handspun. She is coauthor of *The Warp-Weighted Loom* and contributed to *Shetland Textiles: 800 BC to the Present*. Elizabeth has demonstrated, lectured, and taught workshops in spinning, lace, Fair Isle knitting, and natural dyeing in Shetland and throughout the UK, Europe, Scandinavia, and the United States. Learn more at shetlandhandspun.com and shetlandhandspun.blogspot.com.



Elizabeth's handspun hap made for grandson Keyaan

Shetland Old Shell Hap and Half Hap

ELIZABETH JOHNSTON

The Shetland old shell knitting pattern was—and is—so commonly used in the borders of Shetland haps that it became known as the hap shell. Haps are square, but some are now knitted as triangles—half haps. The construction for both full and half haps is mostly from the outside, but in a few areas in Shetland, haps were worked from the inside. The way it was done depended on who taught you. I learned working from the outside, and that is what I will share with you here.

This construction method was used to create a range of haps and shawls in different sizes—small for wrapping baby, larger for work wear—and with a range of yarns. Instructions are provided for three yarn sizes: jumper weight, laceweight, and two-ply fine lace (equivalent to cobweb). Thick yarns are best for a warm hap, while finer yarns produce a more delicate shawl.

Haps are worked in garter stitch, and once blocked, the lace motifs are best seen when the garter ridges lie flat. This works with a wool yarn, so suitable yarns for this textile are 100% wool or yarns with a high wool content.

As this is a very “Shetland” garment, I have used Shetland abbreviations. For a hole (yarnover) in lace, we say “cast up,” which is abbreviated “CU.” For decreases, we say “two together” and “three together,” which are abbreviated “2T” and “3T,” meaning k2tog and k3tog.

SPINNING NOTES

In my work, I use wool from Shetland sheep raised on Shetland. For a warm hap like the one shown here, I usually drumcard and spin in the grease. Spinning with a long draw creates a soft, lightweight woolen yarn that is then washed. Depending on the type of fleece or wool blend you want to use for a hap, you may find that the quantity of fiber needed will vary. Your yardage and weight does not have to be the same as mine (see page 65); different fibers,

preparations, and spinning methods create yarns that vary in grist.

I knitted this shaded hap using handspun Shetland wool in white, fawn, three shades of gray, and indigo blue. It was knitted for a grandson of mine. This hap with its particular sequence of shaded colors does not have a name, but if it needed one, it is Keyaan’s Hap. You do not have to follow the colors or the number of garter ridges in any color. You can select your own colors and decide on the design of the quarters yourself—that is part of the fun of knitting shaded haps.

MATERIALS

Fiber 100% Shetland wool, total 11¾ oz (334 g): light gray (MC), 5¾ oz (163 g); dark gray (CC1), 2 oz (57 g); 1 oz (28 g) of the following colors: medium gray (CC2), fawn (CC3), white (CC4), indigo blue (CC5).

Yarn 2-ply laceweight (3,380 ypp; 25 wpi), 850 yd MC, 340 yd CC1, 170 yd CC2, 90 yd each CC3 and CC4, 110 yd CC5.

Needles Size 3 (3.25 mm); haps are traditionally worked using two long double-pointed needles (dpn); a circular needle (cir) may be substituted. Adjust needle size if necessary to obtain the correct gauge.

Other Supplies Markers (m); spare wool for provisional CO; smooth, contrasting thread or thin yarn for holders; 7 yd (6.5 m) strong wool for blocking the square shawl.

Gauge 21 sts and 38 rows = 4" in garter st. Exact gauge is not essential for the success of this project.

Finished Size Square hap, about 48" (121.9 cm) square, after blocking.

Note: Materials are listed for the square hap shown in laceweight yarn. For adjustments to jumper-weight or 2-ply fine lace yarns or the triangle hap, see page 65.

Visit spinoffmagazine.com/spin-off-abbreviations for terms you don't know.

Notes

- Instructions are given in two sets of numbers. The first set is for the triangle half hap in jumper-weight (laceweight, 2-ply fine lace) yarn, and the second set is for the square hap in (jumper-weight, laceweight, 2-ply fine lace) yarn. If there is only one set of numbers or instructions, they apply to both the triangle and the square. Instructions in brackets [] apply to both shapes in all yarn sizes.

STITCH GUIDE

Two together (2T) K2tog.

Three together (3T) K3tog.

Cast Up (CU) Yarn over.

Quarters The four sections of the border.

Lace Edge: (stitch count varies; begins and ends with 6 sts)

Row 1 (RS) CU, k4, CU, k2—8 sts.

Row 2 (WS) K2, CU, k4, 2T.

Row 3 CU, k6, CU, k2—10 sts.

Row 4 K2, CU, k6, 2T.

Row 5 CU, k8, CU, k2—12 sts.

Row 6 K2, CU, k8, 2T.

Row 7 CU, k10, CU, k2—14 sts.

Row 8 K1, 2T, CU, 2T, k7, 2T—12 sts.

Row 9 CU, k7, 2T, CU, 2T, k1.

Row 10 K1, 2T, CU, 2T, k5, 2T—10 sts.

Row 11 CU, k5, 2T, CU, 2T, k1.

Row 12 K1, 2T, CU, 2T, k3, 2T—8 sts.

Row 13 CU, k3, 2T, CU, 2T, k1.

Row 14 K1, 2T, CU, 2T, k1, 2T—6 sts.

Row 15 CU, k4, CU, 2T—7 sts.

Row 16 K2, CU, 2T, k1, 2T—6 sts.

Rep Rows 1–16 for pattern.

Old Shell: (multiple of 20 sts)

Row 1 (RS) *2T 3 times, k1, [CU, k1] 6 times, 2T 3 times, k1; rep from * to end.

Rows 2–6 Knit.

Rep Rows 1–6 for pattern.

Quarters: (multiple of 20 sts + 51 decreased to multiple of 20 sts + 21)

See instructions below for how to work these directions for your chosen yarn weight.

Place markers (pm) to indicate the pattern repeats if desired.

Row 7 (RS) *CU, 2T, k4; work Row 1 of Old Shell patt (see Stitch Guide) over 120 (140, 160) sts working 20-st patt rep 6 (7, 8) times, k5; rep from *.

Rows 8–12 (counts as Rows 2–6 of Old Shell) *CU, 2T, k129 (149, 169); rep from *.

Rows 13–18 Rep Rows 7–12 once more.

Row 19 *CU, 2T, k5, 2T 3 times, k1, [CU, k1] 5 times, 2T 3 times, k1; work Row 1 of Old Shell patt over 80 (100, 120) sts working 20-st patt rep 4 (5, 6) times; 2T 3 times, k1, [CU, k1] 5 times, 2T 3 times, k7; rep from *—multiple of 20 sts + 49.

Rows 20–24 *CU, 2T, k127 (147, 167); rep from *.

Row 25 *CU, 2T, k4, 2T 3 times, k1, [CU, k1] 5 times, 2T 3 times, k1; work Row 1 of Old Shell patt over 80 (100, 120) sts; 2T 3 times, k1, [CU, k1] 5 times, 2T 3 times, k6; rep from * once more—multiple of 20 sts + 47.

Rows 26–30 *CU, 2T, k125 (145, 165); rep from *.

Row 31 *CU, 2T, k4, 2T 3 times, k1, [CU, k1] 4 times, 2T 3 times, k1; work Row 1 of Old Shell patt over 80 (100, 120) sts; 2T 3 times, k1, [CU, k1] 4 times, 2T 3 times, k6; rep from *—multiple of 20 sts + 43.

Rows 32–36 *CU, 2T, k121 (141, 161); rep from *.

Row 37 *CU, 2T, k4, 2T twice, k1, [CU, k1] 4 times, 2T 3 times, k1; work Row 1 of Old Shell patt over 80 (100, 120) sts; 2T 3 times, k1, [CU, k1] 4 times, 2T twice, k6; rep from *—multiple of 20 sts + 41.

Rows 38–42 *CU, 2T, k119 (139, 159); rep from *.

Row 43 *CU, 2T, k4, 2T twice, k1, [CU, k1] 3 times, 2T 3 times, k1; work Row 1 of Old Shell patt over 80 (100, 120) sts; 2T 3 times, k1, [CU, k1] 3 times, 2T twice, k6; rep from *—multiple of 20 sts + 37.

Rows 44–48 *CU, 2T, k115 (135, 155); rep from *.

Row 49 *CU, 2T, k4, 2T twice, k1, [CU, k1] 3 times, 2T twice, k1; work Row 1 of Old Shell patt over 80 (100, 120) sts; 2T twice, k1, [CU, k1] 3 times, 2T twice, k6; rep from *—multiple of 20 sts + 35.

Rows 50–54 *CU, 2T, k113 (133, 153); rep from *.

Row 55 *CU, 2T, k4, 2T twice, k1, [CU, k1] twice, 2T twice, k1; work Row 1 of Old Shell patt over 80 (100, 120) sts; 2T twice, k1, [CU, k1] twice, 2T twice, k6; rep from *—multiple of 20 sts + 31.

Rows 56–60 *CU, 2T, k109 (129, 149); rep from *.

Row 61 *CU, 2T, k4, 2T twice, CU, k1, CU, 2T twice, k1; work Row 1 of Old Shell patt over 80 (100,



Square hap. Learn more about the half-hap version of this pattern on our website: LT.Media/Half-Hap.

120) sts; 2T twice, CU, k1, CU, 2T twice, k6; rep from *—multiple of 20 sts + 27.

Rows 62–66 *CU, 2T, k105 (125, 145); rep from *.

Note: For jumper-weight yarn only, the quarter pattern now is complete; see special instructions in the directions for how to continue in jumper weight. For laceweight and 2-ply fine lace yarns, continue as follows:

Row 67 *CU, 2T, k4, 2T, k1, CU, 2T twice, k1; work Row 1 of Old Shell patt over __ (100, 120) sts; 2T twice, CU, k1, 2T, k6; rep from *—multiple of 20 sts + 23.

Rows 68–72 *CU, 2T, k__ (121, 141); rep from *.

Row 73 *CU, 2T, k4, 2T, k1, CU, 2T, k1; work Row 1 of Old Shell patt over __ (100, 120) sts; 2T, CU, k1, 2T, k6; rep from *—multiple of 20 sts + 21.

Rows 74–78 *CU, 2T, k__ (119, 139); rep from *.

Row 79 *[CU, 2T] __ (60, 70) times, k1; rep from *.

Row 80 *CU, 2T, k__ (119, 139); rep from *.

INSTRUCTIONS

Lace Edge (for all haps)

With spare wool, CO 6 sts, and knit 1 row. Break spare wool.

Join main yarn and knit 1 row.

Work Rows 1–16 of Lace Edge pattern from chart or written directions (see Stitch Guide) 34 (40, 44) (68, 80, 88) times, ending last repeat with Row [14] [16]—6 sts rem; 542 (638, 702) (1,088, 1,280, 1,408) rows total.

Place sts on thread holder. Do not break yarn.

First Quarters

The quarters are worked two at a time. For the triangle half hap, you will work only one pair of quarters over the full length of the lace edge. For the square hap, you will work the first pair of quarters over half the length of the lace edge, followed by a second pair worked over the remaining half of the lace edge.

With WS of lace edge facing, pick up 271 (319, 351) (272, 320, 352) CU edge sts (two quarters' worth)

along straight selvedge; these loops are simply placed on the needle, not picked up and knitted. Using yarn attached to lace edge and WS facing, knit these sts tbl. Turn work so RS is facing.

Begin working Quarters pattern for all yarn weights as follows; if there is only one set of numbers, it applies to both the triangle and square:

Row 1 (RS) CU, 2T, k134 (158, 174) while dec 5 (9, 5) sts evenly, CU, 2T, k133 (157, 173) (134, 158, 174) while dec 4 (8, 4) (5, 9, 5) sts evenly—262 (302, 342) sts rem.

Rows 2–6 *CU, 2T, k129 (149, 169); rep from *.

Continue according to your yarn weight as follows from the Quarters pattern written directions (see Stitch Guide) or the Quarters chart. The 74-row chart corresponds to Rows 7–80 of the written pattern. When following the chart, work the entire chart over the first half of the sts, then work the entire chart again over the second half of the sts.

Jumper Weight

Work Rows 7–66 of Quarters patt—214 sts total; 107 sts each half.

Continue as follows:

Row 67 *CU, 2T, k3, 2T twice, CU, 2T twice, k1; work Row 1 of Old Shell patt over 80 sts; 2T twice, CU, 2T twice, k5; rep from *—202 sts; 101 sts each half.

Rows 68–72 *CU, 2T, k99; rep from *.

Row 73 *[CU, 2T] 50 times, k1; rep from *.

Row 74 *CU, 2T, k99; rep from *—74 rows total; 202 sts; 101 sts each half.

Laceweight

Work Rows 7–80 of Quarters patt—80 rows total; 242 sts; 121 sts each half.

2-Ply Fine Lace






Work Rows 7–12 of Quarters patt twice.

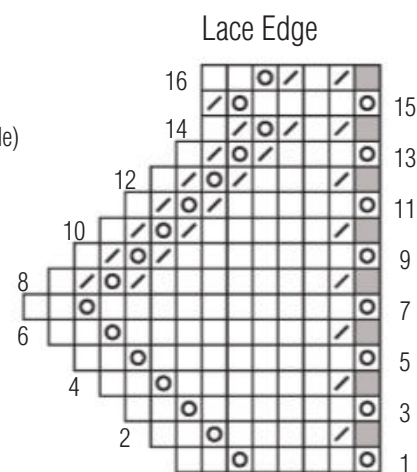
Work Rows 13–80 once—86 rows total; 282 sts; 141 sts each half.

All Yarn Weights

For the triangle, the two quarters are complete; skip to Triangle Center (*right*).

Key

-  knit on RS and WS
-  2T on RS and WS (see Stitch Guide)
-  CU (see Stitch Guide)
-  no stitch
-  repeat



For the square, break yarn, leaving a tail about 30" (76.2 cm) for sewing the opening between the two sets of quarters later, place sts on holder, and continue with second set of quarters as follows.

Second Quarters

With WS of lace edge facing, pick up 272 (320, 352) CU edge sts from the second half of the lace edge; these sts are simply placed on the needle, not picked up and knitted. Join yarn with WS facing, and knit these sts tbl. Turn work so RS is facing. Continue according to your yarn weight as follows:

Jumper Weight

Work Rows 1–74 as for first pair of jumper weight quarters—74 rows total; 202 sts; 101 sts each half.

Laceweight

Work Rows 1–80 as for first pair of laceweight quarters—80 rows total; 242 sts; 121 sts each half.

2-Ply Fine Lace

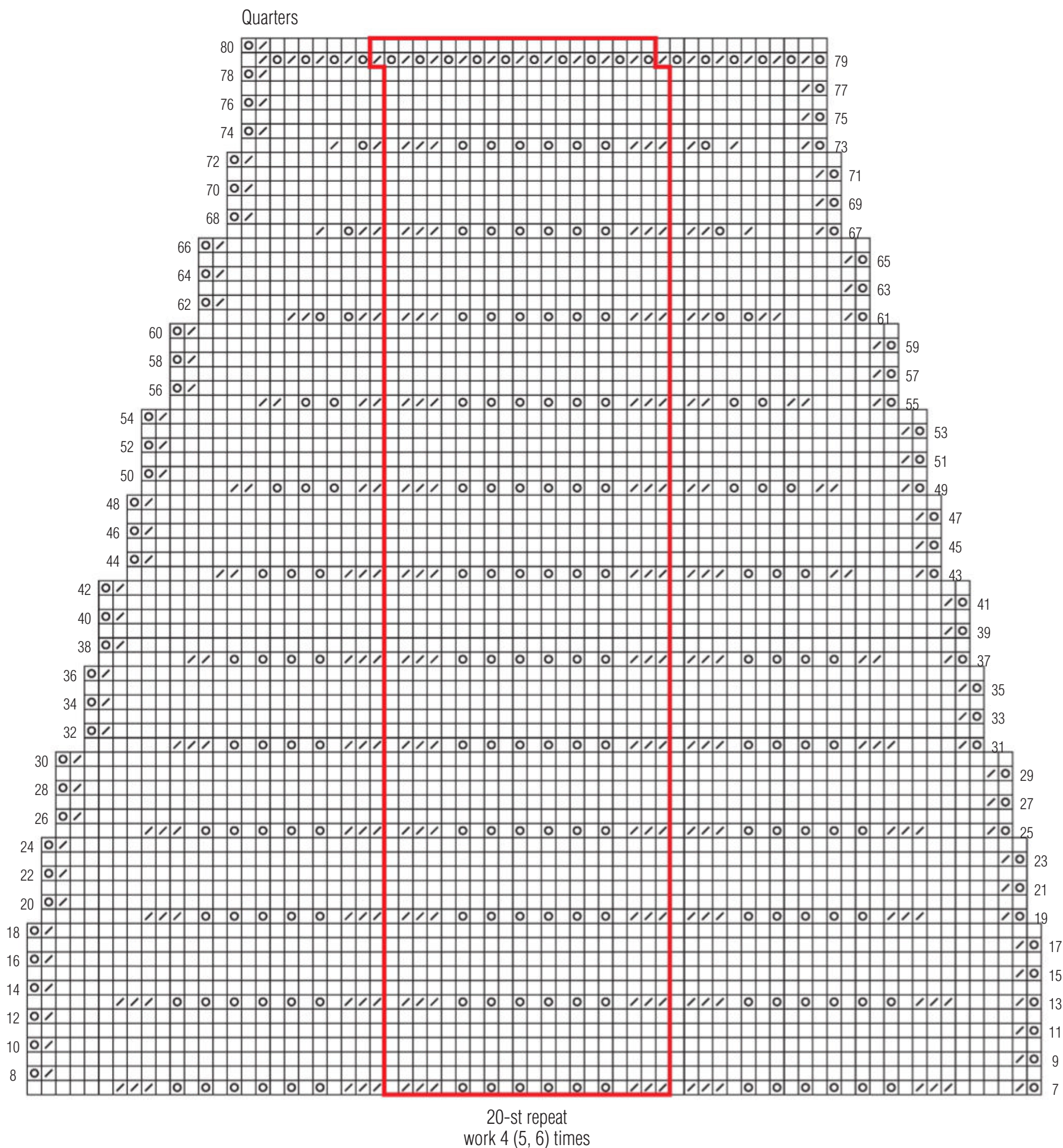
Work Rows 7–12 of chart or written directions twice, then work Rows 13–80 as for first pair of 2-ply fine lace quarters—86 rows total; 282 sts; 141 sts each half.

All Yarn Weights

With RS facing, place the last 101 (121, 141) sts on holder, leaving the first 101 (121, 141) sts on needle. Skip to Square Center below.

Triangle Center (half hap only)

Continue on 202 (242, 282) sts (101 [121, 141] sts each half) with yarn attached as follows:



Shading Pattern for Keyaan's Hap

Rows 1–6 Dark gray (CC1).

Rows 7–8 Blue (CC5).

Rows 9–14 Medium gray (CC2).

Rows 15–20 Light gray (MC).

Rows 21–22 Blue (CC5).

Rows 23–28 Fawn (CC3).

Rows 29–32 White (CC4).

Rows 33–34 Light gray (MC).

Rows 35–40 Medium gray (CC2).

Rows 41–42 Blue (CC5).

Rows 43–48 Dark gray (CC1).

Rows 49–54 Medium gray (CC2).

Rows 55–56 Blue (CC5).

Rows 57–62 Light gray (MC).

Rows 63–68 Fawn (CC3).

Rows 69–72 White (CC4).

Rows 73–74 Blue (CC5).

Rows 75–78 Dark gray (CC1).

Rows 79–80 Light gray (MC).

Next row *CU, 2T, k97 (117, 137), 2T; rep from *—2 sts dec'd.

Next row *CU, 2T, k96 (116, 136), 2T; rep from *—2 sts dec'd.

Next row *CU, 2T, k95 (115, 135), 2T; rep from *—2 sts dec'd.

Continue in this manner, working 1 less st between the pair of 2Ts in each half every row, until 8 sts rem.

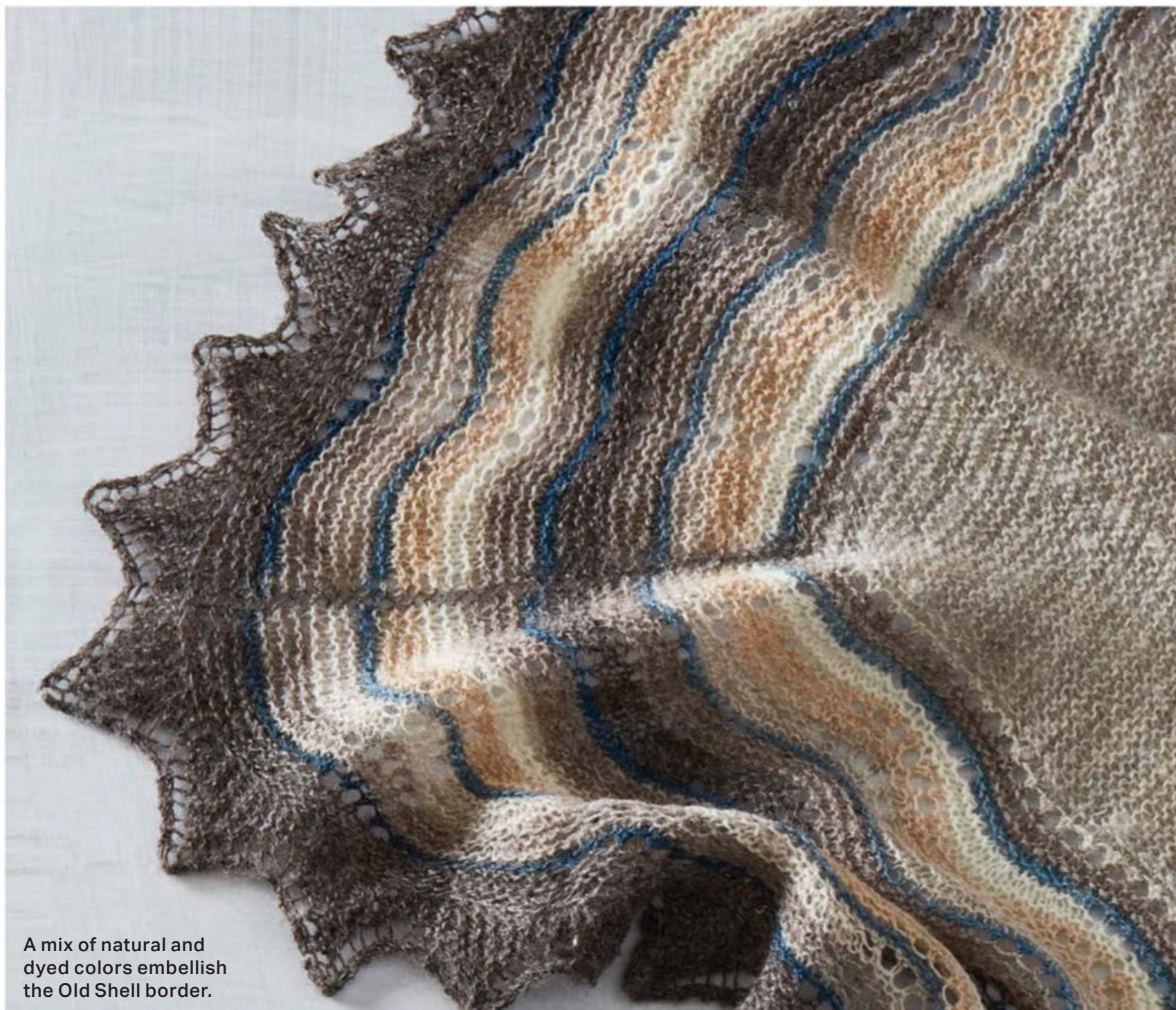
Next row *CU, 2T twice; rep from * once more—6 sts rem.

Next row *CU, 3T; rep from * once more—4 center sts rem. Place 4 sts on hold.

Break yarn.

Top Edge (triangle half hap only)

With RS facing, carefully remove spare wool from 6 sts of lace edge CO and place these sts on a needle, pick up 87 (100, 113) CU edge sts across half of top edge of hap (first Quarter and one side of the center), pick up the 4 sts on hold at the end of the center, pick up 87 (100, 113) CU edge sts across the second half of top edge of hap (other side of the center and second Quarter), and slip 6 sts of the lace edge from holder onto the needle; these loops are simply placed on the needle, not picked up and knitted—190 (216, 242) sts. Rejoin MC and with RS facing, knit 6 lace edge sts, knit the next 87 (100, 113) picked-up sts tbl while increasing 4 (5, 5) sts evenly, work center 4 sts as



A mix of natural and dyed colors embellish the Old Shell border.

Yarn and Needle Requirements

Total quantity of yarn required for square haps [half haps]

Jumper weight: 1,560 yd, 15½ oz (440 g); [780 yd, 7¾ oz (220g)].

Laceweight: 1,640 yd, 7¾ oz (220g); [820 yd, 4 oz (110 g)].

2-ply fine lace (equivalent to cobweb): 1,560 yd, 4¼ oz (120 g); [780 yd, 2¼ oz (60 g)].

For half haps, calculate 50% of the quantities above, plus about 30 yd for the top edge.

Yarn required for 1 garter ridge (2 rows) for all 4 quarters

- Jumper weight, 24 yd.
- Laceweight, 22 yd.
- 2-ply fine lace (equivalent to cobweb), 19½ yd.

Needles

Jumper weight, size 6 (4 mm); laceweight, size 3 (3.25 mm); 2-ply fine lace, size 1 (2.5 mm). Haps are traditionally worked using two long double-pointed needles; a circular needle may be substituted. Adjust needle size to obtain the correct gauge.

[k1tbl, k1] twice, knit the next 87 (100, 113) picked-up sts tbl while increasing 4 (4, 5) sts evenly, then knit 6 lace edge sts—198 (225, 252) sts.

Row 1 (WS) K1, 2T, knit to last 3 sts, 2T, k1—2 sts dec'd.

Row 2 (RS) K1, 2T, *CU, 2T, k1; rep from * to last 4 sts, CU, 3T, k1—2 sts dec'd.

Row 3 Rep Row 1—2 sts dec'd.

Row 4 K1, 2T, *CU, 2T, k1; rep from * to last 3 sts, CU, 3T—2 sts dec'd.

Rows 5 and 6 Rep Row 1—186 (213, 240) sts.

BO all sts loosely. Weave in ends.

Square Center (square hap only)

With RS facing and with the yarn that is attached, work on the first 101 (121, 141) sts on the needle. The remaining sts can be placed on hold.

All Rows (RS and WS) Sl 1 kwise, k to end.

Rep this row 200 (240, 280) more times, ending with a RS row—201 (241, 281) rows total.

Using the yarn attached, graft the live sts in garter st at the top of the square center to the corresponding section of the held sts of the first quarters section. Pick up the slipped sts along one side of the square center and graft them in garter st to the held sts of the corresponding quarter, then graft the other side of the square center to the rem quarter in the same manner.

Carefully remove spare wool from 6 sts of lace edge CO, and graft in garter st to the 6 held sts at the end of the lace edge.

Using herringbone stitch, join the two open sections between the quarters.

Weave in ends.

FINISHING

Before wet-finishing, thread a length of strong wool through the eyelet hole at the tip of each lace point on all four sides of the square, or through the tip of each lace point on two sides of the triangle plus the outermost row of holes along its top edge.

Wet-finish by handwashing and rinse in hand-hot water. Wrap in a soft towel and press to remove as much water as possible. Stretch as far as possible and pin to shape on carpeted floor or mattress, pinning into the strong wool threaded around the outer edges. Allow to dry completely before removing the pins. ●

For more details on creating a half-hap version, visit our website: LT.Media/Half-Hap.

Elizabeth Johnston is a Shetland spinner and knitter. She learned much of her craft as a child, observing and learning from family and friends. She uses these age-old skills, handed down through generations, to turn Shetland fleece into beautiful soft yarns and knitted Fair Isle and lace items in her business, Shetland Handspun. She is coauthor of *The Warp-Weighted Loom* and contributed to *Shetland Textiles: 800 BC to the Present*. Elizabeth has demonstrated, lectured, and taught workshops in spinning, lace, Fair Isle knitting, and natural dyeing in Shetland and throughout the UK, Europe, Scandinavia, and the United States. Learn more at shetlandhandspun.com.

Two-ply Merino fractal gradient created using six dyed wool tops and a small amount of red eri silk

Photos by Matt Graves unless otherwise noted

Create Fractal Rolags on a Blending Board

HEAVENLY BRESSER

Experimenting with color and creating interesting color combinations are two things I absolutely love. My mind generously flows with ideas for managing color, from the preparation stage all the way to the final yarn. I tend to embrace colorplay without caution, viewing it as inspirational and therapeutic. One of my favorite ways to embrace color is by creating dynamic fractal yarns.

In our spinning world, a fractal yarn has a plied structure and self-stripping effects. These colorful skeins start when a whole colorway arrangement is divided into sections, each of which retains the same colors in the same sequence as the original. Some sections are divided further while others are not, and all are spun and plied in a way that maintains the original color arrangement. The result is a complex self-stripping yarn.

The most common way to create fractal yarns is using commercially prepared combed tops that have been hand-dyed in multiple colors. To prepare for fractal spinning, a hand-dyed top is pulled into strips, which adjusts the length of each color when spun into singles. There are special considerations for these tops due to the uniqueness of color intensity, color arrangement, and quantity of each color provided within a particular colorway. Because the colors are already provided in dyed top, the spinner's control of color placement (without removing or rearranging colors) is somewhat limited.

One way to have greater control over color placement and quantity is to create a unique colorway using fiber-processing tools and equipment, such as drumcarders, handcards, and blending boards. We have many options for creating fractal yarns using dyed top, batts, and rolags, but here, I'll focus on making unique fractal rolags using a blending board.

A fractal is a mathematical term coined in 1975 by the famous mathematician Benoit Mandelbrot. One way to define a fractal is as a curve or geometric figure, each part of which has the same statistical character as the whole. Fractal geometry can be found in nature and human biology: lungs, succulents, trees, lightning strikes, and much more.

CREATE A LOFTY SAMPLE

First things first—you'll need a blending board. A blending board is a large wooden portable surface with a carding cloth fixed onto it. It's a simple idea, but the board design and type of carding cloth vary by manufacturer. A standard carding cloth is usually about 12 inches (30.5 centimeters) square, and the number of teeth per inch (tpi) is usually between 72 and 108, but some options are available outside of that range. There are many technical factors that impact how a particular carding cloth will feel, so you should try several blending boards before purchasing if possible. (See page 20 to learn more about carding cloth.)

Sampling is an important step in creating successful fractal rolags because it will ensure the fibers pair well with the processing equipment. It will also help you create rolags that are enjoyable to spin! It is a small

Sampling Checklist

- *Compatibility*—How does the fiber respond to the carding cloth? Is it difficult to smooth down gently? Is it difficult to remove from the blending board when creating a rolag? For example, is there a lot of stubborn fiber left behind?
- *Spinnability*—How easy or difficult is it to spin the rolag? Is it just right or too airy (or too dense) for the preferred drafting method?
- *Repeatability*—Is the layout easy to replicate?



investment in time and fiber and provides the perfect opportunity to play, discover, and adjust if necessary.

You will need fiber, a small brush with soft bristles to help apply the fibers to the cloth, two dowels (or equivalent) to remove the rolags, and a precise scale. I

recommend starting with commercial combed top for first-time fractal rolags because it is readily available, comes in a wide range of solid colors, and is consistently prepared. For the first sample, you only need one color.

There are multiple ways to apply fibers to a blending board, and it is best to use the method that makes you happy and comfortable. In the past, I have struggled to find a good method for applying light layers of fiber that result in lofty rolags. After experimenting with a lot of fiber over the course of a few months in 2020, I finally developed my favorite way to apply fibers to the carding cloth. I first presented this method to my students during the 2021 Maryland Sheep and Wool online festival and jaws dropped. Before the session ended, students were raving about the ability to use a new method on the blending board. If you are aiming for lofty fractal rolags, this is how to sample.

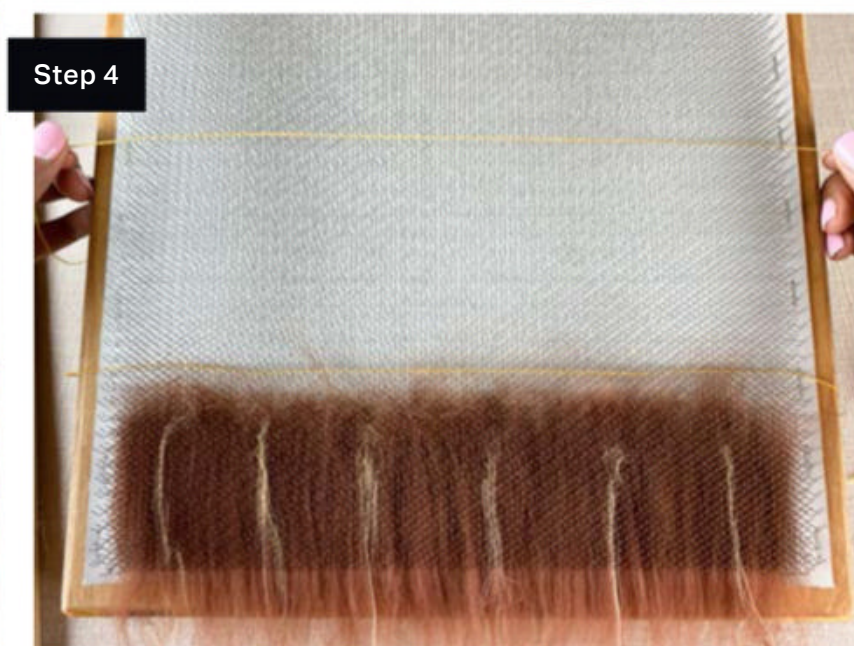
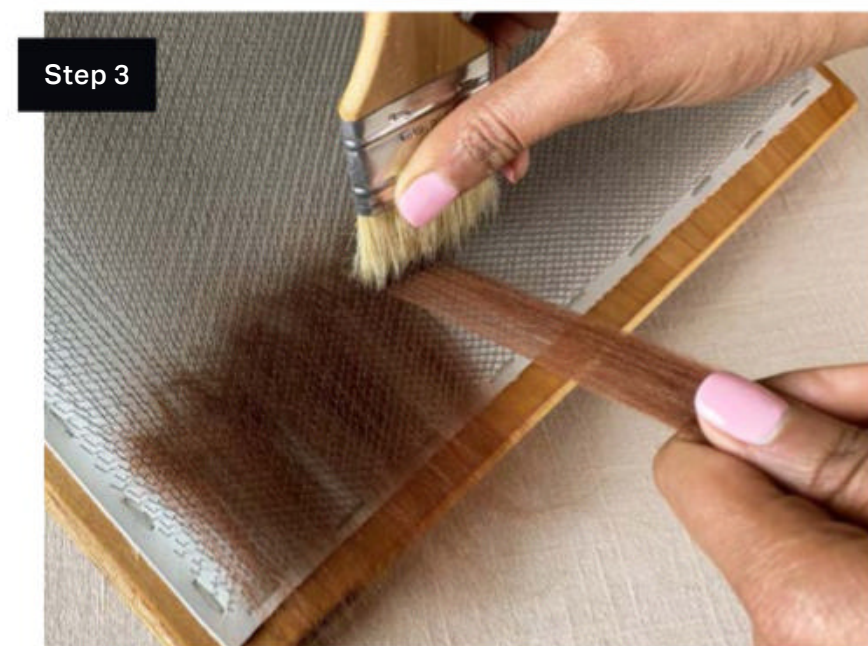
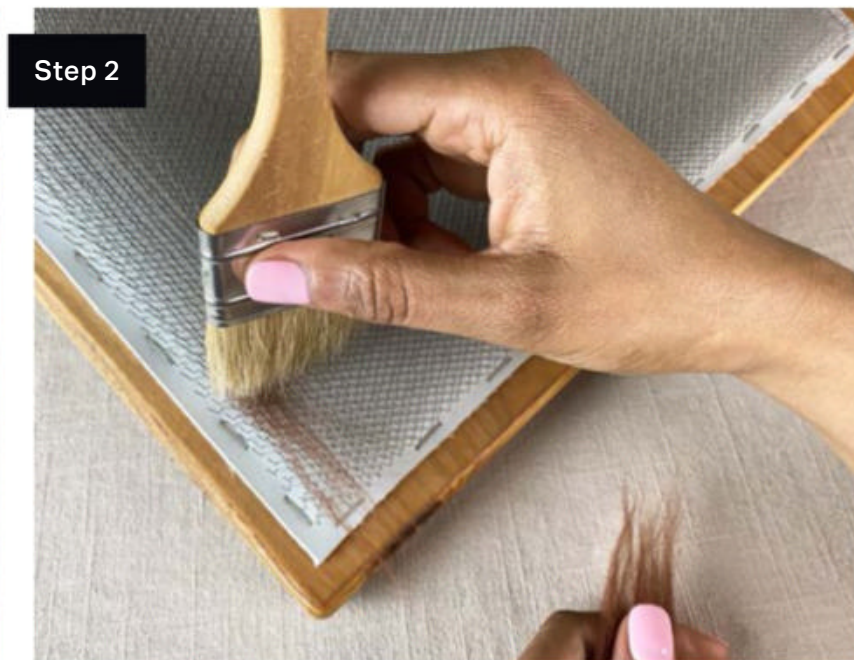
Heavenly's Sampling Process

Begin with a small sample of fiber; one color will do. This should be the same fiber that will be used in the final fractal yarn. I am using Merino top dyed in solid colors here. Make note of the staple length of the fiber. Plan for the fibers to hang about 1½ inches (4 centimeters) beyond the bottom row of teeth for ease of removal.

Step 1: Separate a small strip of combed top—about a thumb's width. Starting at the bottom edge of the blending board, position the tips of the fiber onto the teeth using the bristled brush to anchor the tips to the board. Hold the fibers at a 45-degree angle from the blending board. Your fiber hand should be farther away from the board (over half the staple length of the fiber), while your other hand gently presses the brush into the cloth, securing the fiber tips.

Step 2: Give the combed top a quick tug while maintaining pressure on the brush. Allow fibers to draft out of the combed top. Use the brush to gently smooth fibers onto the cloth. (Do not use a wire burnishing brush to smooth down fibers.)

Step 3: Start applying the fiber to the blending board from left to right (or right to left, if preferred) to create a row of fiber at the bottom end of the board. Fill in any empty spaces with more fiber. For lofty rolags, I like to add enough fiber to the board to fill one-third to



Each row represents the workspace for one rolag. Continue applying fiber evenly onto the cloth, working up the board for as many rolags as you would like to sample.

Step 5: Remove the fiber from each section using two dowel rods (or equivalent) to create a rolag. Weigh the rolag and start spinning the sample. While spinning, be sure to make note of how the rolag holds up. If it is too airy and completely collapses, then use more fiber for the next sample. If it is too dense and refuses to draft comfortably, then use less fiber for the following sample. If the fiber is difficult to spin regardless of the adjustments, simply choose a different fiber to sample.

This initial sampling stage is complete when the rolags you are creating are comfortable to spin. Be sure to record the weight of the sample rolag.

one-half of the teeth height. If you are sampling add-in fibers, apply them using the same brush technique.

Step 4: Once the sample row is complete, use a spare yarn or thread to “divide” the carding cloth into rows.



Courtesy of Heavenly Bresser

Preparing the blending board for bobbin A

PLAN YOUR FRACTAL

Now that the fiber and capacity of the blending board have been tested during sampling, it is time to choose colors. A color wheel is a handy tool for choosing colors. If you are unsure, I recommend working with analogous colors (a cluster of hues that sit next to one another on the color wheel) for the first set of fractal rolags. Be sure to select a minimum of three colors.

How much fiber will you need? Let's revisit the information from the sample rolag. The weight of this rolag will indicate how much fiber can be comfortably placed on a horizontal "row" of the blending board. For example, if my sample rolag weighs about 0.11 ounces (3.1 grams) and I have three rows to create rolags on my blending board, then I will plan to make three rolags using a total of about 0.33 ounces (9.3 grams) of fiber to fill my board.

It is also a great idea to consider the capacity of your spinning equipment—spindles, bobbins, and so on—while planning. I recommend working with a maximum of 2 ounces (about 57 grams) in the first fractal skein.

TWO-PLY GRADIENT FRACTAL

A two-ply gradient fractal is easy to create using what I refer to as the 1:2 or "1 by 2" method. To create this, gather all the colors intended for a fractal, decide on the desired proportion of each color and the color sequence, and weigh out a total of 2 ounces (56.7 grams). For my fractal yarn, I chose six colors of Merino top arranged in a gradient and red eri silk as a subtle add-in fiber to use throughout.

To prepare for a 1:2 fractal gradient, split each fiber component in half, creating two identical piles of fibers. Set aside the first half (for the first ply, bobbin A). Next, the other half should be divided once more (for the second ply, bobbin B) in the same way. Divide each fiber component to create two smaller identical piles of fiber.

Now you are ready to apply fiber to the board: Take the first set of fibers (bobbin A) and start applying rows of fiber onto your blending board with a fiber density that is as close as possible to the sample rolag. Use all of the first color as you fill the

rows before moving on to the next color. The colors can change mid-row. Once the board is filled, remove each individual rolag. Continue filling the board in the same manner, maintaining the color order and creating rolags until you've used all of the first pile of fibers.

Repeat this process for the second set of fibers (bobbin B). Because this set was divided in half, you will work through the established color order in the gradient twice. This second set contains the same amount of fiber as the first, but you'll see the colors transition

twice as fast. Once the second set of fibers is prepared into rolags, you are ready for spinning.

Spin the rolag sets in order for bobbins A and B and then ply into a two-ply yarn. You will start to see how the colors will flow for your gradient fractal, but knitting or crocheting a swatch will allow you to see the true effect.

Heavenly's Sample

I planned the two-ply gradient fractal shown here in three steps. I first created the solid-color sample



Bobbin A rolags (*left*) transition from brown to navy blue. Bobbin B rolags (*right*) transition from brown to navy blue twice. When spun onto two bobbins and plied, a gradient fractal yarn will result.



Sweet rolags and the finished 2-ounce skein

to estimate the weight. Next, I prepared a 0.5-ounce (14-gram) sample and decided to spin singles measuring about 28 wraps per inch (wpi) on my Lendrum folding wheel. I used the fast flyer ratio 12:1 and spun with a supported-long-draw technique. I plied my singles with soft ply twist—a 20-degree ply angle. The resulting yarn was very airy and lofty, so I knitted a swatch with size 4 (3.5 mm) knitting needles to see how the fractal striping would take shape.

Because I enjoyed the overall look of the fractal, I decided to keep the color sequence and create a larger 2-ounce skein. This time, the singles would measure between 38 and 40 wpi, and the final yarn after finishing measured 26 wpi. The yarn is still airy but more consistently spun than the original sample. The larger skein yielded 425½ yards, which is 3,404 yards per pound. I haven't decided what I want the yarn to be

when it grows up, but I am extremely pleased with the final yarn!

I hope this encourages you to give gradient fractal rolags a go. It is such a fun way to get to know your fibers and equipment and to experiment with color. Happy spinning! ●

Resources

Laidman, Janel. "The Fractal Stripe: One Method for Controlling the Striping of Painted Roving." *Spin Off*, Summer 2007, 80–84.
IBM. "Fractal Geometry." *IBM 100: Icons of Progress*. ibm.com/ibm/history/ibm100/us/en/icons/fractal.

Heavenly Bresser is the proud owner of Heavenly Knitchet and loves teaching handspinning and dyeing workshops. Some of her areas of passion include exploring color, working with fleece, and repairing spinning wheels with hopes of discovering historical information. Heavenly currently has a herd of almost 50 spinning wheels. Feel free to reach out to her through her website, heavenlyknitchet.com.

VIDEO COURSE

Create Fractal **Stripe Effects**

FROM BOLD TO BRILLIANT

Spin your favorite batts
and braids of dyed top into
incredible colorful yarns
with self-striping effects.



Spinning Fractal Yarns with Heavenly Bresser

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LT.Media/SpinFractals

long thread
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Photos by Matt Graves unless otherwise noted

Handcard & Diz

An Unexpected
Pairing for
Smooth Prep and
Color Effects

KIM MCKENNA

A new use for your handcards. Diz by Tine and Floyd, and Corriedale top in Tea Leaves from SweetGeorgia Yarns

When I first learned to spin, I purchased four pieces of equipment: a Lendrum spinning wheel, a kate, a niddy-noddy, and a set of handcards. In my fever to produce more yarn more quickly, I soon abandoned the handcards in favor of a drumcarder. In hindsight, I set the handcards aside before having fully explored all they had to offer.

Like many spinners, I thought that handcards were only used to turn short-staple fibers into rolags. As it turns out, this is just one of their many uses.

Handcards can also be used with medium- to long-staple fibers to produce long lengths of dizzed sliver that are a dream to spin. Add handpainted combed tops to the equation, and the possibilities for creating complex and interesting color effects are staggering. Gradients and fractals are just two of the many color effects I prepare using one handcard and a diz.

Many spinners spin straight from beautifully dyed braids that can prove challenging if the handpainted commercial combed top has become slightly compacted from shipping, packaging, or dyeing. This is why some spinners prefer to predraft their fiber. Predrafting loosens the fibers, making drafting easier and spinning more consistent. But predrafting by hand can lead to thick and thin spots, especially if the fibers are compacted. Loading fiber onto a handcard and drawing it through a diz loosens, attenuates, and funnels the fibers into an airy, easy-to-spin sliver.

TOOLS & BASIC TECHNIQUES

When doffing (removing) fiber from handcards, I prefer a diz that is balanced, lightweight, and either dish- or cone-shaped. I also like the orifice to be shallow-channeled and smooth-lipped. The orifice size depends on the grist of yarn I wish to spin (smaller orifices for finer yarns and larger orifices for thicker yarns).

Handcards are traditionally used in pairs, but you'll only need one for this technique. Clamping the handle of the handcard to a table keeps it stationary and leaves both hands free to manipulate the fiber and diz. I use a curved-back style of card with teeth roughly 1½ inches (3.8 centimeters) in height. The curved contour makes the fiber a bit easier to remove with a diz. If you own flat-back cards, you will need to adjust the technique slightly. Some handcards have really short teeth that are not conducive to this particular technique.

A detailed explanation of how fiber for gradients and fractals is organized and loaded onto a handcard is explained a little later on. Once the fiber is loaded onto the handcard, give a few gentle strokes to the fringe of fiber extending from the front of the card, coaxing it into a triangle shape. With the diz held vertically and the concave side facing the card, thread the diz with fibers from the tip of the triangle. Begin

to diz the fiber from the handcard, holding the diz a little lower than the card so that the fibers are drawn through the carding cloth. My draft length while dizzing is directly proportional to the length of the staples I am working with: longer fibers, a longer draft and shorter fibers, a shorter draft. I use both hands to draft as follows:

Handcards are traditionally used in pairs, but you'll only need one for this technique. Clamping the handle of the handcard to a table keeps it stationary and leaves both hands free to manipulate the fiber and diz.



Photo by Kim McKenna

- Use the thumb and index finger of Hand A to grasp the fiber at the orifice with a firm pinch from side to side and draw the fiber back a half staple length. The diz will move back with the fiber as you pull toward you. If using a lightweight, well-balanced diz, you need not hold onto the diz, just let it sit on the fiber.
- While still pinching with Hand A, slide the diz forward with Hand B a half staple. Then, pinch the fiber at the orifice with Hand B, but this time, pinch from the top and bottom. Draw the fiber back with Hand B as before.
- Slide the diz forward with Hand A and repeat these steps.

As you work along the length of fiber, you can change the angle of the diz and fiber being removed. The bent angle of the teeth and the curve of the card make it possible to hold the fiber under some tension. Disengage the original strip of top from the carding cloth as needed to move it forward so you can work comfortably. Ensure the combed top is not twisted along

its length; it should lie straight on the carding cloth. How often you adjust the original fiber source, how much fiber you allow to hang over the edge, and more can be adapted for different fibers and what works best for you. Protect your back and try not to hunch over while working. Try a higher working surface if needed.

SPECIAL COLOR EFFECTS

To share how these techniques can be used to create different color effects, I prepared, spun, and knitted two pairs of fingerless mitts. Both are created with a handpainted braid (and contrasting undyed white). One pair is knitted with a gradient yarn and the other a fractal yarn. I hope this will help you see the many possibilities one beautiful braid can offer.

Gradient Yarn Preparation

Many handpainted tops that have repeating colors or nongradient color placements can be reconfigured to create a gradient yarn. The term gradient refers to the



Kim isolated seven colors from her handpainted braid and organized them from light to dark.



Gradient Quick Guide

1. Handpainted top is pulled into color sections.
2. Create batts that mix each color; remove from the card.
3. A narrow strip of the batt is reloaded (not shown).
4. Diz a narrow strip of the batt.
5. Continue working this way until all of one color is processed, dividing into piles for each ply.
6. Spin and ply your gradient.
7. Enjoy!

To see this technique in action, head to [LT.Media/Diz-Handcard](https://www.littletony.com/LT.Media/Diz-Handcard).



1

2

3

4

Fractal Quick Guide

1. Handpainted top is prepared into strips following your fractal design.
2. Load each strip onto a handcard and diz.
3. Spin and ply your fractal.
4. Enjoy!

yarn's gradual fading or shifting from one color to the next, either tonally or into other hues.

First, you need to decide which colors you will isolate from the braid and the color progression you wish to create. Pull the chosen colors from the braid and place them in their respective piles. I ended up with seven piles of color. You will notice when a color is pulled from the braid, the tip of either end contains a blush of the neighboring color. These bits of other colors will be blended in the next step, creating complex solids.

Working with each color pile separately, load the fiber onto the handcard. Take hold of a length of fiber and lash it onto the teeth at the heel end. As you draw the fiber across the cloth towards the toe end, encourage the fiber to bed down into the cloth. To ensure each color is well blended, apply layer upon layer of the thinnest wisps of fiber.

Once the handcard is full, the batt is removed and divided in two, one for each ply if creating a two-ply yarn. After completing this color-mixing step, the new solid color needs to be dizzed. Pull a strip from the batt and reload the fiber onto the handcard in a strip about 1½ inches (4 centimeters) wide. The fiber is now ready to be doffed from the handcard with a diz as explained on page 76. Repeat this for all of the fiber and then spin for each singles in color order. Ply the singles to create a gradient yarn.

Fractal Yarn Preparation

Fractals consist of different scales of color repeats within the same yarn. In a two-ply, for example, one ply will have long color repeats and the other ply shorter repeats of the same colors. (For more on fractals, see page 66.)

To construct a two-ply fractal yarn using a handpainted braid or section of a braid, the length of the top is first divided lengthwise into two sections: think of these as Strip A and Strip B. Strip A will create long shots of color for the first ply. For the second ply of the fractal yarn, I want Strip B to create shorter color repeats, so it is stripped into thinner lengths. My fractal yarn here is a 2/9, which means Strip A was split into two long pieces and Strip B was split into nine long pieces. The number of times

The Ever-Useful Diz

Kim loves exploring new combinations of fiber preparation tools and techniques. She wrote a previous *Spin Off* article covering the finer points of wool combing and dizzing, as well as a fun tutorial on dizzing off of a blending board. We created companion videos for both of those techniques so you could see them in action, and you can find them on the Long Thread Media YouTube channel. The method shown for handling a diz in Kim's combing video is the same as described here for dizzing from handcards.

—Editor

- McKenna, Kim. "Wool Combing and the Importance of Planking." *Spin Off*, Fall 2020, 40–45.
- "Dizzing: How to Remove Fiber from Wool Combs with a Diz," YouTube, LT.Media/Diz-Comb.
- McKenna, Kim. "Diz Is How I Use the Blending Board." *Spin Off*, Spring 2022, 46–50.
- "Diz from a Blending Board," YouTube, LT.Media/Diz-BB.



Kim prefers a lightweight diz with a centered hole.

Fractals consist of different scales of color repeats within the same yarn. In a two-ply, for example, one ply will have long color repeats and the other ply shorter repeats of the same colors. This creates complex striping patterns where some color changes shift slowly while others change quickly.

each section is divided is up to you, but to create a plied fractal-yarn effect, at least one of the singles needs to be spun from fiber stripped more times than the other plies.

Each of these prepared strips of top are ready to place onto the handcard. Hold one strip over the carding cloth with 1 to 2 inches (2.5 to 5 centimeters) hanging over the toe (front) edge (see page 75). Seat the fiber into the carding cloth by lowering it onto the teeth and jiggling slightly to encourage the fiber to bed down securely into the carding cloth. Diz the fiber from the handcard as described on page 76. When the fiber is almost exhausted from

the section of top secured to the handcard, or if the fiber on the carding cloth begins to buckle, it is time to lift and reposition. Grasp the heel end of the top with one hand, the toe end with your other hand, lift the fiber out of the teeth, and reseal it farther forward. Thinner strips of top need to be repositioned more often.

Spin the components of Strip A onto one bobbin and those of Strip B onto another bobbin. Once plied, long shots of color nestle against shorter color repeats in the two-ply yarn. This creates a subtle striping effect in the knitted fabric.

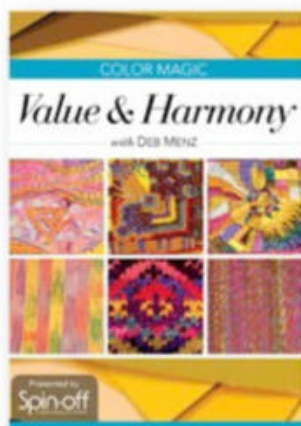
PROJECT PLANNING

When planning a project, the scale of the textile and amount of fiber needed will impact how you might choose to prepare your fiber. A pair of fingerless mitts might require about 1½ to 2 ounces (about 45 to 60 grams) of handspun, so I first select sections of dyed top of about that weight. If I want to spin for a pair of mitts that are somewhat similar to one another, I prepare and spin two 1-ounce (30-gram) lengths containing the same color repeat. The mitts will never be exactly alike, but they will relate well to one another.

In addition to eye-catching color effects, this technique has a few other benefits. This fiber prep adds a bit of loft to worsted-spun yarns. The technique helps to open the fiber in handpainted braids, which can be slightly compacted and difficult to draft depending on the dyeing process. This method is quicker than attenuating fiber by hand. Finally, doffing the fiber from the carding cloth with a diz results in a consistent sliver, which, in turn, makes for more consistent handspun yarn. I hope you are encouraged to dust off your handcards and explore color and preparation in a new and playful way. ●

Curiosity is what propels **Kim McKenna's** fiber journey. She constantly strives to improve her fiber preparation and spinning skills. Kim teaches workshops through SweetGeorgia Yarns, both in-person as well as through the online School of SweetGeorgia. She also teaches silk-spinning workshops through Sanjo Silk. You can follow her at claddaghfibrearts.com and on Instagram @claddaghfibrearts.

On Our Bookshelf



Color Magic
Value and Harmony

Deb Menz

Video, learn.longthreadmedia.com

GET THIS

DIZZES

Photo by Matt Graves



❶ Uncle Kolya's lightweight eight-hole diz is easy to hold and provides plentiful options for a variety of roving thicknesses. unclekolya.etsy.com



❷ The five-hole dizzes crafted from hardwoods by Tine and Floyd feature a smooth, convex shape that helps funnel fibers into your sliver. tineandfloyd.etsy.com



❸ With curled feet that provide a place to comfortably pinch while dizzing, Creative with Clay's ceramic diz is available in five luscious colors and pairs nicely with their colorful orifice threaders. creativewithclay.com



❹ Made of solid wood with a lacquer finish for durability, this beautiful diz from CF Merchantile has three orifice options and is designed to easily fit in your hand while drafting. cfmerchantile.etsy.com

Is there a great product you would suggest for Get This? Contact us at spinoff@longthreadmedia.com.

A wooden swing picker machine is shown in operation. The machine has a wooden frame with two vertical supports and a horizontal bar at the top. A wooden seat is positioned between the supports. A large, fluffy mass of white wool is being processed by the machine. A warning label on the side of the machine reads "DANGER KEEP CLEAR". The machine is set against a light-colored, textured wall.

Wool Pickers

Friend or Foe?

JURATE GERTZBEIN

Swing picker

Photo by Jurate Gertzbein

The sun's rays glanced off the vegetative matter in the gray wool top I was hand picking. My slow labor was interrupted by an email with an invitation: Would I write an article about the use of the wool picker with a variety of fleece types? Yes! My mind instantly went to my Patrick Green Triple Picker and shed full of fleeces. Why would I hand pick when I have a machine to do it?

The swing picker is a specialized tool for processing fleeces that have been skirted and scoured; it is not intended for fiber that has already been through a carding or combing process. The two main goals of picking are to open up the fiber by disarranging the fibers to create air spaces and to drop most of the vegetative matter (VM) out of the fiber. Commercial-scale wool mills have machines that open washed fleeces in a similar way, but the design, speed, and effect are very different. Swing pickers and box pickers are used on a smaller scale, primarily for preparing fibers for carding, and that's what I'll discuss here.

Make sure to leave a space between the upper and lower sets of nails. Your fleece needs space to roll around a bit as it is pulled by one set of nails after another, moving from the picker's input side to the output side.

A picker can also be used as a first step in blending together different fiber types or varied colors. As with a carder, the more times you run the fiber through the picker, the more mixed—or homogeneous—it becomes. If you intend to use an entire fleece for one spinning project, you likely want the most homogeneous product at the start of spinning. Spending some time pulling the washed fleece into smaller chunks and mixing wool from different parts of the animal will

Picking for Spinning: Dos and Don'ts

- **Do** use a picker to blend colors, fibers, and different parts of a fleece.
- **Do** try spinning straight from the picked cloud!
- **Do** adjust a picker (if possible) for different fibers.
- **Do** look under your picker and marvel at the pile of VM removed!
- **Don't** use a picker with very sticky, very greasy, or felted wool.
- **Don't** pick tender fibers or fleeces with a break (weak area).
- **Don't** continue picking if you hear fibers tearing.
- **Don't** ever use a picker when tired or distracted.

Photo by Jurate Gertzbein



Nails point in different directions to open the fiber as it passes through the picker.

save you time later. Place the mixed fleece in a large basket to one side of the picker, and then your time at the picker will be short; just grab and pick. The picked cloud that results can be mixed further before carding and spinning.

While picked cloud is usually an intermediate preparation, it is possible to go right from the picker to spinning! In many cases the fiber is so well opened that no further prep is needed. You will be able to spin from the cloud. Using a swing picker is a pretty fast process—much faster than carding or combing.

HOW DOES IT WORK?

When clean wool is fed into a picker, two sets of angled nails pass near each other and grab the outer portion of the compressed fleece. The sets of nails are moving in opposite directions and act to separate and open up the locks and clumps. Just as with handcarding, the tines should not be touching; the nails should be set at a small distance from one

A picker isn't a great option for all fibers. I don't advise using raw fleeces with your picker. If you try to run a greasy fleece through, it will gum up the works. The VM will be attracted to the grease and stick on all the surfaces.

another. To be most effective with a variety of fiber types, the picker should be adjustable and allow you to change the distance between the upper and lower nails.

When getting used to a picker, it is best to start with a wide gap between the tips of the nails and feed only a small amount of fiber in at a time. If you find that the fiber exiting the machine is not opened up very much, adjust the upper bed to a lower position a small



The top row shows fibers before picking; the bottom row shows the samples after picking. From left: Romney, Corriedale, Finn cross (first and second pass), and Dorset cross

increment at a time. If you can hear sounds of the fiber pulling and tearing or if the upper bed jams, your nails are likely set much too close. Too much fiber can also cause these problems. With practice, you will soon learn the optimal amount of fiber to feed at a time. If the swing is difficult to move, your clump was too large.

A picker will remove a lot of vegetable matter but not all of it. However, for most types of fiber, picking removes significantly more VM than a drumcarder or handcards. Periodically, you will have to stop sending fiber through and clean debris out of the lower nail bed. A brush with long bristles works well. Just blowing on the grit and VM that has not fallen through the waste slot in the center also works.

A picker isn't a great option for all fibers. I don't advise using raw fleeces with your picker. If you try to run a greasy fleece through, it will gum up the works, literally. The VM will be attracted to the grease and stick on all the surfaces. This will obstruct the smooth movement of the fiber through the picker. Then you

will have quite the time trying to clean the grease out. Tender fibers and fleeces with breaks in the locks are not good candidates for picking. Examine your locks before starting; if you can easily tear the lock with your hands, the picker will, too.

PUTTING A PICKER TO THE TEST

As a retired scientist, I was excited to set up a series of samples to test how favorably different wools respond to the picking process. I tested a wide variety of fiber from sheep breeds and a few other fiber animals: Romney, Corriedale, Finn cross, Dorset cross, alpaca, and mohair. I also explored a few extras: raw and felted Cotswold, raw Lincoln Longwool, a blend of Finn cross with mohair, and a blend of alpaca with Romney. All the fibers were washed (unless stated otherwise), and I used my Patrick Green Triple Picker (see page 50) for all samples.

The Romney wool was somewhat compressed with average VM (long grass). Minor second cuts were



The top row shows fibers before picking; the bottom row shows the samples after picking.
From left: alpaca, mohair, Cotswold, and Lincoln Longwool

difficult to see, and the tips of the locks were stuck together. Picking worked well to open this fiber evenly. The second cuts became easy to see. A large piece of second cut rolled backward out of the picker and down the infeed tray. Some small grit and VM fell out in the picking. There was no damage to the fiber. I would be happy to go to the spinning wheel with this cloud.

The Corriedale wool was slightly compressed and possibly felted. It contained a huge amount of VM. The tips still held on to a bit of grease, even after washing. The picker action removed about one-quarter of the VM, and there was a small tearing or pulling sound. Some jamming of the swing action occurred. I could not see any nepps or noils. One second cut fell into the bottom of the nail bed. The picker opened the fiber very well, even the tip portions. Some minor locks exited the picker without being opened.

The Finn-cross sample contained a moderate amount of VM. It was about half locks and half loose fibers, with all locked together in a cobweb-like mass.



Finn-cross and mohair blend: unpicked (top) and picked (bottom)

During the first pass, a lot of the Finn stuck to the upper nail bed and much of the fiber passed through the machine without being picked, still holding most of its original VM. The result appeared like fine cotton balls held together with fine strands. I adjusted the upper nail bed so that the teeth were just touching. Then I backed off one-third of a revolution on each wing nut to create a small gap. After the second pass, there was still a lot of fiber caught in the upper teeth. A bit more fine grit fell out but not much of the longer VM. The lock structure was opened and disorganized. The cotton ball appearance was still there, and the mass felt very spongy with good body. I could also see a few second cuts after this second pass.

The Dorset cross was quite compacted after washing. Clumps up to fist-sized were present. Only a trace amount of VM was present, but minor second cuts were obvious. If I teased open the locks by hand, I could see more second cuts. Tips displayed a minor crispy feel. After picking, the multicolored aspect of the fleece was less evident. All the tips and locks opened up. The uniform cloud was very springy when squeezed. I could still see VM, and the second cuts were easier to see and remove. There was no sign of breakage of the fibers.

The alpaca had no grit, little VM, and was about 60 percent compressed. After picking, it opened up very nicely and evenly. A few locks were still preserved after processing, but even they were opened up better than before. The resulting fiber cloud could go straight to the spinning wheel.

The adult mohair contained minor VM, formed compact masses, and had some yellowed tips that were still supple. Portions of this fleece were hard to pull apart. After picking, the yellow spots were largely broken up and not visible. The open wavy lock structure was still quite evident. Very little VM remained. No tears or breaks were seen in the picked fiber.

I then wanted to try some more challenging fibers. I picked an unwashed Cotswold fleece with minor lanolin, a lot of sand/silt, and a high VM count. Tips were very crispy, and there were weak sections in the locks that would break when pulled. During the picking, I felt significant resistance as bigger clumps got

caught on both nail beds. I heard a bit of tearing noise. Significant jamming of the picker occurred. Dust clouds rose as I worked. After picking, the machine and table were very dirty. In places, there was almost a half inch of dirt, VM, and broken fiber. Most of the broken fiber was at the leading and tail ends of the lower nail bed. The top nails were full of longer fibers, and those were not as broken. It took about 20 minutes to clean the picker before the next use.

The second challenging fiber was Lincoln Longwool. This fleece was unwashed and very heavy with lanolin. The color was yellow to orangey yellow. The long locks were very tightly matted. I could not see a lot of VM. Locks appeared to be about 10 inches long but were hard to separate. During picking, there was some jamming and tearing. After picking, the color was still yellow, but the orange tint was gone. No VM was found in the machine. The wavy lock structure was still somewhat present, and it was too greasy to separate to examine well. I thought I could see three or four torn chunks that had the appearance of second cuts. Overall, it did have a good cloud development.

Next, I decided to test the capability of the picker to blend two different fibers. First, I combined the Finn cross with kid mohair. The kid mohair had some burrs, but almost no other VM. The fleece was dusty and not washed. To perform the blending, I pulled off an equal-size portion of each fleece and tossed the two chunks in the picker together. At the end of the picking, a bit of fiber was still left in the teeth. The appearance of the blend was of little clouds with lustrous strands in between. Less than half of the fiber was actually blended, but the picking was a good first step. It would have to go to a carder for more blending. The Finn-cross locks were mostly opened up. A lot of dust lay on the picker at the end.

I also ran a mixture of alpaca and Romney through the picker. I used the same batches of fleece as above. I tossed equal amounts into the machine at the same time. The resultant mass was not totally blended, and I could easily see that due to the color difference. A minor amount of grit fell out and hardly any VM remained (just long pieces). A nice, open, soft cloud

resulted. Very minor tip definition remained. I could go straight to spinning with this product.

Results

It was interesting to analyze all these fiber types in the span of a few days. The best results were from washed fiber. Heavily compressed fibers will jam the action of the picker and lead to tearing. I found that the fibers with short staple lengths did not open up as evenly as the medium and longer fibers. A second pass could be helpful in some cases.

The picker may be able to replace carding in a few cases, but mostly it is a preliminary step that effectively removes a lot of VM and really opens up the fiber. The added benefit of the technique is that it is simple and fast. This machine is a friend! ●

Fun has been the main goal in life for **Jurate Gertzbein**. After retiring from a career as an exploration geologist, she added spinning and weaving to her love of knitting and sewing. Knowing how to do things "from scratch" is fun and fulfilling.



Alpaca and Romney blend: unpicked (top) and picked (bottom)

The 2023 *Spin Off* Lace-Along

Each January, we invite handspINNERS to join us for a spin-along. This year, we challenged intrepid handspINNERS of all skill levels to spin for lace. Our cheerful community of makers took up the challenge and created some amazing knitted-, crocheted-, and woven-lace textiles.

I'm grateful to these spinners for creating such inspiring work but also for allowing us to share their projects and thoughts here. We only have space to share a few of the many great projects, and you can find more on our website. I've already added three or four of these patterns to my project queue, and I hope you will, too!

And a special thanks goes out to our spin-along leader, Stefanie Johnson! Stefanie is a frequent Spin Off contributor, fiber farmer, maker, and public health professional.

—Kate Larson, editor



All images are courtesy of the makers

It started with two beautiful silvery batts of kid mohair and silk I won in a drawing on Ravelry (thank you, Lois!). I used that for the lace. Allons-y! Fiber Arts does beautiful long gradients in the softest wool: New Zealand Haunui Halfbred and silk. I chose the pattern Long Johns and Lace by Pacasha Younger for its simplicity (to highlight the gorgeous colors) and textures (seed stitch and the openwork of the lace). The shawl has it all: great drape, incredible softness, loads of texture, and lovely soft colors.

—Jenifer Ebel



I set an easily achievable goal for myself for this year's lace-along: to spin a three-ply sock yarn and knit the Green Lake Socks pattern by Kristi Schueler. My original plan was to draft green sari silk and Leicester Longwool locks alongside one of the plies to add some pops of green to my spin, but just before the spin-along started, I decided to blend the green fibers into carded, dizzed roving instead for a smoother spin. I was so pleased with my yarn that I knitted up the socks in 10 days while starting another spin. These annual spin-alongs really jump-start my wheel every year.

—Stefanie Johnson, Illinois

For my bobbin lace project, I used Leicester Longwool locks, purchased raw. I washed, flicked, and combed the locks, then spun singles Z and plied S on my Lendrum Folding Wheel. Five yards of yarn was wound on each of the 44 vintage lace bobbins, and I wove the scarf using the bobbin-lace technique. The pattern is an enlarged version of a bookmark designed by Ann Wild from *The Small Friendly Spider Book* from the Lace Guild of England.

—Denise Duda



This scarf is a variation on the Skipping Stones Cowl by Stephanie Erin. I shortened the rows and made a long scarf rather than a cowl because I thought it would work better with the yarn I spun. The yarn is a Merino wool top blended with sari silk. My wonderful sister, Stefanie Johnson, blended the fiber for me, and I spun it on my Schacht Ladybug Wheel.

—Emily Born

Spin-Along 2024
Would you like to participate in our next spin-along? We'll kick off 2024 with a new challenge for our fiber folks in February—stay tuned!

The inspiration for this lace scarf was a braid of silk/Merino top hand-dyed in the colors of the Ukrainian flag. I separated the colors and spun them on my Turkish spindle at 32 wpi, ending up with a laceweight two-ply. There wasn't enough blue in the braid for my pattern, so I spun some Merino in a closely matching blue and plied that with the silk/Merino. Evelyn Clark's Icelandic Long Shawl pattern showcases the color blocks.

—**Martha Driscoll**



I created two lace-along projects. Van Gogh's *Starry Night Over the Rhône* was the inspiration for this semicircular Starry Night shawl, which was also a stash-busting project. I love how the variety of colors and fibers blended together gives a painted effect in the finished shawl.

For my second project, I wanted to create an everyday cardigan that was also something special. I started with a base of oatmeal-colored BFL and tussah silk, and then I drumcarded that with Merino in all my favorite colors and plenty of gold Angelina. Not only was it a learning experience to control the width of stripes on the sleeves and body, but it is indeed a sweater that is soft, comfortable, and magically coordinates with everything I wear!

—**Jennifer Miller**

Have a finished object to share? Tell us about it! Contact spinoff@longthreadmedia.com to submit your project.

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Curved handcards

Photos by Tiffany Warble

Four Handcarded Preparations

KATE LARSON

I love and collect handcards the way that many of my friends collect spindles. New cards, antique cards, flat or curved, they are all unique and do different jobs well. However, if you have not fallen in love with the pursuit of the perfect rolag, you are not alone.

Some spinners I meet feel they are struggling to get the hang of carding, while others just don't like spinning rolags (a woolen preparation). I love spreading the good word that you can use your cards to create a wide range of preparations, and trying additional techniques can help you practice. The more time you spend with cards in your hands, the more comfortable you will be with the process. Here are four preparations to try.

Cloud

"Carded cloud" varies, but it generally means that fibers have been opened, somewhat blended, and have

no particular arrangement. Cloud is joyously unorganized! Simply begin carding, work until the locks are opened or reach your preferred level of blending, and doff (remove the fibers from the cards). Most yarns spun straight from cloud have more texture and halo than more organized preps.

Woolen

This is the most common fiber preparation spinners make with their handcards. After fibers have been carded until smooth, roll the rolag from the tip of the card toward the handle. Spin this tidy tube from one end, creating an airy, woolen yarn.

Semiworsted

This is a wonderful technique I learned from Norman Kennedy. After carding your fibers until smooth, begin rolling your rolag from one edge of the carding cloth to the other, sideways. This aligns the fibers as it would for a worsted-type preparation.

Worsted

This method is different than the previous two and only prepares one lock at a time. Hold a lock firmly at

one end and pull the other end through the carding cloth. Flip the lock and pull the other end through the teeth. Make a few more passes if needed to prepare the middle of the lock. You can spin this from either end for a perfectly smooth, worsted preparation. I especially love this method for handpainted locks or for processing challenging fleeces, such as tender tips or a lot of vegetable matter. ●

Resources

Kennedy, Norman. *From Wool to Waulking: Spinning Wool and Creating Cloth*. Video. learn .longthreadmedia.com.

Larson, Kate. "Flicking and Combing Painted Locks." *Spin Off*, Spring 2012, 88–91.

Kate Larson is the editor of *Spin Off* and spends as many hours as life allows in the barn with her beloved flock of Border Leicesters.



For a woolen preparation, Kate rolls the fiber from the long edge of the card to the handle.



Instead of rolling from front edge to handle, roll into a little bundle from one edge for a semiworsted prep.



Hold a lock firmly in the center, and drag one end through the carding cloth at the top edge of the carder. Turn the lock around and do the other end, and you are ready to spin!



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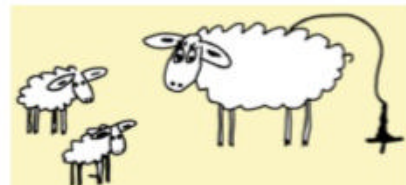
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Black River Falls, WI 54615
(715) 284-4590
fibergarden.com

The Woolgatherers

Weaving studio and fiber shop. Makers of DutchMaster table looms, spinning stools; Weaving, spinning, fiber, knitting, needlework—convenient downtown location. Individual instruction. Books. Gallery. Fine Fabrics.
35 N. Main St.
Fond du Lac, WI 54935
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www.woolgatherers.com

WYOMING



**The
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House**

The Fiber House
146 Coffeen Ave
Sheridan, WY 82801
Vendors for Schacht, Ashford, and Kromski wheels and looms. Supplies for all fiber arts needs. Individual and group classes. See our website for more.
(877) 673-0383
thefiberhouse.com

AUSTRALIA

The Lucky Ewe
50 High Street
Oatlands, TAS 7120
402 149 404
www.theluckyewe.com/

CANADA

Indigo Hill
26 Main St East
P.O. Box 963
Vankleek Hill, ON K0B1R0
(613) 306-1834
indigohilldystudio.ca

Sisterhood Fibres
567 Sand Point Rd
Tatamagouche, NS B0K 1V0
(902) 483-3715
www.sisterhoodfibres.com

JAPAN

Kakara Woolworks
580 Yagami
Akaiwa-shi, Okayama-ken
709-0734
Japan
+81-(0)86-995-9988
kakara-woolworks.com

UNITED KINGDOM

George Weil & Sons
Old Portsmouth Rd
Peasmarsh, Guildford GU3 1LZ
United Kingdom
01483 565 800
www.georgeweil.com

The Handweavers Studio and Gallery
140 Seven Sisters Road,
London N7 7NS
020 7272 1891
handweavers.co.uk

Weft Blown Ltd
17 Ailsa View
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Maker: Dia Robinson of Twisted Urban Fiber Arts
Where to find them: [twistedurban.etsy.com](https://www.twistedurban.etsy.com)
Tool: Brother Drumcarder 90 tpi



Photo courtesy of Dia Robinson

Photo by Matt Graves

When I sit in front of the drumcarder to create a batt, I think of myself as a painter preparing to embark on this incredible journey with the fiber as my paint and the drumcarder as my canvas. Many of my ideas for colorways come from sources such as photos, music, and books. Sometimes the colorways are designed for a specific theme, such as holidays, the seasons, or whatever strikes my imagination at the time.

One of the biggest things I do as an artist is to make sure that I stay open to all inspiration and push myself to try different color combinations that one wouldn't normally put together, keeping the process of creating unique colorways interesting, which allows me room to continue to grow and push the envelope as a fiber artist. ●