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HANDWOVEN

September/October 2023

Luminous E Lustrous

RADIANT PROJECTS

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Stunning
Light-Catching
Scarves

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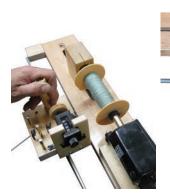
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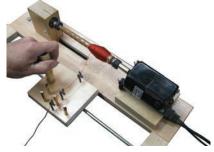
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Toshiko Taira: Reviving a **Cultural Tradition**

BETH ROSS JOHNSON

In 1946, Toshiko Taira's love for weaving, dyeing, and a unique bast fiber took her from Tokyo back to her childhood home in Okinawa. There, she worked tirelessly to revive bashōfu. In 2001, Beth traveled to Okinawa to meet Taira. During that visit, Beth learned more about this determined woman and the weaving tradition she saved.

18 Notes from the Fell **Sheep-to-Shawl Basics**

TOM KNISELY

One of the main events at many state fairs is a sheep-to-shawl competition. If you want to join in the fun, Tom offers his advice about organizing a team, designing a quick-to-weave warp, picking your fleece, delegating jobs, and preparing for the big day.

22 Bioluminescent Yarn?

HEATHER MATTHEWS WITH DR. SWETA IYER

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26 Photography for Weavers

KELLY CASANOVA

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30 Exploring Multicolor Iridescence

After accidentally weaving a sample with iridescence, Bobbie became intrigued. She began studying how to purposefully create those same color effects. Use what she discovered in your own designs.

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DEBORAH JARCHOW

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74 Yarn Lab Prairie Spun DK Neons from **Brown Sheep Company**

LIZ MONCRIEF

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- 80 Endnotes EILEEN LEE

Recently, I traveled to northern California for a wedding.

Not wanting to drive that far, I took the train to San Luis Obispo, where I met my sister. The train ride takes longer than the drive, but I used the six hours wisely, hemming two towels, working on an inkle-band pouch, and then getting inspiration from the views outside the window. After Los Angeles, the train goes up the coast and at times crosses areas of California that have

never been developed and are, for the most part, inaccessible. It's almost surreal to see beaches filled with flocks of birds rather than people, cliffs so rugged that you doubt anyone has ever scaled them, and coves tucked into the cliffs that have never been visited by a person. When I arrived in San Luis Obispo, it was a foggy, quiet day, and I was still thinking about the sagebrush and beaches.

Coming home in the evening three days later, my view started in the wilds of the California coast but eventually shifted to the nighttime scenes of urban life. When I arrived home, it was close to midnight, and I was mostly just anxious to be home. But thoughts of the changing scenery with shifting colors stayed with me.

When I think of color shifting, I'm reminded of the holographic cards from the 1980s that changed depending on the viewing angle. Many of the nine projects in this issue have that same type of color shift. Look at them from one side and they look like one color; move them slightly and they seem to be another color altogether. If you want to weave similar types of cloth, with pearlescence, iridescence, and even fluorescence, this issue will guide you. We've included an article about weaving with shimmery chenille, another on planning for iridescence, a Yarn Lab on strategically using neon yarn colors from Brown Sheep Company, and some tips on what not to do in the Endnotes. In other articles, you'll learn how to take better photos of your weaving, about Toshiko Taira,

who was instrumental in preserving the Japanese textile tradition *bashōfu*, how bioluminescent yarns may become a thing in the future, and some basics of sheep-to-shawl competitions from Tom Knisely.

I hope this issue inspires you to weave cloth that shifts colors and captures light or that is simply based on the beauty around you from whatever angle you view it.

Weave well,



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FUTURE THEMES

NOVEMBER/DECEMBER 2023

Venn Diagrams

Based on anecdotal evidence, we believe many weavers are also bird-watchers, gardeners, and great cooks, but we want to know for sure! This issue will be filled with projects and articles that show how our designers and authors express, or perhaps accessorize, their other passions, occupations, and hobbies with weaving.

JANUARY/FEBRUARY 2024

Bast and Friends

For our first issue in 2024, we will look at bast and other types of plant-based fibers—alone, in yarn blends, or in combination with other types of yarns. The issue will include articles about plant-based fibers, their cultivation, their historical significance, and their position in today's fiber world.

MARCH/APRIL 2024 Flights of Fancy

Sometimes something simple will spark an idea. This issue based on flying and the concept of flying will look at things such as the feathers on a bird, a twill pattern in an airplane seat cushion, the feeling of looking up into a cloud of butterflies, the passing of time, or the perfect V of a flock of geese flying at sunset that can be the source of a weaver's inspiration.



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Letters

Stories, tips, tricks, and questions from *Handwoven* readers

I would like to give the *Handwoven* March/April 2023 issue a big round of applause. I have so many architectural photos (of natural and man-made structures) waiting for me to design with them, and these articles were so inspiring. On top of that, the fact that these weavers were kind enough to share their creative problem-solving processes—and you were willing to give them the space to do it—was spectacular!

—Gillian Miller



Jill's burned warp

I have a unique story that I thought might serve as a warning to others about a potential danger with looms.

I have my loom near a window in an upstairs bedroom. Recently, I went up to work on a project and found a section of the warp broken. At first, I could not imagine how the ends had broken as no one else had been in the room. As I looked more closely, I saw that the broken threads were black on the ends! I could not imagine what had happened and called my husband to come up to look.

As he sat on the bench looking at

the threads, he looked around and said, "You are not going to believe this...." At that moment, I saw what he was looking at—a magnifying light standing between the window and the loom. As unbelievable as it was, we determined that the sun coming through the window and then through the magnifying lens had burned the threads. I later noticed burn marks on the beam as well.

We were very fortunate nothing burned enough to actually catch on fire, and I was grateful that it did not affect more of the warp than it did. With help from a friend who is an experienced weaver and mentor, I was able to repair the burnt threads and complete the project.

And my magnifying light is now far away from the window!

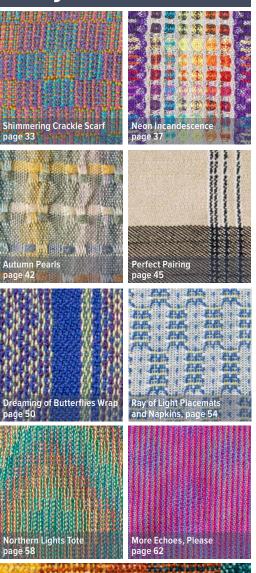
—Jill Ellson

With all the WIFs available in the *Handwoven* All Access Subscription in the *Handwoven* library and at handweaving.net and miscellaneous project ideas received from fellow weavers or what I create on my own, I'm wondering what suggestions *Handwoven* has for managing the electronic files. Sort by fiber? Type of project? The number of shafts? Project name? And what filenaming convention would be most effective? I have more WIF files than I could weave up in several lifetimes, but when there's that one WIF I remember storing away but I'm not sure where, the search begins. Help! I'm drowning in WIFs! Thanks for your suggestions.

-Susan Favro

From the Editor: With regard to my own collection of WIFs, I'm in the same predicament as Susan. If you have any great tips for how to organize your WIFs, please send them to handwoven@longthreadmedia.com. Maybe our collective minds can come up with a great solution!

Project Index



enly Harvest Chenille Poncho



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Favorite Finds

Sometimes a simple object can make your weaving life easier. These four tools can be used at the loom to help you warp, repair warp ends, manage your tie-up, and keep track of where you are while you thread and weave.

Lease-Stick Brackets

We all could use a helping hand from time to time, especially when warping our looms and wrestling with lease sticks. Angel Wings from Handywoman Shop slide onto your lease sticks and hold them parallel. Holes in the brackets allow you to lash them to your loom, stabilizing the whole setup. Available in three sizes and either maple or cherry, a set of two will be a welcome addition to your toolbox.

handywomanshop.com





Warp-End Repair Assistance

It happens to us all: the dreaded broken warp end that somehow always appears smack-dab in the middle of your warp. Find the guilty culprit and then hold the neighboring strands out of the way using Windhaven Fiber Tools' warp string separator made from walnut or cherry. Simply slide the polished wood tool between the intact threads and then turn it to isolate the broken end, creating a space for working your repair. windhavenfibertools.etsy.com

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Photos by Matt Graves



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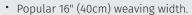




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Introducing the latest multi shaft table loom from Ashford the Brooklyn Four Shaft Loom! This loom has been designed to be an economic stepping-stone for rigid heddle weavers who are ready to expand their weaving skills and explore the wonderful world of multi shaft weaving. It makes weaving multi shaft patterns simple and easy.

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Weaving at Black Mountain College

by Christina Garton

The history of handweaving in America is incomplete without mention of the weaving program at Black Mountain College. Though the program lasted a relatively brief 22 years, the impact it had (and still has) is immeasurable. Founded by none other than Anni Albers herself, the program boasted Trude Guermonprez, Marli Ehrman, and Else Regensteiner among its students and faculty, just to name a few. In honor of this incredible program and the impact it had on the art world, Black Mountain College has created a new exhibition, Weaving at Black Mountain College: Anni Albers, Trude Guermonprez, and Their Students.

Given the import of the weaving program, it might come as a surprise to some that Weaving at Black Mountain College is the first exhibition to spotlight the program, its teachers, and its students. Along with a focus on the works created by those within the program, the exhibit also explores the way the program affected the rest of the art and design curriculum within the college. Originally downplayed as "women's work" and as a craft rather than true art (and therefore deserving of less funding and respect), the weaving program is finally being recognized.

On display from September 29 through January 6 at the Black



Students weaving on backstrap looms at Black Mountain College, 1945



This handwoven bookcloth, titled Bookbinding: Johannes Brahms; Fifty Selected Songs, was woven by Janet Heling Roberts circa 1945.



John "Danny" Deaver weaving, circa 1941-43



Elizabeth Schmitt Jennerjahn, Cross, 1949, Wool, 121/2" × 10"



Bay Area by Joan Potter Loveless, circa 1960-70

Mountain College Museum + Arts Center, the exhibit showcases objects from both the college's permanent collection as well as pieces on loan from private collections and other institutions and includes many objects on display that have never been publicly shown before. There are also works by contemporary artists such as Bana Haffar,

Porfirio Gutierrez, Kay Sekimachi, and Susie Taylor, whose works have been influenced by the Black Mountain College weavers. A book by the same name as the show featuring works within the exhibit, essays by the curators and others, and archival and other historical photographs is being released in conjunction with the exhibit.

More information on the exhibit, including hours and how to purchase the book, can be found at black mountaincollege.org/weaving.

CHRISTINA GARTON is the editor of Easy Weaving with Little Looms. When she's not editing, you can usually find her chasing her children, having outdoor adventures, or hiding away with a good book.





Left: Toshiko Taira, circa 2001. Right: Checking an indigo vat

Toshiko Taira

Reviving a Cultural Tradition

BY BETH ROSS JOHNSON



The fiber for the distinctive Okinawan cloth bashōfu comes from the banana species Musa balbisiana (known as ito-basho in Japanese). Centuries ago, the plant was brought from Southeast Asia to the Ryukyu archipelago, whose largest island is Okinawa. Today, ito-basho can be found at nurseries and landscape companies in the United States.

The soft yellow of the natural bashōfu contrasts with the *kasuri* (a Japanese form of ikat) motifs and the stripes in the cloth, both of which are dyed blue-black (using indigo) or dark brown (using dyes made from hawthorn plants native to the island). Okinawan kasuri, which uses shifts in the weft- and warp-dyed threads to produce

designs such as arrows, birds, and diagonals, was the original inspiration for the blue and white cotton kasuri commonly associated with mainland Japan. The time-consuming processes to make the fabric—which, when first woven, resembles stiff linen—made it vulnerable to advances in industrialization. That, and the disruption caused by World

War II, nearly put an end to the production of bashōfu. It is thanks to the work of skilled artists and weavers, including Toshiko Taira (1921–2022), that bashōfu lives on today.

A LIFETIME OF WEAVING

Originally from Kijoka in Ogimi, Okinawa, Toshiko Taira learned to weave bashōfu and cotton cloth from her mother. At the end of the war, she was a young woman working on the Japanese mainland at a spinning mill. The founders of the Japanese *mingei*, or folk-craft movement, recruited her to join their







Bashōfu on the loom in Kijoka

efforts to revive the bashofu tradition on Okinawa, and in 1946, Taira returned home to the island.

Taira began the revitalization of bashōfu by restoring the ito-basho fields that had been decimated by the American army in its attempts to control malaria. Taira, in addition to weaving fine bashōfu for kimonos, wove coarser cloth for domestic items such as table runners and cushions. In 1974, the Japanese Agency of Cultural Affairs recognized the bashōfu she produced as an Important Intangible Cultural Property, and in the same year, the Kijoka Preservation Society was established to teach the various processes necessary to produce the cloth.

In 1986, Taira, along with 11 other weavers, established the Kijoka Bashōfu Industrial Cooperative Association. Taira was named a Living National Treasure in 2000.

BASHŌFU

To produce the threads for bashofu, workers cut the ito-basho plants and then immediately peel the stalks, separating the layers of fiber into outer, middle, and inner grades; the inner layer is reserved for the finest textiles. They then boil the strips before scraping and separating them into long filaments to be knotted together. The long threads are twisted on a spinning wheel and then wound into warps or skeins to be tied and dyed for kasuri. After weaving, the cloth is finished and sewn into kimonos, obis, noren (door curtains), and various small items.

Soetsu Yanagi, founder of the Japanese mingei movement, said of bashōfu, "Anyone cognizant of the beauty of textiles could not possibly pass by bashofu without taking a second look. Such a person would be enthralled by the excellence of the materials, the distinctiveness of the design, and the subtlety of the coloring." You cannot separate Kijoka bashōfu from its place of origin. The fibers, dyes, temperature, and even humidity influence the making of this cloth that is so

The fibers, dyes, temperature, and even humidity influence the making of this cloth that is so suitable to the tropical climate.

suitable to the tropical climate. The limitations of material, pattern, and technique have produced a cloth whose design is inevitable and unselfconsciously beautiful.

VISITING KIJOKA

When I lived in Japan from 2000 to 2001, I jokingly said I needed to make a pilgrimage to Okinawa to visit the original birthplace of kasuri. As this was before the advent of smartphones, a hotel clerk circled the Japanese character for Kijoka on my paper map, leaving it up to me to find it with my rental car. Once I got there and was able to explain in my limited Japanese that I was in Japan learning to weave kasuri and loved bashōfu, Toshiko





At the workshop, even the laundry hanging to dry was worthy of capturing in a photo.



Adding a twist to ito-basho filaments

Taira offered me a tour of the workshop (which was closed to the public that day), showed me the banana fields, and served me tea. I'll never forget being surrounded by this beautiful cloth in various stages of completion with Taira and the dedicated artisans who continued to make it. It turned out to be a pilgrimage after all.

Toshiko Taira passed away in September of 2022 at the age of 101. Today the bashōfu weavers led by Taira's daughter-in-law, Mieko Taira, continue to grapple with the all-too-common issues of not enough young people learning the craft and shortages of materials. Toshiko Taira's legacy is the preservation of this craft within an industrialized society. Its revival after World War II has made it a symbol of peace, and it is recognized as an art form that embodies the unpretentious beauty revered by the Japanese.

BETH ROSS JOHNSON has had two extensive stays in Japan to weave. She teaches, weaves, and researches in Black Mountain, North Carolina. Find her online at bethrossjohnson.com.



Weaving with Bird Motif by Toshiko Taira, 141/2" × 143/4", banana fiber, weft kasuri. Gift of Barbara C. Adachi. Image courtesy of Mingei International Museum

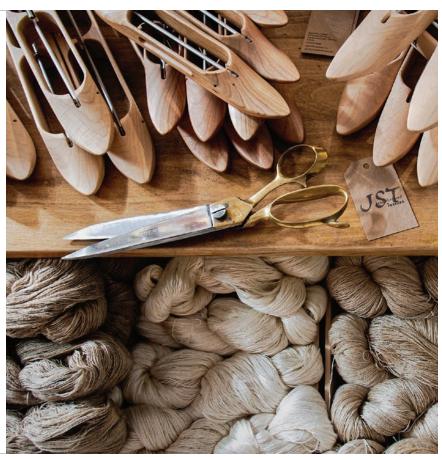


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The Fidget Spinners of Adams County competing in the 2019 Sheep-to-Shawl competition at the Pennsylvania Farm Show. They chose the theme of Singing in the Rain and dressed accordingly.

Sheep-to-Shawl Basics

BY TOM KNISELY



I think just about everyone enjoys an old-fashioned country fair. Fairs have been held all around the world for hundreds of years. They're a chance to show off agricultural skills and artistic talents. You will also find friendly competitions for the best canned goods, baked items, and needlework. There is plenty of livestock to visit as the animals await judging. Cattle, horses, poultry, and, my favorite, sheep are there for viewing, and it's a great time to ask their owners any questions you might have about the animals. You might even be lucky enough to see sheepshearing followed by someone demonstrating spinning wool, and then others weaving it into a piece of fabric.

Fairs can be local, but many are official county or state fairs. You might think of them as summer events, but fairs can be held at any time of year. Pennsylvania, where I live, holds its state fair the second week in January. They call it the Farm Show, and it's been held annually since 1917. The fair is in a

heated building that encompasses many acres under one roof. When I asked an official why we have the Farm Show in January, the answer was quite simple: winter is the farmers' slowest time of the year and allows them to participate without guilt about being away from their farms.

One of the biggest events at the Farm Show is the Sheep-to-Shawl competition. People fill the stands in the arena to cheer on their favorite team like it's a pro-sports event. If you're not familiar with sheep-to-shawl competitions, let me tell you all about them.

THE TEAM

A team consists of five individuals: a shearer, three spinners, and a weaver. Most competitions have a time limit to produce a shawl, typically two and a half or three hours. At the start of the competition, the shearer shears the sheep. The spinners then spin the raw, unwashed fleece into thread. Because the

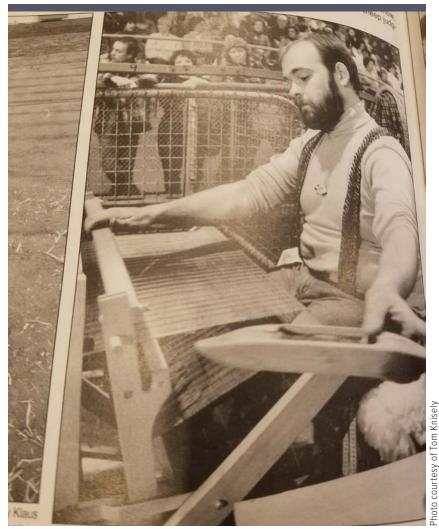
Because you are weaving a soft and luxurious shawl, your team should pick a breed of sheep that reflects those wool qualities—not a rough, tough carpet-wool breed.

shearer's job is done and the weaver is waiting for thread, the two help card and comb the fleece to assist the spinners. As soon as there is enough thread to get started, the weaver takes the spun thread and begins weaving it into a shawl on a prewarped loom. That's how the team produces a shawl that is 22 inches wide and 80 inches long in that short amount of time. No pressure, you think? Well, let me tell you more about it from a weaver's point of view.

In the early 1980s, I was the designated weaver on a team called the Wool Wizards. It was a lot of fun, I must say, but I gave up my post when I realized I was competing against my former students—people I had taught to spin and weave. It didn't seem ethical. During that time, though, I learned what it takes to be competitive. It takes the efforts of the entire team to make a winning shawl. It takes the shearer's expertise and the spinners' skilled hands to make a thread that the weaver can use to weave a beautiful shawl.

Here are a few pointers if you want to gather some friends and become a team.

First, read the rules and work those into your weaving plans. For example, if the rules state that the finished shawl needs to measure 22 by 78 inches, you must take draw-in into consideration. Your



Tom weaving during a sheep-to-shawl back in his competition days

competition loom will need to have a weaving width wider than 22-inches, and it will need to fit in your car warped and ready to weave. Measure first to make sure it fits! When shopping for a new car, my wife and I hit the lots with a tape measure in hand. If the loom we want to carry doesn't fit in a car we like, we move on to the next.

Your team's shearer often doubles as the source of the sheep you will be using. Because you are weaving a soft and luxurious shawl, your team should pick a breed of sheep that reflects those wool qualities—not a

rough, tough carpet-wool breed. Check the rules to see if your sheep needs health papers to enter the competition. Being careful helps everyone; you never want to have an infected or sick sheep in a livestock venue, no matter how short a time it will be there. On the other hand, there is no need to worry about that if you are competing in a fleece-toshawl competition, which eliminates the beginning shearing portion of the contest. Your spinners are spinning from a shorn fleece they brought and not from a recently shorn animal in the ring. Instead of a



Friends through Fiber, the winners of the 2023 competition, pose with their winning shawl. The sunflower design was painted on the warp before weaving.

shearer, the fifth individual on the team can be anyone who can help with the wool preparation.

Your spinners should be able to spin uniformly so that one person's varn doesn't stand out as thicker or thinner than the others. It takes practice. As a weaver, I don't want the fabric to have weft-wise stripes due to weft threads that are different in size. You shouldn't be able to look at the fabric and point out that this section was from Jean's bobbin and that section was Betty's. One solution is having two team members spin single-strand yarns and a third spinner ply them together to even out the differences in the two sizes. This not only balances the thread but also relaxes the tension in the finished thread making the weaving much easier. And as a bonus, the completed shawl is much less likely to look wrinkled or corrugated as it might from a single-strand yarn.

DESIGNING THE WARP

As the weaver on my team, I looked for patterns that were interesting

and easy to treadle and weave. Although we tossed around ideas as a team about the design, my teammates ultimately said, "It's you that has to weave it; you pick the colors and pattern for the shawl." My approach was to spend a bit more time to make an attractive warp so that I could then weave plain weave or a simple twill without getting off track. Although an advancing twill might knock the socks off the judges, something less complicated might be a wiser choice for weaving under the pressure of competition.

Choosing colors for a warp is a personal thing, but if in doubt, I always went with cool colors. It seems many people like blues and greens. If the shawls are auctioned off at the end of the competition, you are more likely to receive a large bid for a shawl that appeals to a broader audience. I planned ahead, and if I thought a gray or dark fleece would add more interest to the shawl's design based on the warp I was planning, I would go back to the shearer and ask for a natural gray, black, or chocolate-colored sheep.

HELPFUL TIPS

It is rare that something goes terribly wrong while competing, but be prepared and take a toolbox containing the tools you might need to keep you going. Know your loom and all its bolts and screws. Check whether it uses straight-, Phillips-, or Robertson-head screws. Have extra tie-up cords readily available. Don't forget to have a few extra yards of the warp in the event that you break a warp thread. Always have duct tape, scissors, extra drive bands, and cords for the possibility of a wheel breakdown, and a can of silicone spray to keep everything moving smoothly when it doesn't want to.

Remember to take good care of yourself and your team. Drink plenty of water and have snacks available. Provide disinfecting hand wipes to clean your hands. Everyone is working with raw wool with plenty of unspeakable inclusions within those beautiful wool locks. Wipe your hands.

Starting your own sheep-to-shawl team can be a whole lot of fun. The competitive rivalry between the teams is good-natured, and you will make new friends and share ideas. What's more, you are showing fairgoers that spinning and weaving are not dreaded chores of the past but something fun to do and very much part of modern times.

Ready? Start!

Go, team, go.
Tom

TOM KNISELY is the resident weaving and spinning instructor for Red Stone Glen Fiber Arts Center. He is a regular contributor to Handwoven and has written five books on weaving.



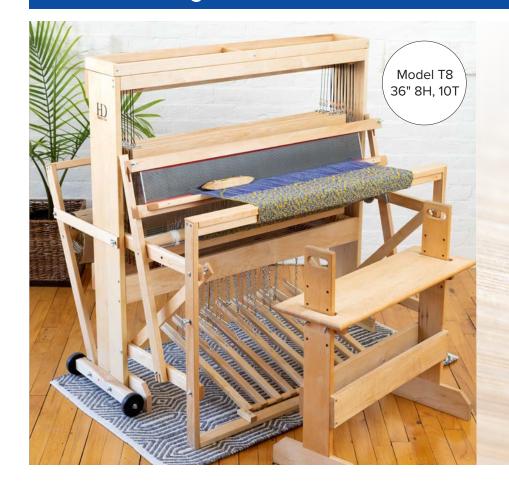


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An example of bioluminescence as found in nature

Bioluminescent Yarn?

BY HEATHER MATTHEWS WITH DR. SWETA IYER



On a warm, moonlit evening several summers ago, a friend and I sat on a beach in the south of France, relishing our rare time together. We'd eaten a delectable Indian meal, shopped for souvenirs from Provence, and in our conversation, solved all our—and the world's—problems. As we sat there on the beach during what felt like a magical moment, I noticed something strange: the water was glowing in the dark. Somehow, unbelievably, the whites of the waves were sparkling!

Since then, I've learned a little more about the phenomenon of natural bioluminescence and marveled at it. Several species of seawater algae light up when they are agitated. Marine plankton do it when they're distressed, a defense mechanism used to evade

predators. And then there's my favorite: fireflies flickering in a warm summer sky. That things can naturally glow in the dark seems impossible, yet the memory of that night in France looms brightly, reminding me that it is, in fact, very possible.

To my surprise, I recently came across an article describing a researcher who has experimented with natural bioluminescence in textiles. My heart beat faster when I read the first few sentences. Textiles that could light up? Now that yarn would be something I'd want to weave with!

Dr. Sweta Iyer works in the Department of Textile Technology at the University of Borås in Sweden. Her foundational research focuses on the topic of functional and smart textiles, particularly those that prioritize sustainability. Creating fabric that can light up has applications in many areas, which is why she was funded by a European research commission to explore this line of inquiry. She would also like to acknowledge Professor Nemeshwaree Behary, Professor Jinping Guan, and Professor Vincent Nierstrasz for constant guidance and support throughout this project.

We sat down with cups of tea and a nine-hour time difference to video chat about Dr. Iyer's research and what it could mean for people who make things out of yarn.

Heather Matthews: How is it even possible to think that fiber could be luminescent and in a natural way? Dr. Sweta Iyer: That's science! What you think is impossible can happen! In the movies (or our imaginations),

we see futuristic technologies and things. Later, through research, what we once saw in movies or dreamt of turns out to be real.

What exactly is bioluminescence?

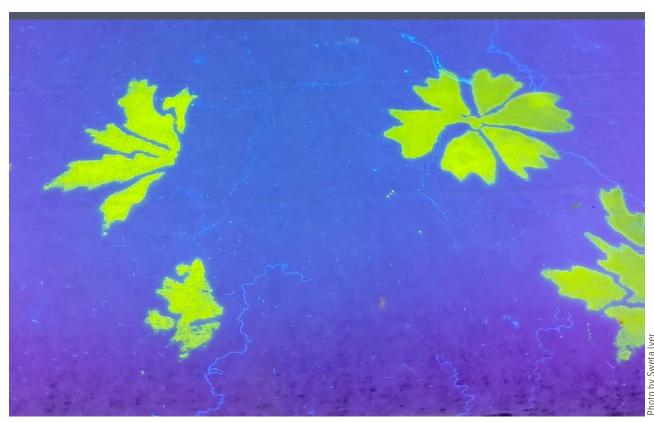
The scope of my research focuses on two different types of luminescence. To understand it in a simplified way, bioluminescence is a chemical reaction that, when activated, emits light and can be seen by our naked eye. It happens in living organisms (therefore, the prefix "bio"). Organisms light up for mating or defense purposes or even communication. The chemical reaction often occurs in the presence of oxygen.

A good example of a chemical reaction in humans is dopamine. We might smell cookies baking in the oven, which could make us excited and feel a great sense of pleasure. That excitement and anticipation triggered in our brain is due to chemical reactions happening in our body.

The other type of luminescence is **photoluminescence**, which is when light is emitted from a material in the presence of an additional light source. A great textile-related example is neon T-shirts that illuminate under black light.

So, it's not just about what living organisms do. Making fabric light up does not require something in the fabric to be alive.

Right. Everything around us is science, whether living or not. The basic understanding of chemicals reacting in living organisms to emit light helps us to obtain the same feature, or mimic it, on textiles/fibers.



For this cloth, the bio-based, luminescent-producing chemical was screen printed.



This textile was coated in bio-based, luminescent-producing chemicals.

We use enzymes, which are biobased chemicals. They incite a faster reaction and can be reused, which is part of a sustainable solution to develop luminescent fabrics. Enzyme science is a hot topic because it is considered sustainable.

What fibers are being tested in this science?

For the bioluminescent part of the project, we use a polyester nonwoven. For our photoluminescence project, we use fabrics such as cotton, silk, wool, and polyester.

What is the process of making fibers luminescent?

As a weaver, you might know some of our application techniques, such as dyeing and printing. Inkjet printing and spraying are the latest technologies that people at an industrial level are excited about because they require so much less water and

energy—which makes them more sustainable! For luminescence, the fabric is immersed into the chemical overnight in a petri dish. Then we measure the intensity [of the luminescence] using a light-detecting instrument. As a side note, the application of the bioluminescent chemical to a fabric does not drastically change the feel of the fabric.

What about luminescent textiles makes them interesting to industry-and to you?

As an example, what if textiles in the form of a mask or gloves could light up to indicate contamination around us? Light-emitting textiles can be useful in defense situations or for design purposes, in workwear, for safety, and also in biomedical applications.

To me, bioluminescent textile research is exciting because nothing like this has been done before,

that I am aware of. I am doing the "foundational research"—the very beginning of an idea. Other types of luminescent textile development and research have been done but have also been shown to possibly be toxic and demand a lot of resources, like water. Even though I've only shown the "proof of concept" so far (the fact that this can be accomplished at all), I am excited about bioluminescent textiles because they are more sustainable and safer for humans to interact with.

So, they're safe? If someone wore a bioluminescent textile against their skin, would they be okay?

Yes. The chemical we are using is completely safe because it is made of enzymes and bio-based products, just like our bodies are made up of. Europe, particularly Sweden, highly regulates the substances that scientists can work with. These chemicals already exist—I am just applying them in a new way.

What are the current limitations of this work?

Well, to begin with, we are just at the beginning phase. The bioluminescent effect is impossible to see without applying additional chemicals and doing more to the fabric. I have confirmed the proof of concept, but there is still more work to do!

The scientific structures of different fibers are a limitation. Various fibers react in unique ways, which take time to understand.

Enzymes are currently quite expensive to use in research. More research is being done to investigate less expensive ways of developing and synthesizing enzymes—this will eventually make them more affordable.



Dr. Sweta Iyer is a research scientist who specializes in bioluminescent textiles.

How long until a luminescent yarn is available to us weavers to start experimenting with?

As a researcher, I'd say 20 years, but it could be faster because of the way others might engage with the science.

Creating a bioluminescent yarn for weaving is a different process than creating a fabric—almost like creating different doughs for two baking projects. Your dough for bread will be different from your dough for cookies, with unique ingredients, textures, and chemical reactions. Yarn may have different characteristics than fabrics—it may lose certain effects of luminescence or have new effects that didn't occur in a fabric application. Also, bioluminescent

chemicals are sensitive and cannot handle a lot of pressure, which is a consideration for weaving.

Through collaboration and the combining of ideas, perhaps by 2024, our timeline for bioluminescent yarn could change to being just 10 years away. **←**

HEATHER MATTHEWS is a weaver and the current president of the Northern Colorado Weavers Guild. She enjoys relating complex scientific ideas to everyday situations.

DR. SWETA IYER lives and works in Borås, Sweden. You can learn more about her work at researchgate.net /profile/Sweta-Iyer.



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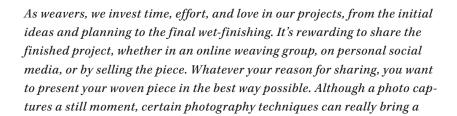
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Kelly's silk scarf photographed outside during the golden hour

Photography for Weavers

BY KELLY CASANOVA



For my examples, I'm using a scarf I wove using 60/2 silk in an undulating twill. The warp is a dark purple, and for the weft, I wound together one strand of magenta and one strand of orange silk on my bobbins. The iridescence in my scarf

woven piece to life.

occurred by combining three elements: fine and lustrous silk with a gleaming quality; a combination of three colors that pop when used together; and an undulating, wavelike twill pattern that seems to move and shimmer.

Capturing iridescence in your weaving through photography takes some work, but it is worth the effort because when you get it right, your cloth will seem to glow. In the "old days" of photography, I used an SLR camera and developed my prints in a darkroom. While it was all great fun, nowadays you don't even need a camera to take great photos—just a smartphone. Even my six-year-old dinosaur, waiting-to-die phone takes lovely, high-resolution photos-and it's what I use for most of my social media sharing.

Taking a good photo is like baking a cake: with quality ingredients and the right setup, you can be successful.

LIGHT

Light is king in photography. American photographer Jerry Uelsmann once said, "Photography is just light remembering itself." It's not only the ability to adequately light a photograph but also the *type* of light that plays a crucial factor in the final image. Many newbie photographers think that the need for good lighting means waiting for a sunny day so they can photograph outside, but this is not the case. In photography, the "golden hour" is either the time just after sunrise in the morning or right before sunset in the evening. The light at these times of day is frequently soft and warm, making it friendly for photographers. Look at the photos throughout this article for examples of how light affects a photo.

Before I move on, I want to say a word about using the flash feature. My advice is just don't do it. Flash can work well for professional photographers with top-notch equipment in a studio setting. But for the home photographer, it tends to wash out colors and warm tones, leaving you with a stark-looking photo.

CLARITY

No one wants to look at a blurry photo. It's unappealing to the eye and will cheapen the appearance of the piece you are trying to show. If you are photographing an item to sell, an in-focus photo is essential.

If you are frustrated by the lack of clarity in your photos, don't worry; clear photos are easy to achieve with a few tips and tricks.

- · Make sure your phone is set to autofocus. Phones do an awesome job of focusing on whatever you're pointing at, as long as the autofocus is turned on!
- · Wait for your phone to focus before rushing in and taking the photo. It may take a couple of seconds to find the best point of

In photography, the "golden hour" is either the time just after sunrise in the morning or just before sunset in the evening.

focus, so be patient; then, when the image looks nice and clear on the screen, take the photo. The two enemies of crystal-clear

photos are low light and movement. Combine the two and you are guaranteed to take a blurry photo!

- · Be sure that you have adequate preferably natural (if possible) —lighting.
- · It seems obvious, but the phone and item you are photographing need to be as still as possible to ensure a clear photo. If you find that you can't hold the phone still enough (a more common issue than you would think), consider investing in a simple and affordable phone tripod.



Taken outdoors in the full sun. The colors are a little washed out, and there is high contrast due to shadows.



Taken on a sunny day, indoors, next to a large window. The light was indirect and filtered.



Taken underneath an open veranda with darker bricks as background

Iridescent fabric looks wonderful draped, rippled, or crumpled. This can be careful or careless. Experiment with picking up and dropping your woven piece or carefully forming ripples or soft folds with your hands.

COMPOSITION

Think of your photograph as an artwork. You want to arrange all the elements of the picture so that they appear harmonious and balanced. Try not to clutter your photos and make sure that the woven item is the centerpiece. Including too many other elements or a busy background can distract the viewer.

Use a background that is appropriate to the piece you are photographing. While it makes sense to photograph a picnic blanket spread out on some nice green grass, kitchen linens are better positioned on an orderly, clean surface. You will notice that in the two photos on this page, I chose a neutral but still visually interesting background. The neutral background showed off the iridescence of the scarf beautifully.

For the photo at the top of page 26, I waited until the golden hour in the evening. I carefully arranged the scarf with folds and ripples to best display its iridescence. Although you can't tell from the close-up, I chose to position the mannequin near, but not right up against, the wooden wall. Putting it around 5 feet from the wall ensured that any shadow cast on the background was minimal.

I made sure that I was far enough away to photograph the whole scarf





An example of using editing to adjust a photo. On the left is the unedited photo; on the right, the edited photo.

but near enough that the lovely detail of the wave pattern would not be lost even when cropped. I draped the scarf so that the viewer could appreciate the lightness of the fabric and the perceived movement of the colorplay.

GENERAL TIPS FOR PHOTOGRAPHING IRIDESCENT PIECES SUCCESSFULLY

Ensure your item is not creased. Iron or steam it before the session if needed.

Iridescent fabric looks wonderful draped, rippled, or crumpled. This can be careful or careless. Experiment with picking up and dropping your woven piece or carefully forming ripples or soft folds with your hands.

I live in an area that is some degree of windy most of the time. I choose to photograph at times of day that are less breezy. I also use strategically placed weights or pins to help keep the item in position. Some days are just too blustery, and it's too much of a battle. On those days, I

will either take my photographs inside or wait for a more suitable day.

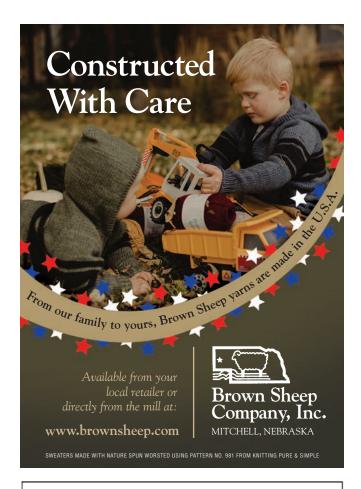
WHAT ABOUT EDITING?

Never use editing as a crutch. The purpose of editing is to enhance rather than fix a photo. A bad photo will always be a bad photo. Start with a good photo, applying the key elements I've discussed, and then use editing to make a good photo great. I use free editing software to edit my photos.

Some colors are challenging to photograph. Keep the woven item beside you as you look at it on the editing screen. Adjust slowly and stop when you feel that your photo looks most like the actual item.

I hope I've inspired you to look at photography in a new but simple way!

KELLY CASANOVA is a weaving teacher from a beautiful coastal region of Australia. She loves weaving, creativity, and family beach walks.





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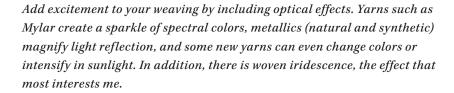




Woven in a plaited twill on eight shafts at 60 epi, this 60/2 silk scarf glows with four colors.

Exploring Multicolor Iridescence

BY BOBBIE IRWIN



Back in 2002, one of my woven samples unexpectedly produced striking iridescence. Since then, I've been fascinated by the phenomenon. I wanted to know why iridescence happens and, more importantly, how to make it happen when I want it. More than two decades later, I'm beginning to appreciate the many variables involved and the vast number of amazing ways to make iridescent fabric.

WOVEN IRIDESCENCE BASICS

At first, I concentrated on color relationships: complements, triads, tetrads, and the like—but I've simplified the requirements for seeing iridescence in fabrics. First, you need *light*. What we think of as iridescence is primarily the result of light reflecting off the valleys and ridges in our cloth, although sometimes it also incorporates light

transmission in sheer and layered cloth. Movement helps us see shifting colors as we view the fabric from different angles. (I've mastered what I call "artful crumpling" for still photography and effective display.) The fabric must contain at least two colors or a yarn that reflects more than one color. Most importantly, you need *visual contrast*. This is commonly achieved through color variation, but iridescence can also be influenced by other factors including differences in luster and value; exaggerated textures, such as pleats; and even contrasting thread sizes within a fabric.



The space-dyed weft in this 20/2 rayon scarf ranges from green to blue, and the warp from red-violet to red and pink, with a touch of silver. The colors shift in constantly changing combinations. Bobbie sett this eight-shaft plaited twill scarf at 40 epi.



At a low angle, this four-color scarf in Bronson lace looks pink on one side and blue on the other, although every intersection has the same four colors. Bobbie wove this scarf using 30/2 silk sett at 36 epi.

TWO-COLOR COMBINATIONS AND **COLOR MIXING**

I started my study by crossing two colors, the easiest way to produce the apparent color shift that defines traditional iridescence. Although my first samples were plain weave, I quickly discovered that floats increase light reflection and magnify the magic. We have endless possibilities working with two colors along with many different weave structures and fiber variables, including luster, value, and relative thread sizes!

Early on, I discovered that some of my favorite two-color combinations were the hues that fall between the pure primary colors on the color wheel. Hues such as bluegreen and red-violet contribute their component colors to a woven mix and make it more interesting. It wasn't long before I wanted to create iridescence with multiple colors, and for starters, I found ways to cross two yarns that would give the illusion of additional colors.

Some combinations of two colors give the effect of three through color mixing. Crossing red-violet with yellow adds orange to the mix while retaining the iridescence of the original combination. Blue and red give violet, and other combinations also mix visually. Crossing complementary colors (opposite on a color wheel), such as red and green of similar value, can give a brown cast to the fabric, which may not be what you're after. Avocado green crossed with blue-violet can make gray. I call these bonus effects "sophisticated," because you aren't actually weaving with all the colors you see. This phenomenon is most apparent a few feet away and when viewed at a low angle. Color mixing works best in balanced plain weave, one of the few instances when I prefer that structure for iridescence.

You can expand the two-yarn color range by crossing space-dyed yarn with a contrasting solid or by crossing two space-dyed yarns. This works best with relatively short

color segments and yarns from distinct color families rather than those with a wide range of colors.

COLOR ORIENTATION

Color orientation can dampen or enhance iridescence in otherwise identical fabrics. My early samples with turquoise warp and red weft worked well. In similar samples with red warp and turquoise weft, the red dominated, and the iridescence was subdued. Orientation can make an even more significant difference with more colors involved or with warp- or weft-dominant structures. The greater the number of colors you use, the more combinations there are to try; some will work better than others. It's a good idea to weave a gamp to sample color combinations and orientations. Sampling different color orientations with an inexpensive yarn, such as 10/2 pearl cotton, is prudent, especially if you are planning a project with more expensive or finer yarns.



The wefts of these 8/2 Tencel scarves with parallel threadings on eight shafts produce iridescence with the two warp colors.

THREE-COLOR IRIDESCENCE

I learned about the old French method of creating three-color iridescence in fine silk. These half-basketweave fabrics had a warp of one color and two weft colors used together in the sheds. The doubled wefts were not allowed to cross, and the weft order remained the same in each pick.

Could I alternate two colors in the warp and weave with a single shuttle? What isn't practical with very fine threads on factory looms becomes workable on handlooms with heavier threads. I paired warp colors on the same shafts but in separate heddles, and sampling determined that those pairs could not share dents in a reed or they would twist. The only possible sley order is one per dent or two per dent, keeping the paired warps separated in adjacent dents.

This became one of my favorite games. With two warp colors, I can use up to three additional weft colors before floats become too long (so much for the idea of using one shuttle!). These fabrics are most magical with fine threads, when thread intersections are almost imperceptible, which encouraged me to use much finer threads and closer setts than ever before. Containing all the component colors at every thread intersection, every part of the fabric is iridescent. My first experiments with my modification of the French technique were in plain weave, but I found that structures with floats that better reflect light produce even more excitement. The denting restrictions can make it challenging to find yarns to double-sley at appropriate setts for the reeds you have and the structure you want to use,

but I've had success with heavier 8/2 Tencel at 24 ends per inch (epi).

PARALLEL THREADINGS

Many weavers are entranced with "echo" patterns using different colors on parallel threadings. (The term echo was introduced in the 1930s for a different woven color effect. See Note on Echo.) Often with intricate curved patterns, many of these fabrics have little or no color shifting, although the multicolor effect is similar to some static patterns in natural iridescence. Using contrasting weft color (or colors) adds traditional color shifting.

So little time, so many possibilities to explore! Although my research is winding down, a new temptation comes along every so often. A recent workshop with Susan Wilson on polychrome crackle induced me to experiment with iridescence in yet a new way.

NOTE ON ECHO

According to Helene Bress (The Weaving Book, 1981), the term echo was introduced by Bertha Needham for a color effect in twill-based structures, using two pattern yarns. It is most effective with closely related colors, especially lighter and darker versions of the same hue. Bress's book shows echo variations for huck, monk's belt, overshot, and other twill treadlings.

RESOURCES

Bress, Helene. The Weaving Book. New York: Charles Scribner's Sons, 1981. Irwin, Bobbie. Weaving Iridescence: Color Play for the Handweaver. Lanham, MD: Stackpole, 2017.

Shimmering Crackle Scarf

BOBBIE IRWIN

STRUCTURE

Polychrome crackle.

EQUIPMENT

4-shaft loom, 8" weaving width; 12-dent reed; 3 shuttles.

YARNS

Warp: 8/2 Tencel (100% lyocell; 3,360 yd/lb; Valley Yarns; WEBS), Gold, 514 yd.

Weft: 8/2 Tencel (Valley Yarns; WEBS), Aguamarine, 202 yd; Blueberry, 201 yd. 8/2 Tencel (100% lyocell; 3,360 yd/lb; Brassard), #5214 Magenta, 202 yd.

WARP LENGTH

169 ends 3 yd long, 2 ends 31/2 yd long for floating

selvedges (allows 5" for take-up, 29" for loom waste; loom waste includes fringe).

SETTS

Warp: 24 epi (2/dent in a 12-dent reed).

Weft: 36 ppi.

DIMENSIONS

Width in the reed: 73/12". Woven length: (measured under tension on the loom) 74". Finished size: (after wetfinishing) 6" × 71" plus 7" fringe.

After studying iridescence for many years, finding a new approach made me happy! A workshop with Susan Wilson inspired this scarf, which includes my own modification of one of her workshop threadings. This iridescent fabric glows with four colors, while displaying a repeating diamond pattern of color blocks. Weaving polychrome crackle "in the Italian manner" creates shifting pattern blocks, each featuring two of the weft colors, interspersed with background blocks where the gold warp is more prominent. While not all color combinations produce good iridescence, these colors shimmer as you view the scarf from different angles.

Requiring only four shafts, this scarf is not difficult, but with three shuttles, it is also not a quick project. Once I was comfortable with the treadling and color sequences and able to recognize the pattern, I enjoyed the methodical rhythm of the weaving.

lackl Wind a warp of 169 ends 3 yd long. Wind 2 additional ends 3½ yd long for floating selvedges and set them aside. Warp the loom using your preferred method following the draft in Figure 1. Centering for a weaving width of 73/12", sley 2 per dent in a 12-dent reed. Sley the floating selvedges through empty dents on each side of the warp and weight them over the back beam.

 $oldsymbol{2}$ Wind stick shuttles, quills, or bobbins with each of the weft colors. Leaving at least 9" of unwoven warp for fringe, spread the warp with scrap yarn. Note: To avoid the bulk of regular shuttles, Bobbie used narrow stick shuttles; slim shuttles with quills would also work well.

 $oldsymbol{3}$ Leaving a tail 4 times the width of the warp, with the Aquamarine weft, weave 2 picks of plain weave using treadles 5 and 6.

4 All shuttles start at the same side and follow each other across the warp, always in the same order. Begin pattern block A with Aquamarine. Follow with Blueberry, then Magenta, tucking the weft tails around the floating selvedge and back into the same sheds. Beat firmly after each pick. Hemstitch over the first 2 plainweave picks in groups of 6 ends, adding the floating selvedges and the 1 leftover warp end to the hemstitching groups at the selvedges. Weave the 3-pick sequence a total of 6 times to square the pattern.

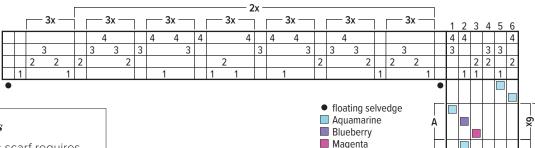
 $oldsymbol{5}$ Continue weaving, following the draft in Figure 1, changing blocks after repeating each sequence 6 times. Weave about 72" and end with block A (this may take slightly less or a little more than 72"). Tuck Aquamarine and Blueberry tails around the floating selvedge and back into their last picks. Weave 2 picks of plain weave with Magenta and hemstitch as you did at the beginning.



HEDDLE COUNT

1. DRAFT

| Total | 160 |
|---------|-----|
| Shaft 1 | 36 |
| Shaft 2 | 40 |
| Shaft 3 | 49 |
| Shaft 4 | 44 |



Weaving tips

- · Weaving this scarf requires concentration, minimum distractions, and careful attention to where you are in the pattern. Treadling errors can be subtle and are difficult to repair off-loom. Check frequently for slight differences in the position of floats within a block or colors woven out of order, and make corrections as you work. Bobbie keeps a note card with the color and treadling sequences written out, using a paper clip as a marker. She tilts the clip upward or downward for blocks B and C to remind herself whether she is moving up to the middle of the block sequence (D block) or down from the middle.
- It takes several inches before the diamond pattern becomes evident, and it's more apparent a little away from the loom—a good excuse to get up and stretch every so often! The A treadling puts the Aquamarine/Blueberry blocks on the selvedges, which helped Bobbie keep track of where she was in the pattern.
- · When weaving with two or more shuttles, take the shuttle you just used and place it closest to you, using the shuttle closest to the fell for the next pick. This trick is especially helpful with three shuttles. The wefts will wrap automatically at the selvedges, helping you avoid tangles and frustration.



6 Leaving at least 9" for fringe on both ends, cut the fabric from the loom and trim the fringe to 8". Prepare a twisted fringe from each hemstitched group. After twisting clockwise about 30 revolutions, pinch the ends tightly and deliberately twist counterclockwise 25 revolutions before tying the ends with an overhand knot. Just letting the strands ply back on their own would result in considerable loss of the clockwise twist and a fringe that isn't tight enough for this slick yarn.

7 Wet-finish in a basin of warm water with a drop of mild shampoo and gentle agitation, leaving the

scarf to soak for about 10 minutes before rinsing in clear water. Line-dry.

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RESOURCES

Wilson, Susan. Weave Classic Crackle & More. Atglen, PA: Schiffer, 2011.

BOBBIE IRWIN, of Montrose, Colorado, has been weaving for 50 years and specializing in iridescence for the last 20. She is the author of Weaving Iridescence: Color Play for the Handweaver. She is a former contributing editor to Handwoven and has taught in 40 states as well as Canada and Australia.







Quilt & Fiber Arts Museum





Neon Incandescence

DOROTHY TUTHILL



STRUCTURE

Deflected doubleweave and networked twill.

EQUIPMENT

8-shaft loom, 19" weaving width; 12-dent reed; 3 shuttles; 10 bobbins.

YARNS

Warp: 2/14 Alpaca Silk (80% alpaca/20% silk; 3,472 yd/lb; Valley Yarns; WEBS), Light Gray, 528 yd; Amethyst, 464 yd; Black, 376 yd. 8/2 Tencel (100% lyocell; 3,360 yd/lb; Valley Yarns; WEBS), Aquamarine, Ruby, Burnt Orange, and Lemon Grass, 64 yd each. 8/2 Tencel (100% lyocell; 3,360 yd/lb; Brassard), Mauve, 64 yd. 8/2 bamboo (100% rayon from bamboo; 3,360 yd/lb; Brassard), Magenta, 64 yd. 20/2 silk (100% spun silk; 4,900 yd/lb; RedFish Dyeworks), bright green, 64 yd.

Weft: 2/14 Alpaca Silk, Light Gray, 500 yd. 8/2 Tencel (Valley Yarns), Aquamarine, 65 yd; Ruby, Burnt Orange, and Lemon Grass, 56 yd each. 8/2 Tencel (Brassard), Mauve, 65 yd. 8/2 bamboo, Magenta, 65 yd. 20/2 silk, bright green, 65 yd. Hatfield (100% baby alpaca; 437 yd/50 g; 3,900 yd/lb; WEBS), Charcoal, 349 yd. Crystal (85% polyester/15% cotton; 144 yd/25 g; 2,600 yd/lb; Stacy Charles Fine Yarns, WEBS), #03 Silver Mist, 125 yd.

Note: Amethyst 2/14 Alpaca Silk is no longer available. Substitute Eggplant, a darker purple, or another color. The 20/2 silk is an odd color lot, use your choice of bright green.

WARP LENGTH

454 ends 4 yd long (allows 10" for take-up, 30" for loom waste; loom waste includes fringe).

SETTS

Warp: 24 epi (2/dent in a 12-dent reed). Weft: 24 ppi.

DIMENSIONS

Width in the reed: 1811/12". Woven length: (measured under tension on the loom) 104". Finished size: (after wetfinishing) 17" × 97" plus 81/2" fringe.

This shawl, woven in the depth of winter, brings to mind much of what is delightful about the sun-colors refracted through raindrops and ice crystals as rainbows or sundogs (patches of concentrated light sometimes seen on either side of the sun), sunlight or even moonlight (which is technically also sunlight), or light reflected from water, rock, and snow. For me, this shawl brought light incandescence—into my dark-day doldrums.

Just as light needs to interact with matter to be seen, two weave structures interact in this shawl. Deflected doubleweave brings spots of color to the shawl, while the twill adds drape. I wasn't at all sure what would happen when I wove the two structures as one, but what happened looks to me a lot like sunsets, sunrises, and shadows on wildflowers.

There are 10 colors in the warp, and the same number in the weft. This may seem daunting, but I suggest that you start with the yarns you have on hand, picking colors you like to create a fabric you'll wear. I chose colors without much regard to fiber content, choosing yarns instead based on if they were of more-or-less comparable size. You should, too. Just avoid wools—they can stretch and shrink much more than the other yarns. The mixture of alpaca, Tencel, silk, and bamboo presented here is an artifact, not a decision. Unfortunately, there's nothing to be done about all the cutting and tail-tucking; just know it's worth it for the opportunity to be wrapped in light and color later.

Weaving tip

Without a floating selvedge, some of the wefts will not weave the two outer ends in the twill section. Dorothy did not find this to be a problem, but if you are concerned, add floating selvedges of Light Gray Alpaca Silk to each edge.

f I Wind a warp of 454 ends 4 yd long following the warp color order in Figure 1. Warp the loom using your preferred method following the draft in Figure 2. Centering for a weaving width of 1811/12", sley 2 per dent in a 12-dent reed.

2 Wind bobbins with each of the weft colors. Leaving at least 10" of unwoven warp for fringe, spread the warp with scrap yarn.

3 Leaving a tail 1½ yd long for hemstitching, weave 2 picks of plain weave using



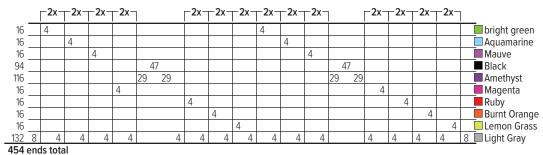
the Light Gray Alpaca Silk, then begin the pattern treadling. Use the tail to hemstitch in groups of 4 warp ends. Place 1 group of 5 ends in the center of each twill section.

4 Continue weaving following the draft in Figure 2 and the weft color order in Figure 3 until the pattern is complete, about 104". Note that the colors in the weft color order are repeated 4 times

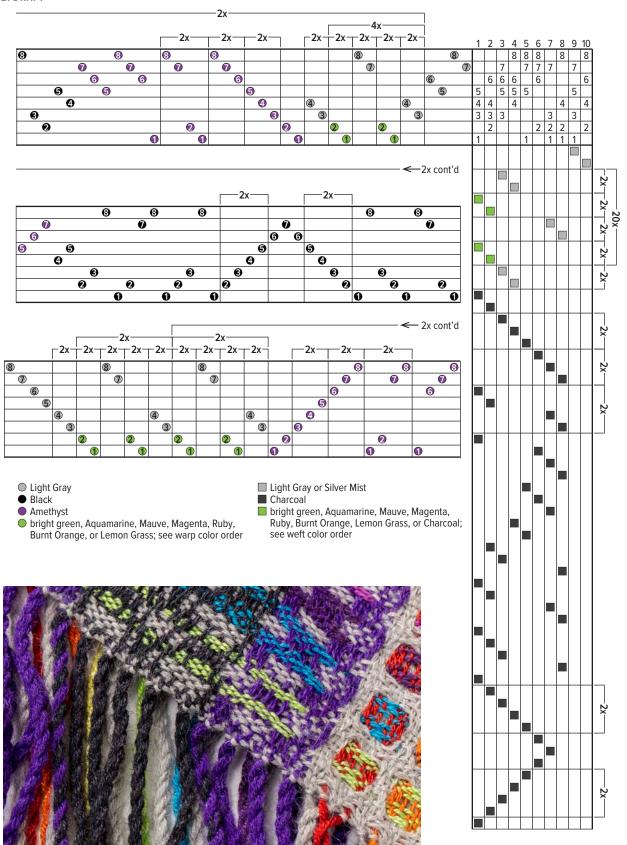
unless a number in the box indicates 2 picks or 105 picks. End with 2 picks of plain weave and hemstitch as you did at the beginning.

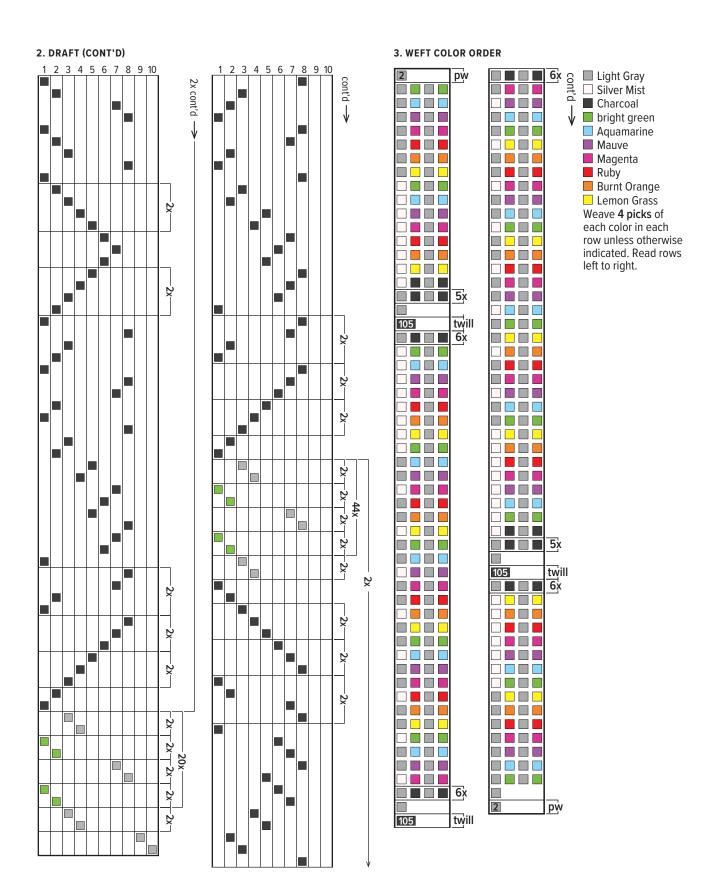
HEDDLE COUNT

1. WARP COLOR ORDER



2. DRAFT





 $oldsymbol{5}$ Leaving at least 10" for fringe on both ends, cut the fabric from the loom. Trim the fringe ends to 10". Prepare a twisted fringe using 2 hemstitched groups of the same color in each fringe (i.e., twist Light Gray with Light Gray, Ruby with Ruby, etc.).

6 Wet-finish in warm, soapy water by gently agitating and then leaving the scarf to soak for 20 minutes. Rinse well in clean warm water. Lay flat or hang until damp, then press with a wet cloth.

DOROTHY TUTHILL is a naturalist and weaver living on the high plains of Wyoming. She teaches weaving at Cowgirl Yarn, her local yarn shop.











Autumn Pearls

JENNIFER SARGENT



STRUCTURE

Plain weave with warp and weft floats.

FOILIPMENT

6-shaft loom, 9" weaving width; 12-dent reed; 2 shuttles; 6 bobbins.

YARNS

Warp: 8/2 Tencel (100% lyocell; 3,360 yd/lb; Valley Yarns; WEBS), Ecru, 153 yd; Lemon Drop, 105 yd; Straw and Whipple Blue, 72 yd each; Lemon Grass and Birch, 63 yd each; Silver Gray, 36 yd. 10/2 pearl cotton (4,200 yd/lb; UKI; Yarn Barn of Kansas), #76 Tea, 36 yd. Weft: 8/2 Tencel, Birch, 224 yd; Lemon Drop, Lemon Grass, Straw, and Silver Gray, 10 yd each. 10/2 pearl cotton, #91 Flaxon, 170 yd.

WARP LENGTH

200 ends 3 vd long (allows 5" for take-up, 29 inches for loom waste; loom waste includes fringe).

Warp: 24 epi (2/dent in a 12-dent reed). Weft: 22 ppi.

DIMENSIONS

Width in the reed: 84/12". Woven length: (measured under tension on the loom) 74". Finished size: (after wet-finishing) 71/2" × 70" plus 6" fringe.

The word pearlescence immediately conjures up the image of pearls

in my mind, so naturally that's what I thought of when designing my project. In terms of its history, the milky-white shimmery pearl is thought to be the world's oldest gem. As early as 2300 BCE, pearls were given as presents to Chinese royalty. Their use in decoration can be traced back to 420 BCE based on a fragment found in the sarcophagus of a Persian princess. Julius Caesar passed a law in the first century BCE that said that only the ruling class could wear pearls, although considering their great cost (as all pearls at the time were natural), that law may not have been strictly necessary. Ignoring Julius Caesar's injunction, I own two pearl necklaces. I love their pale, colored richness and how they reflect the light with their luster and brilliance; it is both a surface brilliance and an internal brilliance. I wanted to bring some of these rich qualities into the autumn season and exchange the wearing of a pearl necklace for the pearlescent color and warmth of a scarf draped softly around the neck.

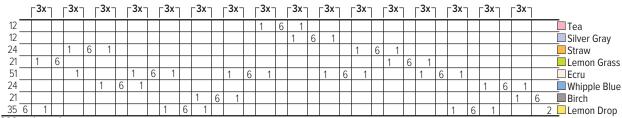
The weft color sequence is simply a suggestion for weaving this particular scarf. Play with your own ideas for changing the color order.

I Wind a warp of 200 ends 3 yd long following the warp color order in Figure 1. Warp the loom using your preferred method following the draft in Figure 2. Centering for a weaving width of 84/12", sley 2 per dent in a 12-dent reed.

2 Wind bobbins with each of the weft colors. Leaving at least 8" of unwoven warp for fringe, spread the warp with scrap yarn.

 $oldsymbol{3}$ Weave following the draft in Figure 2 for about 74". Note that each color stripe pick in sections A and B refers to the weft color order in Figure 3. Rotate through the colors as indicated in the weft color order as you treadle. End with 20 picks of plain weave. Weave a few picks of plain weave with scrap yarn to protect the weft.

1. WARP COLOR ORDER



200 ends total

4 Allowing at least 8" for fringe on both ends, cut the fabric from the loom. Trim the fringe ends to 8". Prepare a twisted fringe using 2 groups of 8 or groups of 8 and 9 in each fringe, for a total of 12 fringes at each end of the scarf.

5 Wet-finish by handwashing in hot water with a mild detergent (Jennifer used a few drops of Dawn dishwashing liquid), rinse with warm water, and hang to dry. Press with a steam iron.

RESOURCES

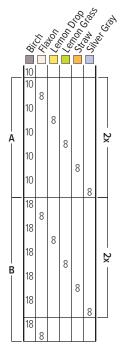
Sutton, Ann. The Structure of Weaving. Loveland, CO: Interweave, 1982, 148-149.

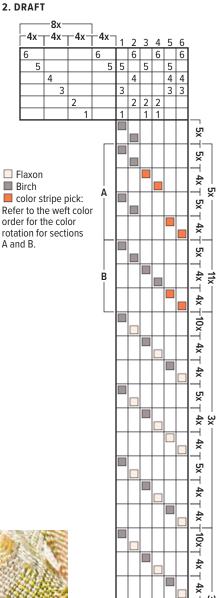
JENNIFER SARGENT can be found either in the garden or at one of her looms or sometimes teaching workshops. Whether weaving scarves or tapestries, she is always exploring ideas of pattern, texture, and color.

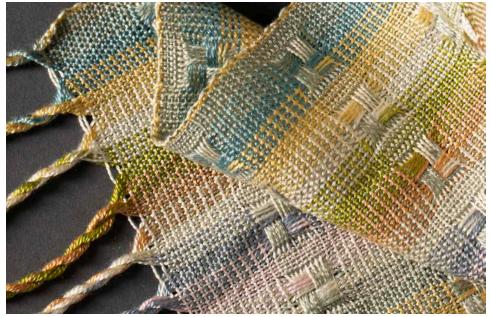
HEDDLE COUNT

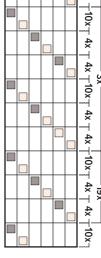
| Total | 200 |
|---------|-----|
| Shaft 1 | 32 |
| Shaft 2 | 32 |
| Shaft 3 | 32 |
| Shaft 4 | 32 |
| Shaft 5 | 36 |
| Shaft 6 | 36 |

3. WEFT COLOR ORDER









Perfect Pairing

BRENDA GIBSON



STRUCTURE

Satin.

EQUIPMENT

8-shaft loom, 11" weaving width; 10-dent reed; 2 shuttles.

YARNS

Warp: Carmelina 30/2 silk (100% muga silk; 6,800 yd/ lb; Treenway Silks), Natural, 1,495 yd. Taiyō 30/2 silk (100% bombyx silk; 7,500 yd/lb; Treenway Silks), #57 Raven Black and White, 260 yd each.

Weft: Blocks scarf: Taiyō 30/2 silk, White, 750 yd; #57 Raven Black, 60 yd.

Shaded Satin scarf: Taiyō 30/2 silk, White, 670 yd; #57 Raven Black, 167 yd.

Note: One 100 g skein of each yarn is sufficient for warp and weft for both scarves.

OTHER SUPPLIES

Yarn swift and ball/cone winder for winding the silk into balls or cones; PVA (polyvinyl acetate) glue also called white or wood glue, optional. Note: Winding the silk will be easier if you position the axis of the swift horizontally, like a Ferris wheel, rather than vertically, like a merry-go-round.

WARP LENGTH

403 ends 5 yd long for two scarves or 3 yd long for one scarf (includes floating selvedges; allows 14" for take-up, 26" for loom waste).

SETTS

Warp: 40 epi (4/dent in a 10-dent reed). Weft: 38 ppi.

DIMENSIONS

Width in the reed: 103/10". Woven length: (measured under tension on the loom) 140". Finished size: (after wet-finishing and hemming) two scarves, 9" × 58" each.

Satin and silk are a marriage made in heaven. It was no surprise when these two silks spoke of satin to me. I set myself a challenge of creating two different designs restricted to eight shafts on the same threading: one based on satin blocks and a second based on very gradually shaded satin. This is a project in which silk and satin could live happily ever after.

Eight shafts would normally be considered too few for satin blocks, but by using a combination of partial and full blocks of fiveend satin, it was possible after all. Where blocks meet, both in the warp and in the weft, there must be a clean break to avoid unsightly floats spoiling the effect. This means that the partial blocks can only be three threads wide, so I emphasized those blocks by outlining them in a color contrast—white three-end warp stripes are outlined in black, and black three-end blocks are outlined in white.

The weft stripes at each end of the Blocks scarf reverse the weave structure from warp-faced to weft-faced; one end of the scarf has black stripes, the other white.

The technique I use for shaded satin creates a very gradual transition from warp-faced to weft-faced and vice versa, and it is something I have made a particular study of over the last few years. The draft for the Shaded Satin scarf uses 20 treadles and is particularly suited to a dobby loom. If woven on a treadle loom, it requires changing the tie-up several times. Another option is to use a table loom with a lift plan and weaving software to keep track of your

Notes on satin

Based on a rearranged warp-faced twill, satin is ideal for showcasing a lustrous yarn as the warps are closely sett. The weft stitching points are scattered so that there is no obvious twill line.

progress. *Note:* WIFs for both scarves are available for subscribers in the *Handwoven* Library, handwovenmagazine.com/library. Lift plans for both scarves that can be used with table looms are available as free PDF downloads at LT.Media/SO2023-Extras.

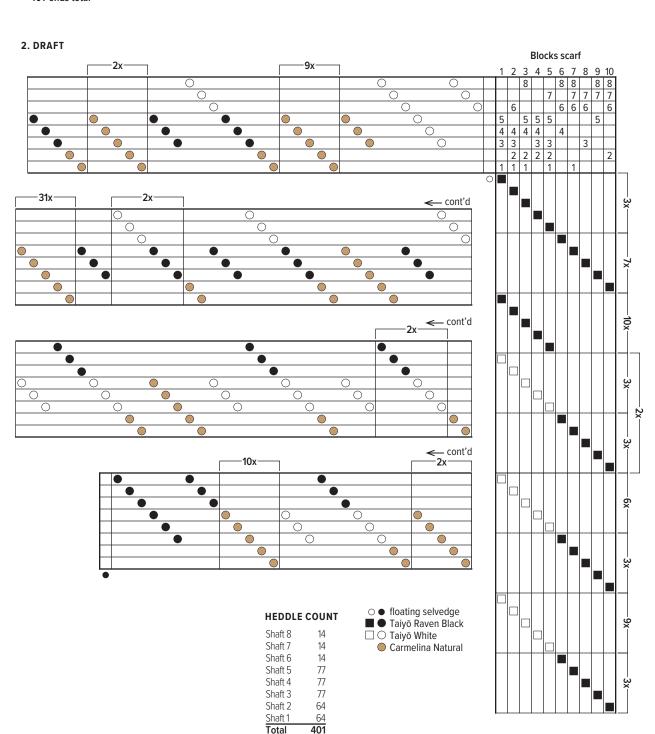
f I Wind a warp of 401 ends 3 yd long for one scarf or 5 yd long for both scarves following the warp color order in Figure 1. Wind 1 additional end each of white and black Taiyō to be used as floating selvedges and set them aside. Warp the loom using your preferred method following the draft in Figure 2. Centering for a weaving width of 103/10", sley 4 per dent in



1. WARP COLOR ORDER

| 299 | 50 | | 1 | 2 | 7 2 | | 2 157 | | | 2 7 | | | 12 50 | | | Carmelina Natural | | | | |
|-----|----|-------|---|---|-----|---|-------|---|---|-----|---|---|-------|---|---|-------------------|---|---|-----------------|---------------------|
| 51 | 9 | 3 | | 3 | 3 | | 3 | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | ■ Taiyō Raven Black |
| 51 | | 3 3 3 | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | 3 | | 3 | | 3 | 9 ☐ Taiyō White | |

401 ends total



a 10-dent reed. Sley the floating selvedges through empty dents on each side of the warp and weight them over the back beam.

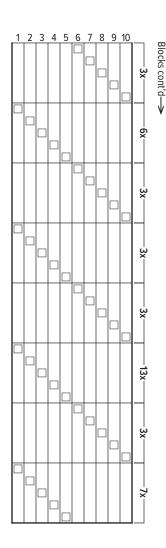
2 Wind bobbins with each of the weft colors. Minimize the front loom waste by lacing onto the apron rod and spreading the warp with similarly sized yarn. For the header, Brenda recommends throwing 2 or 3 picks and beating them together with a tapping motion.

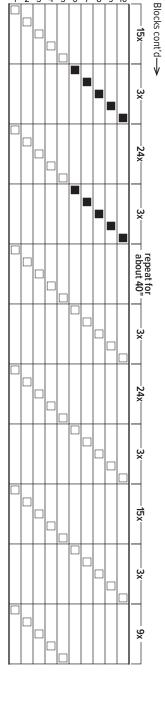
3 Begin weaving following the draft in Figure 2. After weaving about 1", hemstitch or apply PVA glue to prevent fraying, either of which will later be concealed inside the sewn hem.

4 Continue weaving following the draft in Figure 2 for about 70". Hemstitch or glue the last couple of picks as you did at the beginning.

5 Weave a pick with contrasting thread for a cutting line, then weave another scarf following the same treadling, a treadling you devise, or use the WIF for the Shaded Satin scarf available at handwovenmagazine.com/library or the lift plan available as a PDF as noted previously. Glue or hemstitch the ends as you did with the first scarf.

6 Cut the fabric from the loom and cut the two scarves apart along the cutting line. Fold the hems under 1½" from the ends, then fold under again for ¾" hems. Press and pin the hems into position and handsew.





Wet-finish in warm water with a little mild handwashing detergent suitable for silk. Gently agitate and leave to soak for 20 minutes. Rinse twice, adding a little fabric conditioner to the final rinse. Squeeze out water, then blot in a towel and air dry. Steam-press when almost dry.

RESOURCES

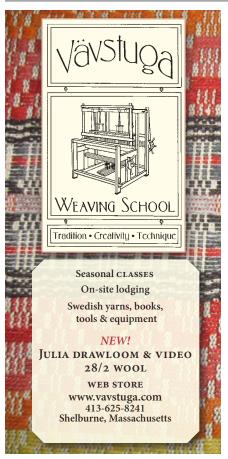
Alderman, Sharon. Mastering Weave Structures. Loveland, CO: Interweave, 2004.

Keasbey, Doramay. Pattern Techniques for Handweavers. Eugene, OR: selfpublished, 2005.

van der Hoogt, Madelyn. The Complete Book of Drafting for Handweavers. Petaluma, CA: Unicorn Books and Crafts, 1993.

BRENDA GIBSON determined, on retiring from her first career, to "take weaving seriously." She lives in London, where she now weaves prolifically and teaches weaving.











Dreaming of Butterflies Wrap

MERRIEL MILLER



Echo weave.

EQUIPMENT

4-shaft loom, 21" weaving width; 10-dent reed; 1 shuttle.

YARNS

Warp: 8/2 Tencel (100% lyocell; 3,360 yd/lb; Valley Yarns; WEBS), Amethyst, 413 yd. 8/2 Tencel (100% lyocell; 3,360 yd/lb; Brassard; Eugene Textile Center), Marigold, 452 yd; Dark Royal, 763 yd; Limette Pale, 497 yd.

Weft: 8/2 Tencel (Valley Yarns), Blue Purple, 912 yd.

OTHER SUPPLIES

Color-catcher laundry sheets or dye-fixative solution such as Retayne.

Last year, my guild hosted a class by Robyn Spady on the functions and features of Fiberworks weaving software (see Resources). If you haven't taken a class from Robyn, I recommend it. She has a huge wealth of knowledge and methodically presents information in bitesized chunks that are easy to understand and digest.

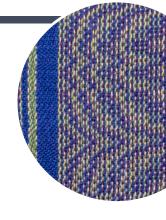
Robyn showed us how to develop parallel threadings using the software and apply the network drafting methods that Jannie Taylor described in her article "Four-Color Echo Weave (Echo-4)" (see Resources). Robyn expanded on Jannie's concept by adding an overshot treadling to the mix to create an interesting overall design.

After the class, I studied Jannie's article and reviewed her examples. Soon I was happily creating my own drafts and sampling color palettes. I was amazed at the complex designs that were possible using only four shafts. After I applied an overshot treadling sequence to one of my threadings, the outline of a butterfly emerged.

In this warp, four colors rotate in some places and not in others, requiring concentration during winding and threading. Treadling also requires some patience because although it's a one-shuttle weave with one weft, some pattern picks are repeated and others are not. For ease of weaving, I placed my pattern picks on treadles 1 through 4, and the tabby picks on treadles 5 and 6, which allowed me to alternate feet as I wove.

Whether you, too, are dreaming of butterflies or simply want to create a beautiful echo weave, this wrap is the perfect project.

f 1 Wind a warp of 605 ends 3½ yd long following the warp color order in Figure 1. Wind 2 additional ends of Dark Royal to be used as floating selvedges and set them aside. Warp the loom



WARP LENGTH

607 ends 31/2 yd long (includes floating selvedges; allows 10" for take-up, 28" for loom waste: loom waste includes fringe).

SETTS

Warp: 30 epi (3/dent in a 10-dent reed). Weft: 16-17 ppi.

DIMENSIONS

Width in the reed: 204/10".

Woven length: (measured under tension on the loom) 871/2". Finished size: (after wetfinishing) 19" × 83" plus 8" fringe.

Notes on structure

Four-color echo weave uses color, sett, and threading to create iridescence. The sett in the reed is very tight, sometimes up to 150 to 180 percent of a normal plain-weave sett. The tight sett produces a thick, luxurious cloth that glistens with a different color when viewed from various angles.

using your preferred method following the draft in Figure 2. Centering for a weaving width of 201/10", sley 3 per dent in a 10-dent reed. Sley the floating selvedges through empty dents on each side of the warp and weight them over the back beam.

2 Wind a bobbin with the weft. Leaving at least 10" of unwoven warp for fringe, spread the warp with scrap yarn.

 $oldsymbol{3}$ Leaving a weft tail 2 yd long for hemstitching, weave 3 picks of plain weave using treadles 6 and then 5, then begin the pattern treadling adding a tabby pick before each pattern pick. Note: To weave the shawl exactly as shown, your next pick (which will be your first tabby

pick) should be on treadle 6. After you have woven several inches, use the tail to work a row of Italian hemstitching in groups of 15–16 warp ends over the first 2 weft picks.

4 Continue weaving following the draft in Figure 2 to about 871/2". Weave 3 picks of plain weave and hemstitch as you did at the beginning. Note that the numerals in the treadling indicate pattern pick repeats. Weave tabby between pattern picks.

5 Remove the fabric from the loom. Trim the fringe ends to 9" and prepare a twisted fringe. Note: Merriel divided the warp ends in the fringe, placing Amethyst and Dark Royal in one ply and Marigold and Limette Pale in the other ply, so the twist in the fringe is distinct.

6 Wet-finish in warm water by gently agitating and then leaving the fabric to soak for 10 minutes. Add

HEDDLE COUNT

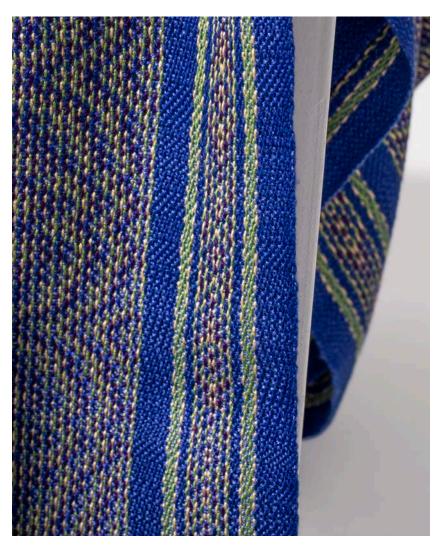
| Total | 605 |
|---------|-----|
| Shaft 1 | 156 |
| Shaft 2 | 150 |
| Shaft 3 | 151 |
| Shaft 4 | 148 |
| | |

color-catchers or a dye-fixative solution, such as Retayne, to the water to avoid color migration. Roll the fabric in a towel and squeeze out any excess water. Lay flat or hang to dry. Hard-press with a warm iron to bring out the shine in the Tencel.

RESOURCES

Spady Studios, spadystudios.com. Taylor, Jannie. "Four-Color Echo Weave (Echo-4)." Heddlecraft, May/June 2018, 3-43.

LOOK FOR MERRIEL MILLER on Facebook and Instagram at Handwoven Designs by Merriel.

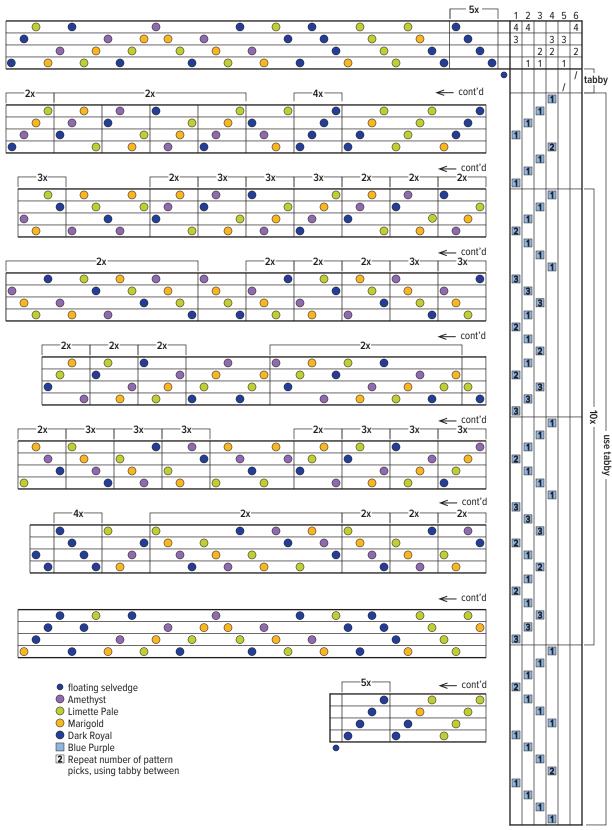


1. WARP COLOR ORDER

| | | 2x | 1 | 2x |] | —54x— |] | ─54x |] | 2x |] | 2x |] | |
|-----|------|----|-----|----|------|-------|-----|------|------|----|-----|----|------|--------------|
| 118 | | 1 | 1 | 1 | | 1 | | 1 | | 1 | 1 | 1 | | Amethyst |
| 142 | 5 | 1 | 1 1 | 1 | 5 | 1 | 1 1 | 1 | 5 | 1 | 1 1 | 1 | 5 | Limette Pale |
| 129 | 1 1 | 1 | 1 1 | 1 | 1 1 | 1 | 1 | 1 | 1 1 | 1 | 1 1 | 1 | 1 1 | Marigold |
| 216 | 22 5 | 1 | | 1 | 5 18 | 1 | | 1 | 18 5 | 1 | | 1 | 5 22 | |
| | | | | | | | | | | | | | | _ |

605 ends total

2. DRAFT





Ray of Light Placemats and Napkins

MALYNDA ALLEN

STRUCTURE

Modified M's and O's.

EQUIPMENT

4-shaft loom, 16" weaving width; 12-dent reed; 2 shuttles; 4 bobbins.

YARNS

Warp: 8/2 cotton (3,360 yd/lb; Georgia Yarn Company), Natural, 2,185 yd.

Weft: 8/2 cotton (3,360 yd/lb; Valley Yarns; WEBS), #3611 Red, #5637 Pacific, and #7198 Burnt Sienna, 187 yd each; #1205 Banana, 82 yd; #2574 Heather, 216 yd. 8/2 Cotton (3,360 yd/lb; Yarn Barn of Kansas), #04 Plum Green, 164 yd; #5214 Magenta, 187 yd. 6/2 cotton (2,520 yd/lb; Valley Yarns; WEBS), Red, Royal, Magenta, and Sienna, 90 yd each; Sage, 135 yd; Banana, 68 yd.

OTHER SUPPLIES

Double-bobbin shuttle (optional); sewing thread in Natural.

Lately I have been exploring M's and O's, so for this project, I thought I would play with color interaction in a modified M's and O's draft from Marguerite Porter Davison's A Handweaver's Pattern Book. A natural warp allowed me to experiment with weft colors of my choice. By using colorful wefts, I was able to explore color interplay and see how different color combinations reacted to light.

As often happens, I got bored weaving the same pattern over and over, so I began to play with different treadling and color placements. A thicker weft made one of those new patterns perfect for placemats, so I wove a set to coordinate with the napkins.

By adjusting the color order when weaving M's and O's, you can create a variety of patterns. Feel free to explore other color placements and combinations. This design is just as beautiful in a single weft color, which causes the solid pattern to emerge.

f I Wind a warp of 378 ends 5¾ yd long in Natural 8/2 cotton. Wind 2 additional ends of Natural to be used as floating selvedges and set them aside. Warp the loom using your preferred method following the draft in Figure 1. Centering for a weaving width of 1511/12", sley 2 per dent in a 12-dent reed. Sley the floating selvedges through empty dents on each side of the warp and weight them over the back beam.

2 Spread the warp with waste yarn. For napkins, wind a bobbin with 8/2 cotton in each of the two weft colors. For napkin 1, Red is the main color and Banana the contrast.



380 ends 5¾ yd long (includes floating selvedges; allows 15" for take-up, 39" for loom waste and sampling). Add 22" for each additional napkin or placemat.

Warp: 24 epi (2/dent in a 12-dent reed). Weft: 33 ppi for napkins; 20 ppi for placemats (18 ppi for placemat 3).

DIMENSIONS

Width in the reed: 1511/12".

Woven length: (measured under tension on the loom) napkins about 19" each; placemats about 191/4" each, or about 153" total woven length. Finished size: (after wetfinishing and hemming) four napkins about $13\frac{1}{4}$ " × $14\frac{1}{2}$ " each, and four placemats about 13½" × 14½" each.

Notes on M's and O's

Typically, M's and O's has alternating blocks of plain weave and ribs; in Malynda's version, the plain-weave blocks are replaced with a textured weave.

 $oldsymbol{3}$ Following the draft in Figure 1, weave the hem of napkin 1 for 11/2". Weave the body of the napkin until it measures about 16", ending with the balance block (the 48 picks after the 4x repeat). Weave the final hem for 11/2". Your napkin should measure about 19" total. Weave 2 picks of contrasting yarn to mark a cutting line.

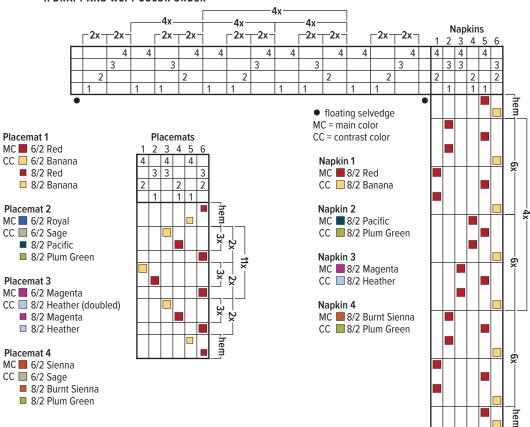
4 Repeat step 3 for each of the three remaining napkins using the weft colors listed in Figure 1.

 $oldsymbol{5}$ For placemats, wind bobbins with the 6/2 weft colors. As with the napkins, follow the weft color suggestions listed in Figure 1. Weave the hem in 8/2 cotton for 11/2". Switch to the 6/2 cotton weft. Weave

HEDDLE COUNT

Shaft 4 113 Shaft 3 76 Shaft 2 76 113 Shaft 1 Total 378

1. DRAFT AND WEFT COLOR ORDER



Weaving tips

- Placemat 3 uses 8/2 Heather doubled in the body instead of 6/2 cotton. Wind your bobbin holding two ends together or use a doublebobbin shuttle. The doubled 8/2 weft weaves at a slightly lower sett (18 ppi). To weave a placemat that matches the length of the other placemats, weave one fewer repeat. Malynda couldn't find 6/2 cotton in a similar blue, but 6/2 cotton in an alternate color could be used instead of the doubled 8/2 cotton.
- These placemats are almost square. If you prefer a wider, more traditional placemat, weave a few more repeats. This will require additional weft and a longer warp.



the body of the placemat following the draft until it measures about 161/4", ending with the balance block (the 14 picks after the 11x repeat). Using 8/2 cotton, weave the hem for 11/2". The finished placemat should measure about 191/4". Weave 2 picks of contrasting yarn to mark a cutting line.

6 Weave the remaining three placemats as you did the first, using the alternate weft colors (see Weaving tips). Weave about 1" of scrap yarn to secure the weft.

7 Cut the fabric from the loom. Zigzag both ends of each napkin and placemat to secure the weft. Wet-finish by machine washing as you intend to wash the finished

items and tumble dry until damp dry. Press and allow to air-dry. Cut napkins and placemats apart along the contrasting yarn picks.

8 Fold hems up 1" and press. Turn raw edges under to meet the fold and press again. Sew the hems in place by hand or machine.

RESOURCES

Davison, Marguerite Porter. A Handweaver's Pattern Book. Rev. ed. Swarthmore, PA: M. P. Davison, 1971, 63.

A mother of nine, MALYNDA ALLEN grew up in the sunshine of the American Southwest. She now basks in the warmth of the firelight on snowy winter days in the Rocky Mountains.





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Lowell, Michigan







Northern Lights Tote

SARA PATE

STRUCTURE

Twill.

EQUIPMENT

8-shaft loom, 33" weaving width; 15-dent reed; 1 shuttle.

YARNS

Warp: 10/2 pearl cotton (4,200 yd/lb; UKI; Yarn Barn of Kansas), #154 Forest Green and #12 Red, 303 yd each; #139 Chamois, #11 Tangerine, #23 Nassau, #53 Scarab, #109 Bermuda, and #80 Oleander, 300 yd each.

Weft: 10/2 pearl cotton, #136 Wintergreen, 982 yd.

Note: #154 Forest Green, #139 Chamois, #23 Nassau, and #80 Oleander are discontinued. Try #136 Wintergreen or #28 Hunter, #91 Flaxon or #139 Champagne, #63 Yale

Blue or #21 Soldier Blue, and #3 Fuchsia as substitutes.

OTHER SUPPLIES

Crafty Carry-All pattern from Serendipity Studio's *Artful Bags* pattern booklet (see Resources); 2½ yd commercial fabric (cotton or poly/cotton); 1½ yd Pellon Peltex; 3 yd Pellon 911FF fusible facing; fastener; jeans/denim sewing needle.

WARP LENGTH

962 ends $2\frac{1}{2}$ yd long (includes floating selvedges; allows 4" for take-up, 36" for loom waste).

SETTS

Warp: 30 epi (2/dent in a 15-dent reed). *Weft:* 20 ppi.

DIMENSIONS

Width in the reed: 322/45"

Woven length: 50". Finished fabric size: (after wet-finishing) 26" × 44".

Finished tote: about $16" \times 14\frac{1}{2}" \times 6"$, with 24" handles.

Rather than look for the perfect bag that would allow me to carry my weaving and craft supplies with me, I decided to make my own. This bag has a very strong large interior pocket designed to hold a heavy object, such as a bobbin winder. The other two interior pockets and four small exterior pockets are great for smaller items, including shuttles, scissors, thread, my guild nametag, and tea bags.

The aurora borealis, or northern lights, that we see so often in my home state of Alaska inspired me to design and weave the fabric using the iridescence weaving technique described in *Weaving with Echo and Iris* by Marian Stubenitsky. The iridescence creates a sense of motion in the design as it transitions through eight colors. Stubenitsky's book includes tips on how to select colors for your warp and weft to obtain the visual effects that you desire.

I used a warping paddle, so that I could wind eight threads at a time to speed up the process, and wound a warp long enough to allow me to weave 6 yards of fabric, which was plenty to sample and make both a vest and this bag. I figured if I was warping 962 threads, I should make more than one item. I used the handwoven fabric for the body of the tote, putting one treadling pattern on one side and another on the other side. I used a poly/cotton fabric for the interior, handles, and exterior pockets.

1 Wind a warp of 960 ends $2\frac{1}{2}$ yd long following the warp color order in Figure 1. Wind 2 additional ends, 1 each of Forest

Green and Red, to be used as floating selvedges and set them aside. Warp the loom using your preferred method following the draft in Figure 2. Notice that one of the repeats is 3x and not 2x like the rest of the repeats. Centering for a weaving width of 32²/15", sley 2 per dent in a 15-dent reed. Sley the floating selvedges through empty dents on each side of the warp and weight them over the back beam.





f 2 Spread the warp with scrap yarn. Wind a bobbin with the weft.

3 Weave 8 picks of plain weave, then begin the pattern treadling.

4 Weave following the Diamond treadling in Figure 2 for 25" for one side of the tote. Weave a few picks of contrasting yarn, then continue following the Rounded pattern treadling for 25" for the second side of the tote. End with 8 picks of plain weave.

5 Remove the fabric from the loom. Zigzag stitch the ends.

6 Wet-finish by machine washing in warm water. Tumble dry. Press.

7 Sew the bag following the Crafty Carry-All pattern (see Resources).

RESOURCES

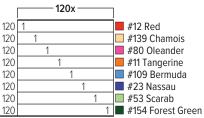
Stubenitsky, Marian. Weaving with Echo and Iris. Randwijk, Netherlands: Weefschool De Hoeve, 2014. Whitt, Kay. Artful Bags. Serendipity Studio, 2012. sewserendipity.com /artful-bags-pattern.

SARA PATE lives in Alaska and weaves in the winter, fishes in the summer, and hikes with her dog year-round.

HEDDLE COUNT

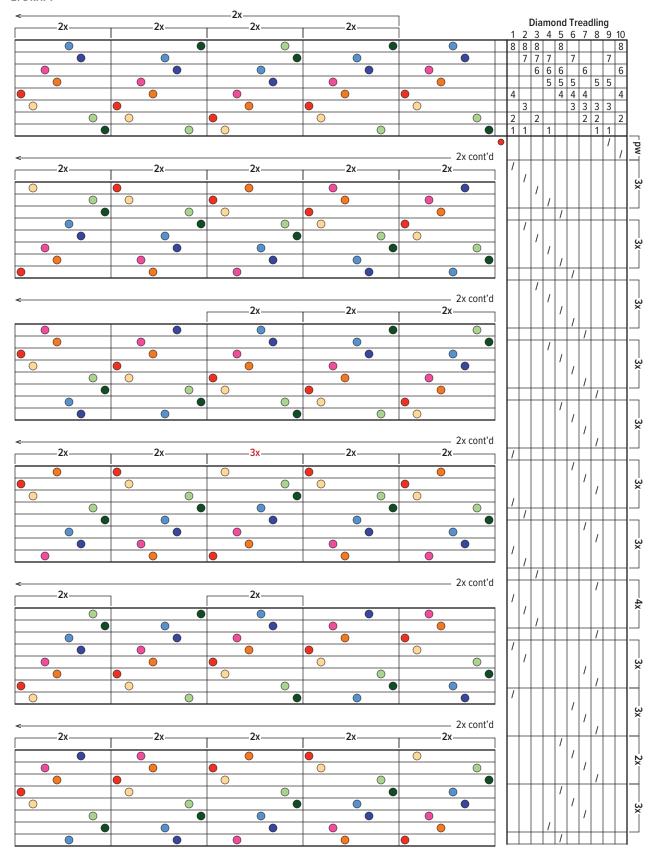
| Total | 960 |
|---------|-----|
| Shaft 1 | 120 |
| Shaft 2 | 120 |
| Shaft 3 | 120 |
| Shaft 4 | 120 |
| Shaft 5 | 120 |
| Shaft 6 | 120 |
| Shaft 7 | 120 |
| Shaft 8 | 120 |
| | |

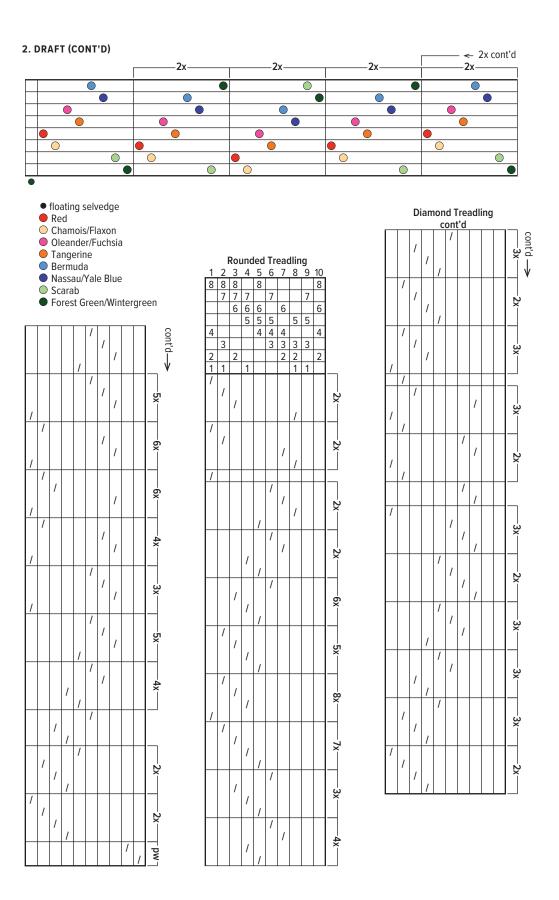
1. WARP COLOR ORDER

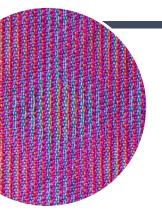


960 ends total

2. DRAFT







More Echoes, Please

BARBARA GOUDSMIT

STRUCTURE

Twill with parallel threading.

EQUIPMENT

12-shaft loom, 17" weaving width; 15-dent reed; 1 shuttle.

YARNS

Warp: Cotton Ne 20/2 mercerized (1,840 yd/100 g; Venne-Colcoton Unikat; Lone Star Loom Room), #3020 Raspberry and #4024 Deep Purple, 318 yd each; #2009 Orange, #5052 Shamrock, #4064 Peacock, and #4062 Cobalt, 315 yd each. Weft: Cotton Ne 20/2 mercerized, #4072 Red Violet, 1,400 yd; #4062 Cobalt, 4 yd.

WARP LENGTH

632 ends 3 yd long (includes floating selvedges; allows 8" for take-up, 24" for loom waste: loom waste includes fringe).

SETTS

Warp: 371/2 epi (sley 2-3 per dent in a 15-dent reed). Weft: 371/2 ppi.

DIMENSIONS

Width in the reed: 1614/15". Woven length: (measured under tension on the loom) 76". Finished size: (after wet-finishing) 15" × 67" plus 5" fringe.

While studying Weaving with Echo and Iris, a book by Marian *Stubenitsky*, I was inspired to experiment with finding iridescence through echo/parallel threadings and network treadlings.

I started out on eight shafts by applying her techniques of echo-4 and echo-8 using four and eight parallel lines respectively. When I got a 12-shaft loom, I continued playing around with echoes and iridescence using the additional four shafts at my disposal. Stubenitsky's echo-4 technique for eight shafts uses four parallel threadings that are each two shafts apart. It was only a small step to try out six parallel threadings on my 12-shaft loom. The iridescence I obtained in this way was truly exciting.

For this project, I designed a shawl with six parallel threadings on 12 shafts and used a design line of small star shapes as a basis for both warp and weft. I then made six parallel lines out of this design line for the warp, each two shafts apart. I developed the treadling by redrawing the design line on a straight twill network with a four-end initial. I opted for a bright combination of colors: pink, orange, green, turquoise, blue, and purple in the warp and red-violet as weft. I landed on this color combination after trying out numerous color options in my weaving software. (Isn't it great that we can turn design lines into parallel threadings and network treadlings while endlessly playing around with color with just a few clicks of the mouse?)

I love weaving these echo projects because it is so satisfying to see the interaction of colors emerge on the loom. One of the nicest things about this weaving structure is that both sides of the cloth have different interactions of warp and weft colors. I think it is amazing to see how the same colors create two equally beautiful yet unique sides of the shawl.

Lift plan for table looms

A lift plan for this scarf that can be used with table looms is available as a free PDF download at LT.Media /SO2023-Extras.

I Wind a warp of 630 ends 3 vd long following the warp color order in Figure 1. Wind 2 additional ends, 1 each of Deep Purple and Raspberry, to be used as floating selvedges on the right and left sides of the warp, respectively, and set them aside. Warp the loom using your preferred method following the draft in Figure 2. Centering for a weaving width of 1614/15", sley 2-3 per dent in a 15-dent reed. Sley the floating selvedges through the reed on each side of the warp and weight them over the back beam.

2 Wind a bobbin with the weft yarn. Leaving at least 7" of unwoven warp for fringe, spread the warp with scrap yarn.

 $oldsymbol{3}$ Weave 9 picks for the border, then begin the pattern treadling following the draft in Figure 2. Use a 2 yd piece of



Cobalt for double hemstitching over the border picks in 68 groups of 9 warp ends and 2 groups of 10 ends. Note: For ease in distinguishing between the border and pattern picks during hemstitching, add a strand of contrasting-color scrap yarn to the first pattern pick. The border picks will be easily recognizable below the contrasting scrap yarn. Remove the scrap yarn after hemstitching.

4 Continue weaving following the draft in Figure 2 for 13 pattern repeats (about 75"). End with 9 picks for the border and double hemstitch as you did at the beginning. (See the note in step 3 about adding a strand of scrap yarn to the last pattern pick.)

5 Leaving at least 7" for fringe on both ends, cut the fabric from the loom. Trim the fringe ends to 7". Prepare a twisted fringe using 2 hemstitched groups in each fringe.

6 Wet-finish in warm water by gently agitating and then leaving the scarf to soak for 20 minutes. Line-dry.

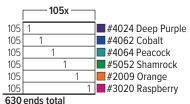
RESOURCES

Stubenitsky, Marian. Weaving with Echo and Iris. 2nd ed. Randwijk, Netherlands: Weefschool De Hoeve, 2017.

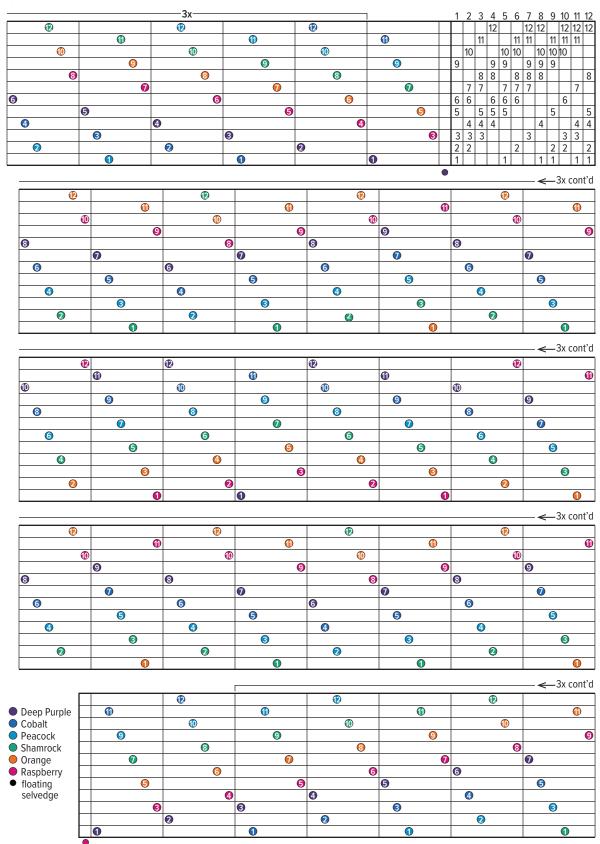
HEDDLE COUNT

| Total | 630 |
|----------|-----|
| Shaft 1 | 53 |
| Shaft 2 | 52 |
| Shaft 3 | 53 |
| Shaft 4 | 52 |
| Shaft 5 | 53 |
| Shaft 6 | 52 |
| Shaft 7 | 53 |
| Shaft 8 | 52 |
| Shaft 9 | 53 |
| Shaft 10 | 52 |
| Shaft 11 | 53 |
| Shaft 12 | 52 |

1. WARP COLOR ORDER



2. DRAFT

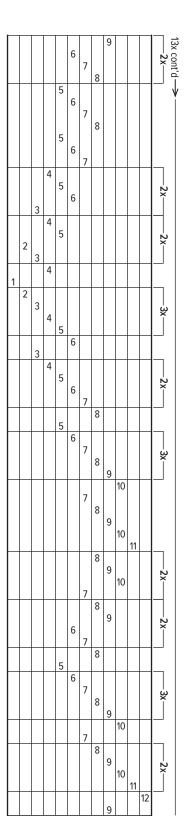


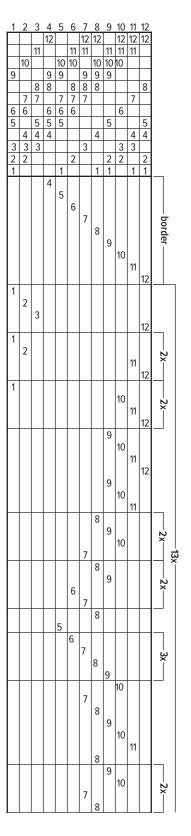
2. DRAFT (CONT'D)

| 1 | | | | | | | | | 10 | 11 | 12 | JX. | 13x cont'd -> |
|---|---|---|---|---|---|---|---|---|----|----|----|---------|---------------|
| | 2 | | | | | | | | | 11 | 12 | | V |
| 1 | 2 | 3 | | | | | | | | | 12 | | |
| _ | 2 | 3 | | | | | | | | | | | |
| | | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | บบเนย — | |



 ${\bf BARBARA\ GOUDSMIT}\ loves\ to\ experiment$ with weave structures and yarns. She writes about her weaving adventures on her blog, awovenworld.com.







Weaving with Rayon Chenille

BY DEBORAH JARCHOW

As soon as I discovered rayon chenille, I was fascinated. In fact, for many years, I was a production weaver, specializing in rayon chenille garments and accessories. The yarn weaves into cloth with wonderful qualities: beautiful drape, soft and snuggly texture, and iridescence created by the fabric reflecting light. For me, these attributes make rayon chenille worth any extra effort when working with it. The yarn sometimes seems to have a mind of its own, requiring some special attention when weaving. Understanding the yarn's idiosyncrasies is helpful in successfully weaving gorgeous chenille fabric.

Rayon is a type of fiber made from cellulosic plant substances (such as wood pulp) that are chemically processed into a filament. Chenille refers to a subset of yarn created with tightly twisted core threads that trap short

lengths (pile threads) in the twists. Think of it like a pipe cleaner but with a softer core. Chenille can be made from many types of fibers, but rayon chenille, made from viscose, has the lustrous appearance that I love.

CHENILLE'S CONSTRUCTION AND CHARACTERISTICS

Understanding the yarn's construction is critical to successfully weaving rayon chenille fabric. The sett is based on the size of the core thread rather than the width of the pile threads. Why? The pile threads get mashed down and do not contribute to the integrity of the woven cloth. In Photo 1, some of the pile threads have been stripped from a strand of chenille. Notice the dramatic size difference between the core threads and the yarn with pile threads still



Chenille garments for sale in Deborah's booth at a retail show

attached. In addition, the tightly twisted core threads make the yarn want to twist back onto itself. Because rayon is a slippery fiber, if you base your sett on the yarn with the pile, strands often escape from the woven fabric and make twisted loops above and below the cloth. These are called worms (see Photo 2) and are the bane of chenille weavers. I like to use rayon chenille that is 1,300 to 1,450 yards per pound, setting the warp at 15 to 16 ends per inch to weave stable cloth that doesn't worm.

Chenille's construction also affects how it reflects light. When the pile threads are inserted in the core threads, a slight "V" is created where the center of the pile crosses through the core. This directional V can cause differences in the way light reflects from the finished fabric, creating nap. If the warp is wound back and forth on a warping board or reel, there is no problem.



Chenille yarn with missing pile



A "wormy" chenille scarf

However, if you are sectional warping, the nap might go in different directions in different sections, which can cause problems. It is difficult to tell the nap orientation in the yarn, but directional variances will show up in the finished cloth. For this reason, I do not sectional warp when using chenille.

WINDING AND WARPING

Rayon stretches, so be aware of its elasticity when weaving with it. As you wind the warp, keep your tension loose, and don't leave the warp on the board or reel for too long. Wind each chain in one session to avoid overstretching any areas of the warp. Tie loose choke ties to avoid

crushing the pile threads. When weaving, loosen the tension each time you get up from the loom to allow the yarn to relax and avoid stretching out any sections.

Tying on to a working warp minimizes loom waste because I can weave right up to the weaver's knots. Depending on your loom, that can save a substantial amount of chenille.

When warping the loom, be careful to wind with even tension. The chenille wants to twist back on itself, so take extra time to ensure all ends are straight and tensioned properly as you wind. Being diligent during this step will pay off when you are weaving.

My preferred method of warping is to have a working warp on the loom, sometimes called a dummy warp (see Photo 3), which works well if you will be using the same threading for more than one project. I warp the loom using carpet warp in four colors, placing a different color on each shaft. Following the threading order for my intended project, I bring those warp ends through the heddles and reed.

Then, after I wind my chenille warp chains, I tie them onto the working warp using weaver's knots (see Resources) to secure the joins. I find having inserted eye heddles on my loom helps as they are large and allow the knots to pass through them easily. Tying on to a working warp minimizes loom waste because I can weave right up to the weaver's knots. Depending on your loom, that can save a substantial amount of chenille. Photo 4 shows the end of my warp where it is tied onto the working warp.

WEAVING

I beat firmly to achieve 12 to 14 picks per inch. The warp ends are close together, so this takes some extra effort. The fabric is very stiff

when on the loom, but I know from experience it will soften nicely during the finishing process.

Although you can weave different structures with chenille, I prefer to use plain weave because it does such a good job of securing the fibers and preventing worms. A structure with floats may allow the yarn to twist out of the fabric. To avoid the dreaded worming, you can alternate between weaving the pattern with the chenille and plain-weave ground cloth with rayon sewing thread. The ground cloth traps the strands and keeps them secure.

FINISHING THE ENDS

End treatments can be tricky with rayon chenille because the strands want to twist and worm out of typical methods. If you are twisting or braiding the ends, do so extremely tightly or threads will work their way out of the bundles. I prefer to either hem or crimp the fringe.

To crimp, I weave the area for fringe at the ends of my piece with a



Warp chains ready to tie onto the working warp



Weaving right up to the working warp so there is no warp waste at the end



Weaving with acrylic yarn and then removing it after wet-finishing creates crimped fringe.

worsted-weight acrylic yarn. After I've removed the fabric from the loom, I zigzag stitch across the end of the fringe area and then wet-finish as usual. After the piece comes out of the dryer, I cut off the zigzag stitching and remove the acrylic yarn. The chenille fringe will be kinky, as you can see in Photo 5. This crimped look lasts for several years but will eventually relax. In addition, some of the pile threads will fall out over the same period, and the fringe will look rather messy. At that point, I cut off the fringe and hem the piece. Plan for your end treatment before warping the loom, including the possibility of crimped fringe that is replaced with a hem in the future.

WET-FINISHING

Wet-finishing is key to creating the beautiful drape chenille fabric is known for. After securing all the raw edges with zigzag stitching, wash your fabric in a washing machine on a delicate cycle, with cold water, but without detergent. Carefully remove it from the washer; rayon can be delicate when wet. Place the fabric in the dryer and dry on permanent-press cycle until the fabric is completely dry. I like to use a fabric-softener sheet in the dryer. Check the dryer filter and clean it a time or two during the cycle as quite a bit of lint will come off the cloth. After this finishing process, the fabric will need to be

dry-cleaned in the future. It may seem appealing to handwash and the fabric will probably be okay for a few times, but at some point, the pile threads will have loosened enough that many will fall out of the core threads, leaving a fabric that looks like cheesecloth. Instead, follow my advice about dry-cleaning to ensure many happy years of wearing your beautiful chenille garments!

RESOURCES

"5 Simple Weaving Knots Every Weaver Should Know," Warped Fibers, July 22, 2020. warpedfibers.com /weaving-knots.



Heavenly Harvest Chenille Poncho

DEBORAH JARCHOW



Plain weave.

EQUIPMENT

4-shaft loom, 24" weaving width; 8-dent reed; 1 shuttle.

YARNS

Warp: Rayon Chenille Deluxe (100% rayon; 1,300 yd/lb; Silk City Fibers), #242 Aegean Blue, 420 yd; #882 Garden and #074 Wild Chestnut, 294 vd each. Rayon Chenille 1300 (100% rayon; 1,300 yd/lb; Silk City Fibers), #672 Golden Sun, 336 yd. Weft: Rayon Chenille 1300, #003 Celadon, 722 yd.

OTHER SUPPLIES

11/4" × 1" piece of Ultrasuede or similar fabric.

WARP LENGTH

384 ends 31/2 yd long (allows 8" for take-up, 36" for loom waste).

SETTS

Warp: 16 epi (2/dent in an 8-dent reed). Weft: 12 ppi.

DIMENSIONS

Width in the reed: 24". Woven length: (measured under tension on the loom) 82". Finished size: (after wet-finishing and sewing) 20" × 34" (each side when folded as poncho).

This project combines my love of rayon chenille with a desire to wear a soft, comforting wrap. The fabric hugs your body, feeling luxurious and soothing against your skin. While rayon chenille may have a reputation for being difficult to work with, the results are worth any extra effort. (Also in this issue, I have a companion article with detailed steps to help you succeed when weaving with rayon chenille, see page 66.)

I designed a basic pattern for this poncho that emphasizes the qualities of the fabric rather than the complexity of the construction, resulting in a beautiful garment where the handwoven cloth can shine. It can be turned to drape in different ways depending on your preference.

As I explain in my article, it is crucial to sett the warp at 15 to 16 ends per inch (epi). I prefer 16 epi because there is a synergy between the threading and the denting. I can group 4 sets of shafts (1-4) as I thread the heddles, giving me 16 ends per set that are in turn sleyed in 8 dents and equivalent to 1 inch of width in the reed. With an 8-dent reed threaded 2 ends per dent, I find it easy to check my threading as I go along.

Because the sett is dense, you must beat firmly to achieve 12 picks per inch. While weaving, the fabric will seem very stiff, but don't worry; it will soften up delightfully during wet-finishing.

Many weavers fear cutting their fabric to fashion a garment, but this poncho only requires folding the finished piece and stitching a seam along one side. Because the weft is a lighter color than the dark teal warp threads at the edges, any irregularities in the selvedges are noticeable, so I chose to fold under the neck and bottom edges.

I Wind a warp of 384 ends 3½ yd long following the warp color order in Figure 1. Warp the loom using your preferred method and threading for plain weave. Note: You will need 96 heddles on each shaft. Centering for a weaving width of 24", sley 2 per dent in an 8-dent reed.

f 2 Wind a bobbin with Celadon. Spread the warp with scrap yarn.

3 Weave for 82" in plain weave with Celadon. There is no need to hemstitch because the piece will be hemmed.

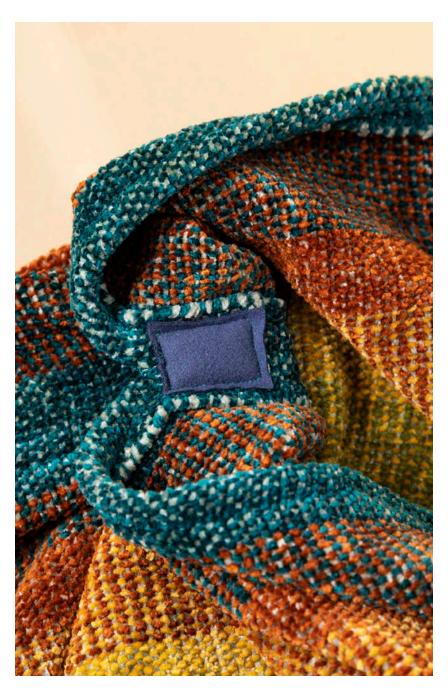
4 Weave about 1" with scrap yarn to protect the weft.

5 Cut the fabric from the loom. Zigzag stitch along the ends of the woven fabric to secure the warp ends. Wet-finish by machine washing in cold water on a delicate cycle. Do not add any detergent or soap. Tumble dry on permanent press cycle until completely dry. Trim warp and weft tails as well as the warp threads beyond the zigzag stitching.

1. WARP COLOR ORDER

| | | 14x | | 12x |] | [12x |] | [14x | | 14x | | [12x |] | 12x |] | 14x | |
|-----|----|-----|----|-----|----|------|----|------|----|-----|----|------|----|-----|----|-----|---------------------|
| 84 | | 1 | 16 | 1 | | | | | | 1 | 16 | 1 | | | | | #074 Wild Chestnut |
| 96 | | | | 1 | 24 | 1 | | | | | | 1 | 24 | 1 | | | #672 Golden Sun |
| 84 | | | | | | 1 | 16 | 1 | | | | | | 1 | 16 | 1 | #882 Garden |
| 120 | 24 | 1 | | | | | | 1 | 16 | 1 | | | | | | 1 | 24 #242 Aegean Blue |

384 ends total



6 Fold the fabric in half widthwise. Pin and then stitch one selvedge edge together, leaving 12" unstitched for the neck opening. Adjust the size of the neck opening if desired. The seam allowance should be about 5/8", which will be half of the Aegean Blue stripe along the edge.

7 Using a press cloth to protect the chenille, press the seam open.

8 Working on the inside, handstitch the edges of the seam allowances to the fabric. Then work around the neck opening, folding 5/8" of the selvedge toward the wrong side, pinning, and stitching. This allows any uneven selvedges or contrasts in warp and weft yarns to be hidden inside the garment.

9 At the neck edge, where the selvedges come together, sew a small rectangle ($1\frac{1}{4}$ " × 1") of Ultrasuede or similar nonstretchy fabric over the inside of the seam to reinforce it and protect it from pulling apart (see photo at left).

10 If desired, fold the lower selvedge toward the wrong side, pin, and stitch %" along the bottom edge of the garment.

11 Hem the side of the poncho by folding under the cut edges of the fabric 3/4", then 1", and handstitching.

DEBORAH JARCHOW loves helping people discover the joy in weaving on rigid-heddle looms. Her book Rigid Heddle Weaving offers 31 projects, each teaching new skills.









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Thirty years ago, I visited Brown Sheep Company in Mitchell, Nebraska, with a northern Utah band of merry spinners on daylong field trips—more like pilgrimages—for yarns, of course, but also for bags of carded and combed wool for spinning. So it was with fond memories that I began this Yarn Lab adventure.

Prairie Spun DK is a luscious, threeply wool yarn available in several heathered shades reminiscent of Nebraska's prairie landscape, as stated on the Brown Sheep website, a description that couldn't be truer. Brown Sheep has done a beautiful job in dyeing and carding the wool to bring out every hue I enjoyed on the drive to the mill outside of Mitchell.

For this exercise, however, I am experimenting with a brand-new offering of neon colors in the Prairie Spun DK line and how best to use them with the more subtle shades. Therefore, I'm not focusing on typical weave structure or weaving suitability but on the color combinations and how to exemplify the palette. I knew that this combination of fluorescent colors would work well because the

Energized Purple, Molten Magenta, and Electric Lime are very close to being tetradic on the color wheel—that is, these are three of four colors on the wheel that are evenly spaced (the fourth color is turquoise). As you can see, my palette choice is based on color theory, so there is some rhyme to my reasoning.

I wove all the samples using four shafts and four treadles or less. Off the loom I trimmed the samples and then sprayed them lightly with water to allow the yarns to bloom before pressing them with a warm iron. The yarns are extremely soft, full, and lofty, as would be expected of a Brown Sheep product. As you will see in my descriptions, I didn't venture into shrinkage calculations because this is a knitting yarn and

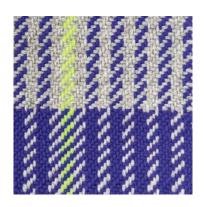
perhaps too elastic to be used for a long warp. I found that under tension, a 10-inch sample at rest could stretch to upward of 13½ inches, causing the woven piece to condense considerably when the tension was released.

Photos by Matt Graves

THE YARN

Prairie Spun DK: 100% 3-ply wool, worsted spun; 256 yd/100 g; 41 colorways.

The wool in this yarn comes from sheep raised in the United States and was dyed at the Brown Sheep mill in Nebraska. The set of five neon colors currently available—Molten Magenta, Cadmium Yellow, Energized Purple, Dragon Fire, and Electric Lime—has an interesting backstory. Wool sheds water until it's saturated and therefore tends to float. One of Brown Sheep Company's owners, an avid fly fisherman, developed these colors for fly-fishing strike indicators (a visual cue on the top of water that shows when a fish has taken the fly).



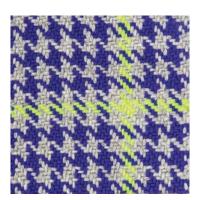
2/2 twill

Warp and weft: Rain Cloud, Energized Purple, and Electric Lime.

Setts: 12 epi: 12 ppi.

This is such a well-known twill that I knew I had to include it in this exercise, and I was pleased to see that it works well with the chosen colors. Because Electric

Lime is so bright, it needed to be coaxed into a suitable accent and works nicely for a flash of color. The twill could be too mundane without the energy brought by the lime. I found it was just right for a stripe in the warp.



Dogtooth twill, aka houndstooth

Warp and weft: Rain Cloud, Energized Purple, and Electric Lime.

Setts: 12 epi; 12 ppi.

There was no need to cut and rethread the warp for this second effort. I simply changed shuttle colors every four picks for a checked pattern, and the threads

behaved similarly as in the first sample. The Rain Cloud and Energized Purple stripes balance each other when used in both warp and weft, and the flash of Electric Lime is even better in this sample than in the first one. Because I used a very moderate beat, the yarns fulled into the negative spaces without being dense. At this sett, I imagine the cloth would be well suited for a blanket or lap robe.



Swarthmore check (canvas weave with some doubled warp and weft threads)

Warp and weft: Rain Cloud, Energized Purple, and Molten Magenta.

Setts: 12 epi; 12 ppi.

I wanted to try a draft with surface floats to give the weaving some loft, and Swarthmore

check was just the ticket. It also fulfilled my desire to combine two of the neon colors with a more subtle grey. As you can see, this draft allows for each of the three colors to mingle with the other two while still giving each single color a square of its own. In addition, each color is featured as either a float or as part of the ground cloth, providing the fabric the structure that is needed when there are a lot of floats involved.



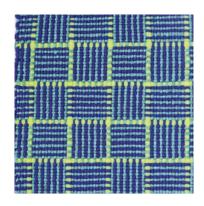
Swarthmore check and twill

Warp and weft: Rain Cloud, Energized Purple, Molten Magenta, and Electric Lime.

Setts: 12 epi; 12 ppi.

Swarthmore check can be woven in a variety of ways to enhance color use without the bulk of the

Swarthmore check's doubled weft picks. This sample ended up being a bit like a combination of a twill gamp and a color gamp using the three colors from the last sample plus Electric Lime. Because of the reduced thickness of the cloth, it would be very suitable for a small blanket in whatever hues you choose, and the Electric Lime used sparingly works well at accenting the blocks.



Plain weave with color-and-weave

Warp and weft: Energized Purple, Misty Mountain, and Electric Lime. Setts: 10 epi; 10 ppi.

For plain weave, I reduced the sett to 10 epi and kept a gentle beat. Doing so allowed me to maintain the needed negative space at the intersections of each thread and helped to balance my blocks. The

Energized Purple and Misty Mountain (mossy green) was a nice combination, but I wanted that flash factor found in the previous sample—the Electric Lime was just what I needed. The lime outline fell into place for the weft sequence and could have perfectly balanced the vertical rows if I'd used more shafts. As it is, I'm happy with the outcome. The cloth is soft and pliable and would work nicely in a short, woven blanket. Did I mention that it can be woven on two shafts? What a boon to rigid-heddle weavers.



Shadow weave

Warp and weft: Energized Purple, Misty Mountain, and Molten Magenta. Setts: 10 epi; 10 ppi. Using the same warp but changing some of the threading, I tried Molten Magenta alongside

Energized Purple and Misty

Mountain. I knew Molten

Magenta would combine well with the purple, which looks nice with Misty Mountain. Misty Mountain is a medium green that has been toned using gray in its base, and in this case, the yarn looks as though it was carded with gray wool. This subtle shade reminds me of the heathered hills of Nebraska. As in the last sample, this cloth has a very nice hand for a small blanket.



Krokbragd

Warp: 5/2 cotton used doubled. Weft: Energized Purple, Misty Mountain, Molten Magenta, Electric Lime, Rain Cloud, Lilac, and Owl Gray. Setts: 6 epi; 48-50 ppi. For my final piece, I wanted to see

all the hues I had been working with together in a strong combination, and krokbragd seemed to be the right structure.

Unfortunately, I can't recommend using this structure for this yarn, as the yarn is soft and energized and this structure collapses it to the point of being indistinguishable. Still, I'm using it as a sample to feature the colors, and in fact, I was considering my knitted Icelandic sweaters of 30 years ago as I lined up the combinations— I may need to take up knitting again. The magenta, lime, and purple add the flash needed to draw the eye in and are a fun factor whether you're weaving or knitting with them.

FINAL THOUGHTS

Prairie Spun DK is a glorious yarn, and knitters will recognize it for its superior softness and lofty hand. In warping a loom, the yarn will release that energy by stretching up to 3 inches for every 10 inches at rest; therefore, it may not be

suitable for a long warp, but as a short warp, I think it works well.

I recommend a flat surface such as in the color-and-weave and shadow weave samples. The goal of this Yarn Lab was to feature the new color line and not necessarily

the yarn's suitability for all weave structures, and I was delighted to play along. Setting the warp at 10 and 12 epi also reminded me that one need not weave with superfine yarns to enjoy playing with a "box of crayons."

LIZ MONCRIEF teaches weaving and pattern drafting and designs kits for The Silk Weaving Studio on Granville Island in Vancouver, British Columbia. She works on 8-, 12-, and 24-shaft looms.

PROJECT DIRECTORY

| Designer/Weaver | Project | Page | Structure | Shafts | Levels |
|-------------------|------------------------------------|------|-------------------------------------------|--------|---------------|
| Allen, Malynda | Ray of Light Placemats and Napkins | 54 | Modified M's and O's | 4 | All levels |
| Gibson, Brenda | Perfect Pairing | 45 | Satin | 8 | I, A, D |
| Goudsmit, Barbara | More Echoes, Please | 62 | Twill with parallel threading | 12 | I, A, D |
| Irwin, Bobbie | Shimmering Crackle Scarf | 33 | Polychrome crackle | 4 | AB, I, A |
| Jarchow, Deborah | Heavenly Harvest Chenille Poncho | 70 | Plain weave | 4 | AB, I, A |
| Miller, Merriel | Dreaming of Butterflies Wrap | 50 | Echo weave | 4 | AB, I, A |
| Pate, Sara | Northern Lights Tote | 58 | Twill | 8 | All levels, D |
| Sargent, Jennifer | Autumn Pearls | 42 | Plain weave with warp and weft floats | 6 | All levels |
| Tuthill, Dorothy | Neon Incandescence | 37 | Deflected doubleweave and networked twill | 8 | I, A, D |

Levels indicate weaving skills, not sewing skills. AB = Advanced Beginner, I = Intermediate, A = Advanced. "All levels" includes very new weavers. D = Dobby suggested but not required

YARN SUPPLIERS

Brown Sheep Company, brownsheep .com, (800) 826-9136 (Moncrief 74).

Georgia Yarn Company, gayarn.com (Allen 54).

Lone Star Loom Room, lonestar loomroom.com, (888) 562-7012 (Goudsmit 62).

Maurice Brassard et Fils, mbrassard .com (Miller 50; Tuthill 37).

RedFish Dyeworks, redfishdyeworks .com (Tuthill 37).

Silk City Fibers, silkcityfibers.com, (551) 298-5104 (Jarchow 66, 70).

Treenway Silks, treenwaysilks.com, (888) 383-7455 (Gibson 45).

WEBS, yarn.com, (800) 367-9327 (Irwin 33; Miller 50; Sargent 42; Tuthill 37).

Yarn Barn of Kansas, yarnbarn-ks.com, (800) 468-0035 (Allen 54; Pate 58; Sargent 42).

Perfect Pairing, p. 45

Matt Graves

Photo by

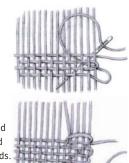
FINISHING TECHNIQUES

Twisting (or plying) the fringe

Divide the number of threads for each fringe into two groups. Twist each group clockwise until it kinks. Bring both groups together and allow them to twist around each other counterclockwise (or twist in that direction). Secure the ends with an overhand knot. (Use the same method to make a plied cord by attaching one end to a stationary object.)

Italian (double) hemstitching

Weave several picks of plain weave (or the basic structure of the piece), ending with the shuttle on the right side if you are right-handed, the left side if you are left-handed. Measure a length of weft four times the warp width, cut, and thread this tail into a blunt tapestry needle. Take the needle under a selected group of warp threads above the fell and bring the needle back to encircle the ends Next, pass the needle under the same ends but come up two or more weft rows down from the fell. Then bring the needle back around the same group of ends below the fell. Repeat, encircling the next group of ends.



Simple hemstitching

Weave several picks of plain weave (or the basic structure of the piece), ending with the shuttle on the right side if you are right-handed, left side if you are left-handed. Measure a length of weft three times the warp width and cut, leaving the measured length as a tail. Thread the tail into a blunt tapestry needle.



Take the needle under a selected group of ends above the fell and bring it up and back to the starting point, encircling the same group of ends. Pass the needle under the same group, bringing it out through the weaving two (or more) weft threads below the fell. Repeat for each group of ends across the fell. Needle-weave the tail into the selvedge and trim.

HANDWOVEN. Retail Shop Directory

Contact Michaela Kimbrough for magazine standing order opportunities. mkimbrough@longthreadmedia.com

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www.LunaticFringeYarns.com

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To be iridescent or not to be

by Eileen Lee

To explore weaving iridescent cloth, I began by choosing complementary colors, which almost always produce iridescence.

In Bobbie Irwin's book Weaving Iridescence, she mentions that even though you will probably get iridescence from these contrasting colors, you might not like the outcome. In other words, just because your fabric is iridescent doesn't mean you'll think it's attractive.

My plan was to weave several structures that I hoped would produce a variety of iridescent fabrics. In most cases, I achieved beautiful iridescent cloth, but I also wove some cloth that didn't meet my expectations. Should I have sampled? The simple answer is yes.

I discovered multiple iridescent color combinations. I also discovered three ways not to weave iridescence, each one having a different flaw that kept me from achieving my goals.

#1 OVERDONE

In this cloth, I wove with shiny 8/2 Tencel and sett it at 24 ends per inch (epi). I used complementary colors twice in the fabric, crossing red-violet and violet with lime green and gold.

Attempting to use two complementary-color sections in one fabric produced an unappealing result. I especially found the places where the warm gold crossed with cool lime green unattractive. If I had used only one of the



Above: #1 Too many complementary color pairs caused this cloth to fall flat. Top right: #2 Though purple and red created iridescence, the purple dominated the red in this twill at this sett. Right: #3 Eileen's favorite weave structure created a beautiful cloth in orange and blue, but the colors don't interact enough to create an iridescent effect.





hotos by Eileen Lee

complementary color pairs, I believe it would have been much prettier. Trying to do too much in one fabric was a mistake.

#2 FLOATS

For this project, I used a handweaving .net draft that was an undulating twill and tromp-as-writ. As with the previous sample, I used 8/2 Tencel and sett it at 24 epi. The red and purple created an iridescent fabric.

However, because of the many floats, the fabric appears weftdominant and looks truncated. While it is iridescent, it's not very pretty. I found the fabric to be heavy and thick, with a terrible hand. Perhaps it would make a nice table runner, but it doesn't work as the scarf I was intending to weave.

#3 UNSUITABLE DRAFT

In this cloth, I used a turned brokentwill block draft, also known as false damask, which gives the optical illusion of a woven basket. False damask is one of my favorite structures. I enjoy the three-dimensional effect of seemingly interwoven

bands created by alternating areas of warp- and weft-dominance.

It was silly to think that I could achieve iridescence from this structure because the complementary colors (blue and orange) do not actually intersect with each other—but it made a beautiful scarf!

I am one of those people who learn from their mistakes. Curiosity and the passion to learn new things motivate me. I never lose hope but, instead, experiment with new ideas. Even though these three examples did not achieve the iridescence and/ or other qualities I was looking for, the cloths are still respectable. Every time I weave, I acquire new understanding and skills.

EILEEN LEE's designs have appeared in several publications including Handwoven, Easy Weaving with Little Looms, Knitting Traditions, and PieceWork. Many of her patterns are available on mzfiber.com and Ravelry (mzfiber). She lives in Grass Valley with her husband, Bill; son, Eric; and border collie, Dizzy.