



BEST OF
HANDWOVEN

TECHNIQUE SERIES

Shadow Weave

10 PROJECTS!

Plus how to design and weave using color-and-weave techniques!

Shadow weave was introduced to weavers by Mary Meigs Atwater in 1942. It seems amazing that she “invented” this incredibly versatile method of creating woven pattern. Shadow weave had perhaps occurred somewhere, sometime before, but never had it been identified in a way that allows its application to be so vast. Shadow weave is a subset of the category “color-and-weave.” This is the name given to fabrics in which the same alternating colors or groups of colors are used in both the warp and the weft. When you look at these fabrics, your eyes do not distinguish the difference between warp threads and weft threads (as they do with weaves such as twill, for example). Instead, you notice the difference between both warp and weft threads of one color vs warp and weft threads of the other color. Generally speaking, shadow weave is the term reserved for fabrics in which the color alternation is one-and-one. When other orders are used (two-and-one, two-and-two, etc.), the effects are called “color-and-weave.” Use this eBook to learn how to design your own patterns in both color-and-weave and shadow weave as well as to weave these innovative and incredibly beautiful fabrics.

Madelyn

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HANDWOVEN

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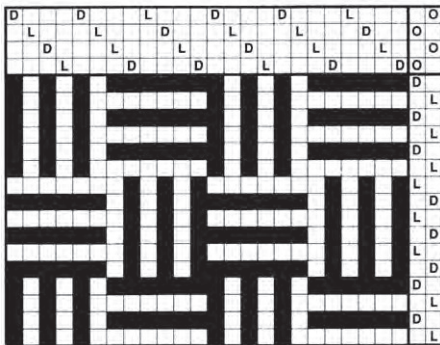


DRAFTING COLOR-AND-WEAVE EFFECTS

SHARON ALDERMAN

Any weave structure, even plain weave, can take on the appearance of a much more complex cloth simply by superimposing warp and weft color sequences. The cloth produced by such a strategy is said to show a color-and-weave effect. Although any weave structure can be changed visually by a color rotation in the warp or weft, some of the nicest examples are woven in plain weave. One of the best known of these has a name of its own, log cabin.

LOG CABIN



In the log-cabin draft above, dark and light ends alternate in the warp and weft. Wherever 2 dark or 2 light ends appear side by side in the warp or the weft, the direction of the stripes in the cloth changes from vertical to horizontal or vice versa. The plain-weave structure is, of course, undisturbed by this manipulation of color, but the result is a fabric with strong graphic appeal. The weaver/designer decides how far to thread a vertically or horizontally striped area and how often to make the weft changes that alter the direction of the stripes.

Any structure can be used for designing color-and-weave effects, but it is a good idea to think about how to use the effect best. Fancy weave structures may be obscured or simply made confusing by the addition of color to change the visual effect. Fortunately, color-and-weave effects can be “woven on paper,” that is, explored as drafts. Computer programs have been especially written so they can do that work, or it can be done easily with pencil, graph paper—and eraser.

COLOR-AND-WEAVE DRAFTS

An ordinary drawdown shows the woven structure of the cloth—the interlacement of warp threads vs weft threads. A color-and-weave-effect drawdown shows the visual appearance of the cloth—the colors on its surface without regard to warp vs weft. Because the two kinds of drawdown illustrate two different qualities, the ways in which they are generated are different.

The first step in generating a color-and-weave draft is to decide what structure is to be used. Start a drawdown by marking the threading, the tie-up, and the treadling sequence you wish to use; see Step 1.

1. THE BASIC DRAFT

4	4	4	4		O
3	3	3	3		O
2	2	2	2		O
1	1	1	1		O

The next step requires the selection of color order for both the warp and the weft. For this example, I have chosen 1 dark, 2 light (DLL) in warp and weft; see Step 2.

2. ASSIGN A COLOR ORDER

D	L	L	D		O
L	L	D	L		O
L	D	L	L		O
D	L	L	D		O

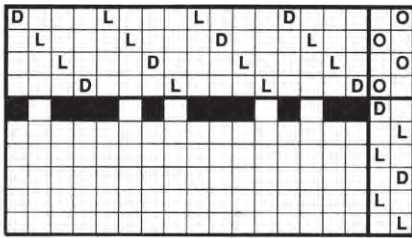
Now look at the first mark in the treadling sequence. Shafts 1 and 3 are raised for this pick. Follow across the weft row in the drawdown area, locate all the raised dark warp ends, and blacken the squares under them (first do the marks for shaft 1; then do the marks for shaft 3); see Step 3. Do not mark any light ends!

3. MARK THE RAISED DARK WARP THREADS

D	L	L	D		O
L	L	D	L		O
L	D	L	L		O
D	L	L	D		O

When all the raised dark ends for that row have been marked, it is time to mark the weft color. If the weft is light-colored, there is nothing more to be done (the white paper represents the light threads). If the weft is dark-colored, then

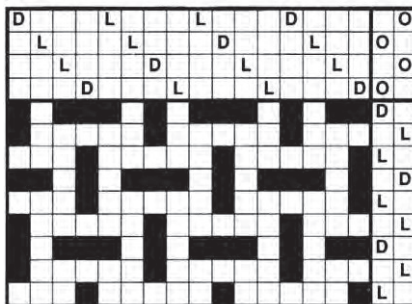
4. MARK THE DARK WEFT ON THE FACE



all the places where the weft shows must be filled in to indicate the dark weft that shows on the surface. The weft shows wherever it passes over a warp thread. Because shafts 1 and 3 are raised in this row, the weft shows wherever it goes over a warp thread on shaft 2 or 4. Once again, break the task down to avoid mistakes and first fill in the squares for shaft 2 and then fill in squares for shaft 4; see Step 4.

Move to the next row and repeat. The second mark in the treadling raises shafts 2 and 4. Mark squares under all the dark ends on shaft 2 first, then all the dark ends on shaft 4. Since the weft is light, you won't have to mark the places where it shows over any warp ends; the white paper represents it. Continue this way to complete the drawdown in Step 5.

5. COMPLETE THE DRAWDOWN



Some of the same assumptions that apply to ordinary drawdowns apply to color-and-weave-effect drawdowns. All the threads are usually the same size, denting and beating are regular, and the number of weft threads per inch is the same as the number of warp threads per inch (for a "balanced" weave or "50/50" cloth). In general, color-and-weave-effect fabrics are woven with the same number of ends and picks per inch so that the image created in the cloth is not distorted, maintaining straight lines of dark and light.

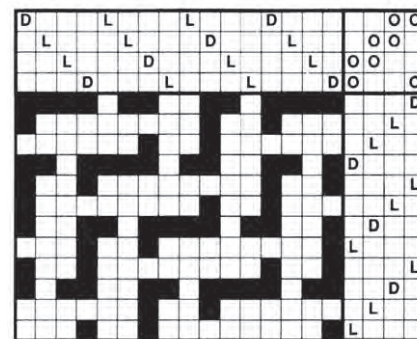
Warp and weft color sequences used with other weave structures produce different designs. Using the same warp and weft color order with 2/2 twill produces the color-and-weave drawdown at upper right on this page.

Suppose that you are not content to use only dark and light in a color-and-weave-effect pattern. The drafting steps are essentially the same—there are just more of them. Think in terms of one color at a time. Write the draft, the tie-up, and

COLOR-AND-WEAVE DRAFTING STEPS

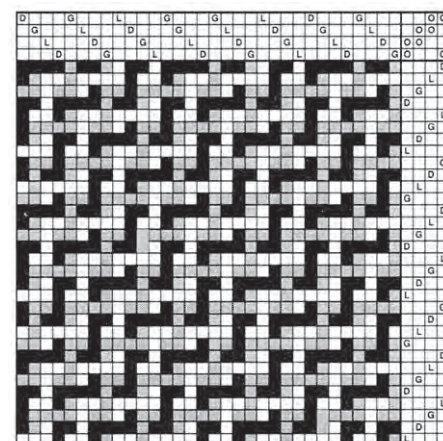
1. Write the threading, treadling, and tie-up.
2. Add the warp and weft color order.
3. For each weft row, first mark the dark warp threads raised over the weft.
4. For each weft row, mark the dark weft over the light weft (squares under shafts not raised). You don't have to make any marks for light warp or weft.

2/2 TWILL COLOR-AND-WEAVE



the treadling order. Then mark the warp and weft color orders (black, gray, and white, say). For the first weft row, mark each raised black warp end, one shaft at a time. Then mark each raised gray end, one shaft at a time. Now, consider the weft. If the weft is black, mark all the places where the black weft passes over warp ends. If the weft is gray, mark all the places where the gray weft passes over warp ends. Don't bother marking white ends or picks because the paper will represent the white warp and weft threads.

3-COLOR EFFECTS WITH 2/2 TWILL



CREATING ORIGINAL COLOR-AND-WEAVE DRAFTS

I usually begin with a rough sketch (I find graph paper a little too exacting at this stage); see Step 1. My ideas are free to flow in this casual approach, and I often make several sketches before settling on the final motif. The sketch gives me a general idea where the areas of dark and light will be and in what proportion. For this design, we'll use a Greek key pattern—counter-change patterns like this one have always fascinated me.

The next step is to transfer the sketched design to graph paper. At this stage, I determine the proportion of the design and designate which squares will be black and which white. I draw two repeats horizontally and vertically to be sure of including the entire motif, and I draw a box around one complete repeat; see Step 2.

Next, I redraw the single repeat on a clean piece of graph paper (Step 3) so that I have room around it for the marks that will need to be made in the following steps. I can always refer back to the larger graphed design if I need to see how the single repeat fits into the whole and how the repeat meets itself at its edges.

To determine the warp color order, I examine each column ("columns" are the vertical rows of graph paper) to see whether it contains more light or more dark squares. If there are more dark squares, I put a D above the column; if there are more light squares, I write an L. If dark and light squares are present in equal numbers, I leave that column for now and go to the next one (see the fourth column from the left in Step 4). When the obvious columns have been labeled D or L, I go back to the questionable ones and look for a pattern in the labels at the top of the columns. In our example, the sequence is D, L, D, __, D, L. A sequence of alternating dark and light has developed, and placing an L above the unlabeled column continues the pattern.

Next, I move to the weft direction, counting the squares and marking accordingly (Step 5). When I mark the weft color sequence, I look carefully to see if what I have marked makes possible what I see. For example, if the weft is light and there are dark squares across the warp, I check to make sure that the warp ends above the dark squares are dark so that it is possible to create dark squares where I have drawn them.

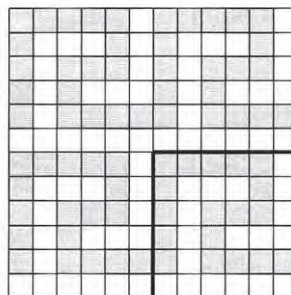
Light and dark threads cross each other all the time in the cloth we weave. If the light thread is on top, the intersection is light; if the dark thread is on top, the intersection is dark. In our graphed design, there are places where a dark warp thread is crossed by a light weft thread and vice versa. Where light crosses light, or dark crosses dark, either thread could be on top, so we ignore those intersections for now.

Using indelible pencil or pen, I mark all the places where light crosses dark or dark crosses light. If the warp thread is

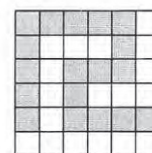
1. DRAW A DESIGN



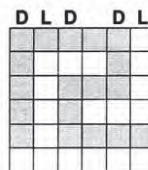
2. TRANSFER THE DESIGN TO GRAPH PAPER INCLUDING TWO WARP/WEFT REPEATS



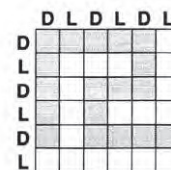
3. REDRAW WITH ONE REPEAT ONLY



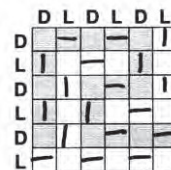
4. LABEL MOSTLY DARK, MOSTLY LIGHT COLUMNS



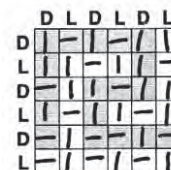
5. LABEL MOSTLY DARK, MOSTLY LIGHT ROWS



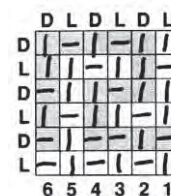
6. MARK WARP/WEFT WHERE LIGHT/DARK THREADS CROSS



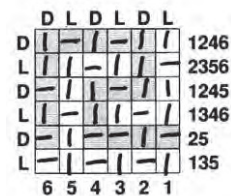
7. MARK REMAINING WARP/WEFT CROSSINGS



8. WRITE A SHAFT NUMBER FOR EACH DIFFERENT COLUMN



9. WRITE THE SHAFTS RAISED FOR EACH ROW



light, the weft dark, and the square is light, the warp is on top so I draw a vertical line in the box. If the square had been dark, the weft would have been on top, and a horizontal line would have been in order. Step 6 shows the marks in our graphed design for all places where light crosses dark or dark crosses light.

Next, I return to the draft with a pencil and fill in the rest of the structure of the cloth: a vertical line for warp on top, horizontal for weft on top as in Step 7. In the intersection of a dark warp and dark weft, I can choose whether the square represents a warp thread on top or a weft thread on top, and the same is true for light squares. In determining which is on top, I try to avoid long floats and create a structure as close to plain weave as possible. Plain weave is stable and the warp threads will not shift when the cloth is removed from the loom

and washed. Floats that cross 2 warp or weft threads at a time are also usually stable. Floats over 3 consecutive threads in either direction may distort the cloth somewhat, but if the floats are few and far between, the eye may pass over the distortion. I find that a color-and-weave-effect fabric collapses if floats cover 4 ends or more. If such long floats cannot be avoided, the design will probably not work. The image is our goal, and if it is distorted, we lose what we are seeking.

When I have filled in the entire structure, I check it over once more for floats, referring back to the earlier version with two repeats to make sure unexpected floats do not occur at connecting points between repeats.

The Greek key pattern shows one float that spans 3 picks and several 2-thread floats. The only way to be sure that this or any other pattern will work is to weave it.

The threading is easy to derive. Arbitrarily assign the first column on the right to shaft 1. If the next column is different, assign it to shaft 2, and so on; Step 8. Assign identical columns, if any, to the same shaft.

To determine which shafts are raised for each pick, work across each row and record the shaft number for each square marked with a vertical line indicating a raised warp end; see Step 9. The numbers beside each row give the combination of shafts that must be raised together to weave that

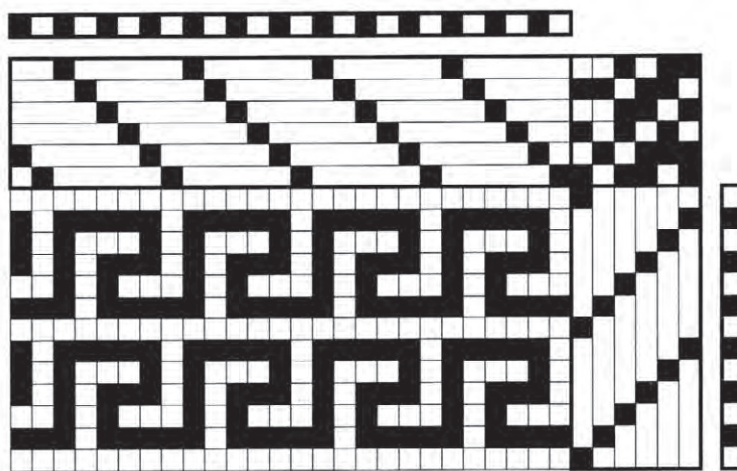
row. (Note that you'll list the shafts that are not raised for counterbalance looms and mark both the shafts that are raised and those that are not raised to create a tie-up for counter-march looms.)

Now you have all of the information you need to weave the cloth, and you can make a standard draft. Transfer all the information and create the tie-up from the combination of shafts for each row as shown in Step 10.

COLOR-AND-WEAVE DESIGN STEPS

1. Make a rough sketch of the desired image.
2. Draw two pattern repeats on graph paper and define one repeat.
3. Redraw the repeat with room for marks.
4. Assign warp color sequence.
5. Assign weft color sequence.
6. Mark each D and L intersection, showing the direction of the thread: warp (|); weft (-).
7. With pencil, fill in the rest of the structure, aiming for short floats. If floats cross 4 ends or more, abandon the design and try a new one.
8. Derive the threading (each different column).
9. Derive the treadling (each different combination of shafts raised for each row).
10. Write draft in standard form.

10. CREATE THE COMPLETE DRAFT WITH SEVERAL REPEATS





In a Boston Weavers' Guild Monograph (see Resources), Elizabeth Lang and Erica Voolich outline a method they call "parallel" shadow weave for translating almost any weave structure into shadow weave (summer and winter, crackle, spot Bronson, etc., as well as complex twills and block profile drafts). The threading and treadling are derived similarly to Atwater's system, beginning with threading of the given weave structure as the base. The tie-up is then divided into quarters with the tie-up from the original weave structure in the lower left and upper right quadrants. The opposite tie-up is then placed in the lower right and the upper left quadrants, as in the 12-shaft tie-up shown here. (This example is derived from a 6-shaft fancy twill.)

For parallel shadow-weave drafts, you need twice the number of shafts required by the original threading, one set for the weave, the other for its shadow (the shadow and main threads are not reversed on the same pair of shafts for additional blocks as they are in Atwater's system; parallel shadow-weave blocks are therefore independent).

12		12	12	12	12	12				
11	11			11	11	11	11	11		
	10					10	10	10	10	10
	9						9	9	9	9
		8	8			8		8	8	8
		7	7	7	7			7	7	7
6			6	6			6	6	6	6
	5			5	5			5		5
	4		4	4	4	4				4
		3	3	3	3	3	3			
	2		2	2	2	2	2			2
1			1	1	1	1	1	1		1

Shadow-weave samples (counterclockwise from bottom center): Sample 1 by Adelaide Murry (Powell 4-26-2) is threaded with a blue wool tweed, used double, alternating with a gray wool bouclé; the weft is a 2-ply blue tweed and a gray singles wool. Sample 2 by Katherine Wertenberger (Powell 4-32-10) has brown and white threads in the warp, blue and white threads in the weft. Sample 3 by Nancy Wallace Spires is a variation of Powell 8-20-4 with a shaft dropped from one treadle to form a float block. Sample 5, by Lillian Blum (Landis #144), features a darker green stripe in both warp and weft.

RESOURCES

- Atwater, Mary Meigs. *Shuttle-Craft Guild Bulletin*. Basin, Montana, February 1942, p. 1.
- Barrett, Clotilde. *Shadow Weave and Corkscrew Weave*. Boulder, Colorado: Colorado Fiber Center, 1980.
- Landis, Lucille. *Twills and Twill Derivatives*. Connecticut: Old Greenwich, 1977.
- Lang, Elizabeth, and Erica Dakin Voolich. *Parallel Shadow Weave, Monograph Six*. Boston: The Weavers' Guild of Boston, 1987.
- Powell, Marian. *1000(+) Patterns in 4, 6, and 8 Harness Shadow Weaves*. McMinnville, Oregon: Robin and Russ Handweavers, 1976.

SHADOW-WEAVE GAMP ON FOUR SHAFTS

JEAN KORUS

Weaving a gamp is a great way to learn about weave structure, color, and pattern. You'll love looking at your gamps, and you'll consult them for design ideas again and again. They make great wall hangings for your studio. Color gamps add splashes of bright color, and twill and shadow-weave gamps, with their checked sections of different designs, look very complex, yet are pleasing to the eye. Gamps need not only be used for wall hangings or samplers. They also make very attractive table squares, table runners, towels, throws, or scarves.

WHAT IS A GAMP?

Harriet Tidball, in a Shuttle-Craft Monograph (see Resources), defines gamp as "a systematic arrangement of warp threadings or warp color sequences in sections of equal size, each section being a minimum of two inches and not more than six, and woven as drawn in." A survey of weaving literature would add to this definition that some gamps combine color *and* structure and that the sections may be smaller than two inches or larger than six—or they may not all be the same.

The basic purpose of a gamp is to see how different colors and/or different threading/treadling sequences look when they are crossed with each other. Usually, color gamps are plain weave, and structure gamps are twills.

Shadow weave, however, is especially appealing for gamps; four shafts can produce an amazing variety of designs, each looking quite different when paired with the as-drawn-in treadling order of another. This project uses only a very few of the almost infinite number of possible designs! The instructions here are for two gamps, one to use as a reference in your studio and the other to decorate a special table. (Or, one to weave for practice and one to weave for real!)

FABRIC DESCRIPTION Shadow weave.

FINISHED DIMENSIONS

Two hemmed shadow-weave gamps (or table squares) 15¼" by 15¼" each.

WARP and WEFT

Warp: 10/2 pearl cotton at 4,200 yd/lb), 392 yd (1½ oz) each of Yale Blue and Natural and 76 yd (⅓ oz) Lipstick.
Weft: 10/2 pearl cotton at 4,200 yd/lb), 220 yd (⅞ oz) each of Yale Blue and Natural, 93 yd (⅘ oz) Lipstick.

YARN SOURCES

10/2 pearl cottons from UKI are available from most weaving retailers.

TOTAL WARP ENDS 430 (includes 2 floating selvages).

WARP LENGTH

2 yd long (allows take-up, shrinkage, and 28" loom waste).

E.P.I. 24.

WIDTH IN REED 18".

P.P.I. 24.

TAKE-UP and SHRINKAGE 10% shrinkage in width and in length.

WINDING THE WARP

Place a cone or ball of each of the three warp yarns (blue, natural, and red) on the floor at the right side of the warping board (if you are using balls, they will each need to be secured in a jar or bowl).

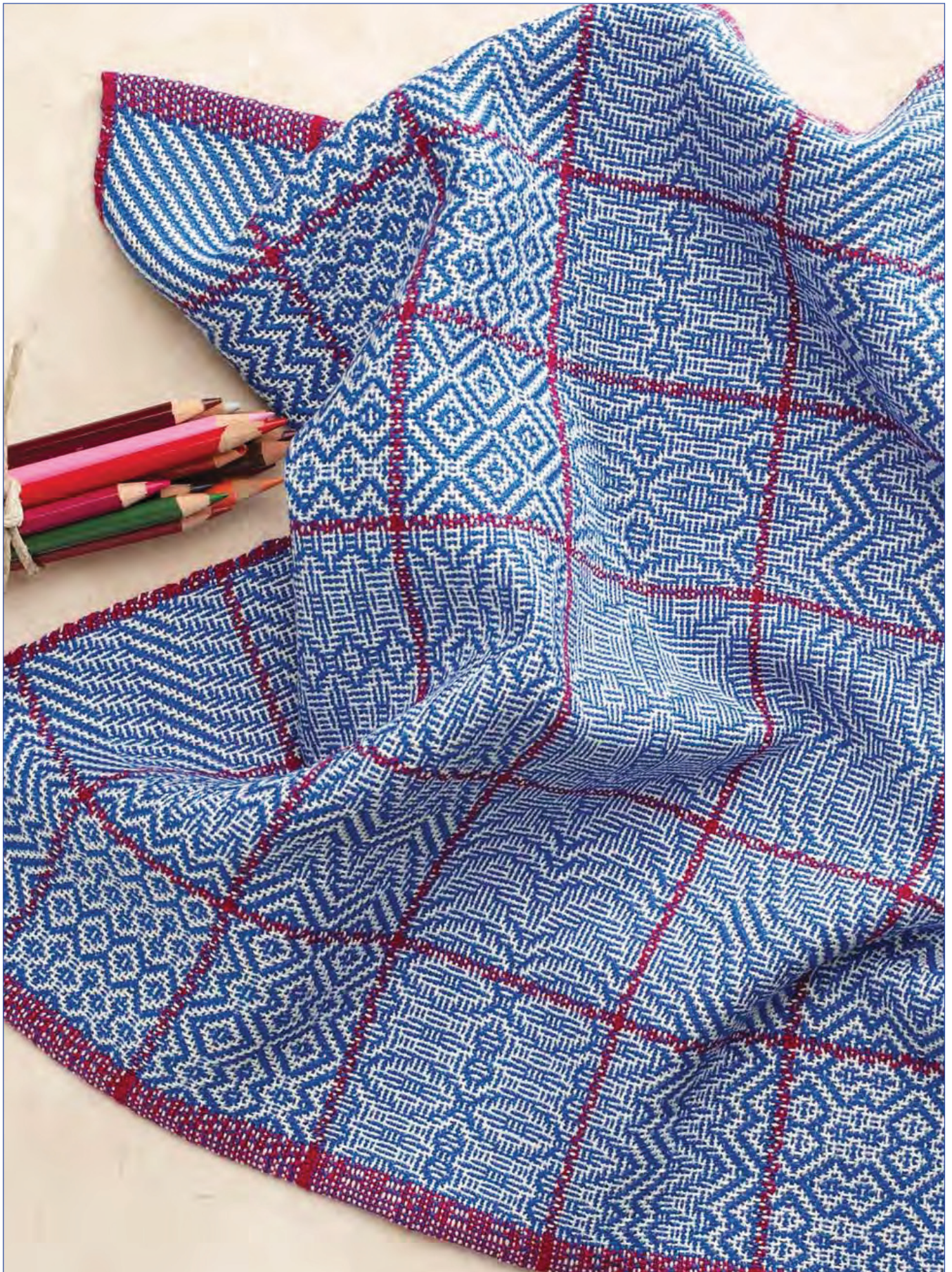
Wind 9 ends of Lipstick. Cut and tie the Lipstick strand to 1 strand from the Natural cone and 1 strand from the Yale Blue cone. Keeping these 2 strands separate with a finger so they don't twist around each other, wind 32 (paired) ends (64 total ends) for section A in the Warp Color Order on page 9. Cut and tie these 2 ends to the single strand from the Lipstick cone; wind 4 Lipstick ends.

Continue, cutting and tying at color changes, following the Warp Color Order; end with the 9 Lipstick ends after section F. Tie the four arms of the cross, tie a firm choke tie about 20" from the cross, cut the loops of warp at both end pegs, and take the warp to the loom so that the part of the warp you wound first is the part you will thread first (section A).

THREADING THE SHAFTS

Place lease sticks in the cross and secure them in front of the reed. Tie the choke tie to the breast beam. Remove the ties from the cross. Sley 1 Lipstick end in a dent by itself (the floating selvedge), and then sley 2 ends/dent in a 12-dent reed, centering for 18"; end with the second floating selvedge. Remove the lease sticks.

Sitting behind the shafts, thread the loom following the Threading Draft, page 9, starting with section A (be sure it's the section you wound first on the warping board so the threading draft will coordinate with the number of ends in each section). Reposition the choke tie if needed so the warp ends are a convenient length. As you finish each section, check the threading carefully. Divide the section into two groups after checking and tie an overhand knot at the end of each group.



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BEAMING THE WARP

When you are finished threading (and all warp threads are secured with overhand knots), untie the choke tie at the breast beam and tie the groups to the back apron rod. Wind the warp on the warp beam with firm and even tension, packing the layers with sturdy paper or sticks. Tie the warp to the front apron rod. Suspend a weight (a 3" S-hook works well) on each floating selvedge behind the back beam. (For more detailed warping directions, visit weavingtoday.com, and under Free Resources, click on How-To Instructions.)

WEAVING

Weave a heading to spread the warp (treadles 1-2-3-4). With Lipstick weft, weave 1" (treadles 1-2-3-4) for the first hem. Then weave the first gamp following the Treading Draft. As you weave, pay attention to the squares in which the treading order you are using matches the threading order (outlined on page 10 in white); these sections will be square in shape if you weave the same number of picks per inch as ends per inch (24). Total length of each gamp measured under tension on the loom will be about 20".

Carry each shuttle over the floating selvedge as it enters the shed, under the floating selvedge as it exits. Begin and end wefts by tucking the tails around the floating selvedge and back into the same shed.

End with 1" (1-2-3-4) in Lipstick for the second hem. Insert a weft in a contrasting color for a cutting line and weave the second gamp the same way as the first.

FINISHING

Remove the fabric from the loom and secure ends with machine stitching. Wash the fabric by hand in cool water; lay flat to dry; press. Cut the gamps apart; turn ends under and sew hems by hand.

RESOURCES

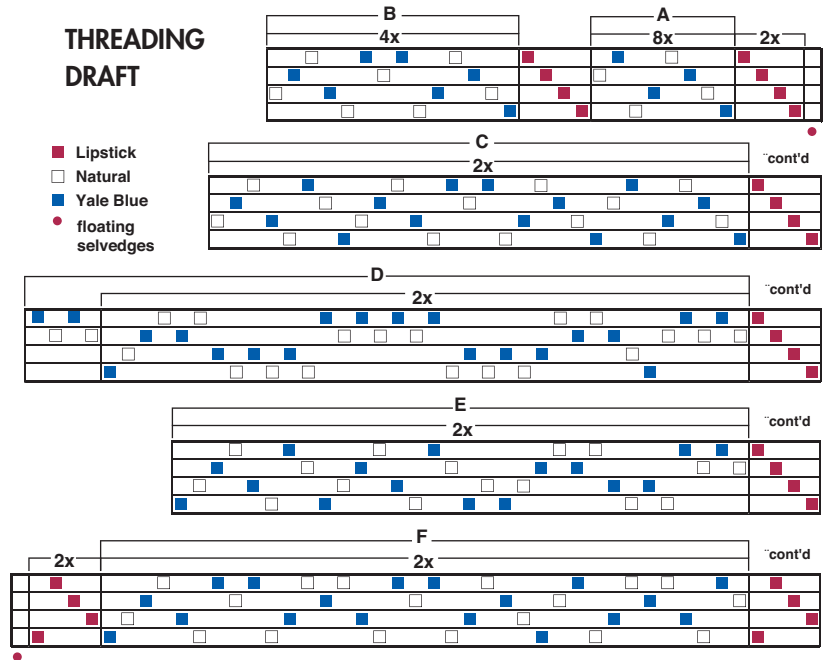
Tidball, Harriet. *Woolens and Tweeds*. Shuttle-Craft Monograph Four. Petaluma, California: Shuttle Craft Books, 1961, pp. 38–39.

WARP COLOR ORDER

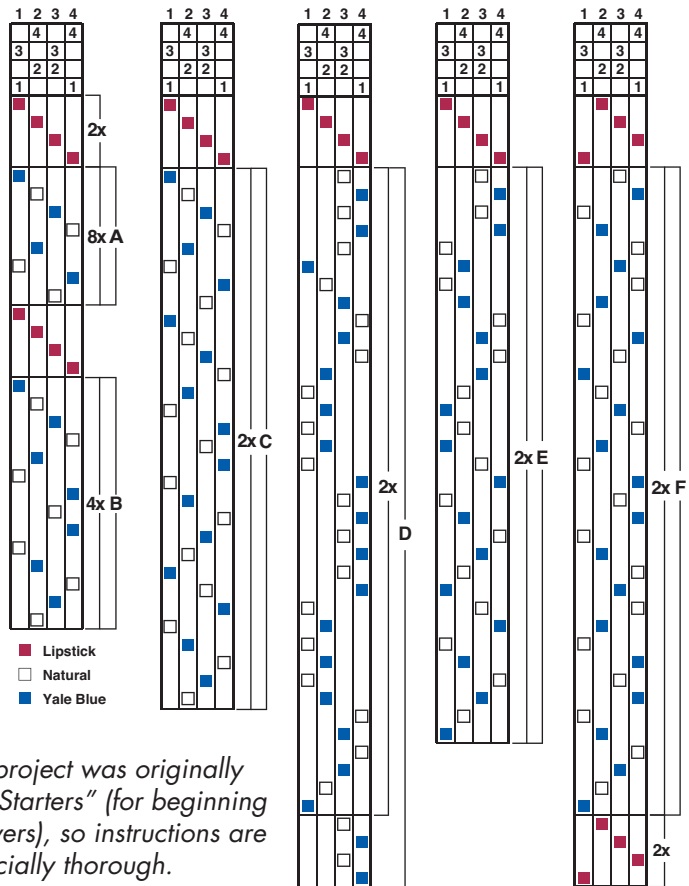
	F	E	D	C	B	A	
	36x	32x	38x	30x	28x	32x	
38	9	4	4	4	4	4	9
196	1	1	1	1	1	1	1
196	1	1	1	1	1	1	1
430							

- Lipstick
- Natural
- Yale Blue

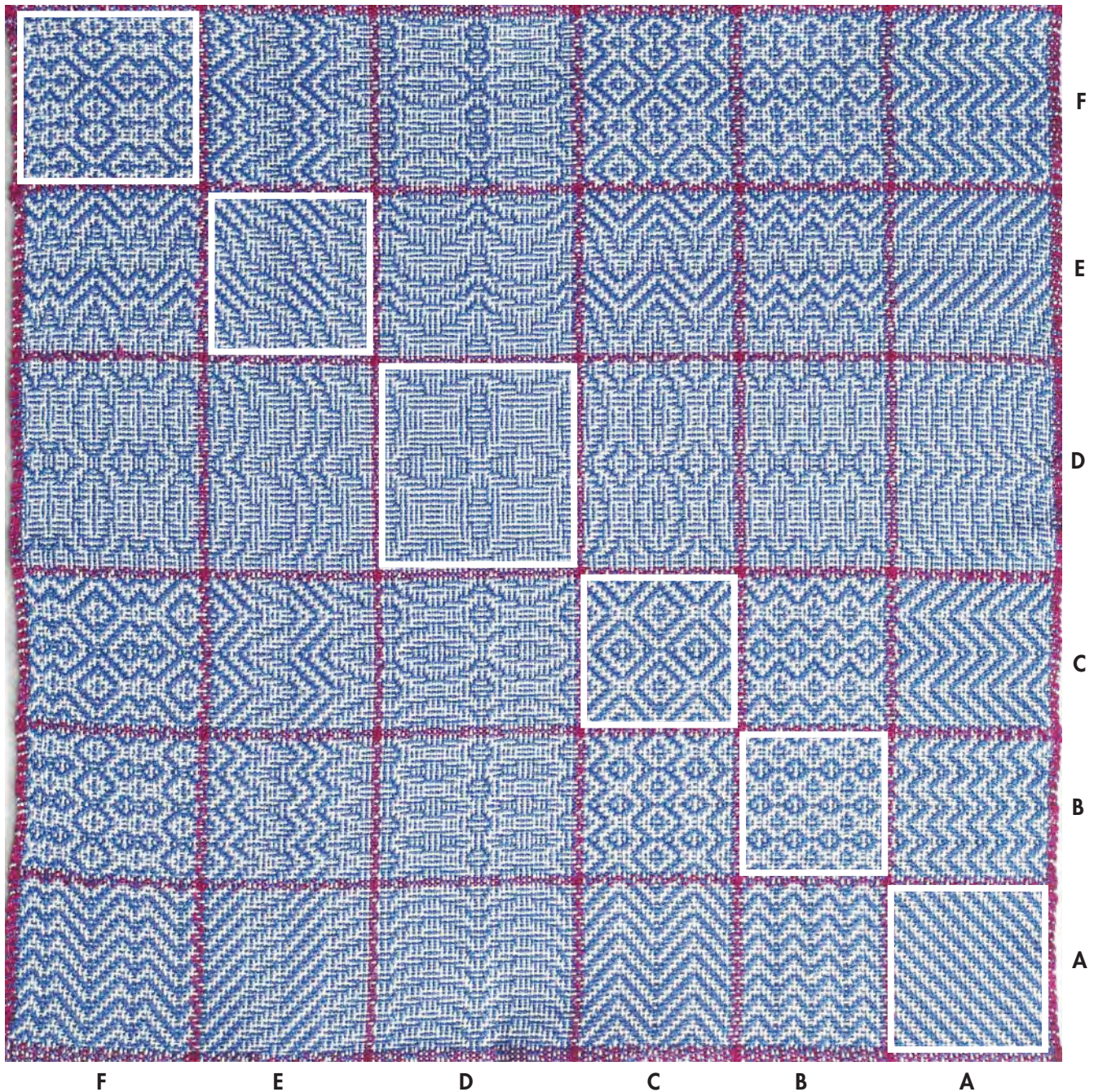
THREADING DRAFT



TREADING DRAFT



This project was originally "For Starters" (for beginning weavers), so instructions are especially thorough.



WEAVING A GAMP "AS-DRAWN-IN"

Note: As you weave, watch only the squares that are being woven as drawn in (the treadling order matches the threading order). These will progress in a diagonal line from the bottom corner of the cloth on one edge (the edge on which you have threaded section A) to the top corner on the other edge. The designs in these squares will either be symmetrical along the diagonal or completely symmetrical (if the threading and treadling orders are both symmetrical themselves). Notice that the woven squares in B, C, and D are completely symmetrical; the squares in A, E, and F are symmetrical along the diagonal.

USING A GAMP AS A SPRINGBOARD FOR OTHER PROJECTS

Choose a threading you like from the gamp and use it as the threading for a set of scarves, guest towels, napkins, or placemats. Then weave each of the items in the set using a different treadling from the gamp to create a line of items, each different from the other.



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STRIP-WOVEN KENTE CLOTH IN SHADOW WEAVE

BREN AHEARN

The strip-woven kente cloths of Ghana are striking in their geometric patterning, vibrant colors, and the many design possibilities that emerge from the different configurations in which the strips can be sewn together. Originally an important ceremonial cloth in Ghana, kente cloth has been adapted by some African Americans for ceremonial wear today. Weave this cloth for a special occasion and celebrate a mix of textile traditions: African kente cloth and American shadow weave.

Shadow weave is especially appropriate for strip weaving in that it mimics the vertical and horizontal lines characteristic of kente pieces. Design scale can be small in shadow weave, fitting easily within a narrow weaving width. Even better, many different designs can be treadled on the same threading. To add to the mix of textile traditions, I decided to introduce yet another culture's concept in the final cloth—the Malian tradition in their mud cloths of having a central “mother cloth” surrounded by borders on all sides.

PROJECT NOTES

The strips in this cloth are 3" wide. The designs in the strips intersperse 3" sections of shadow weave with 3" sections of plain weave. To make the top and bottom borders for the cloth, identical sections are woven at the top and bottom of each strip. For side borders, the edge strips show squares or horizontal sections of plain weave. Although this cloth is woven on eight shafts, four shafts can produce designs that are just as effective. The narrow single strips shown rolled in the photograph on page 16 are woven on four shafts.

Since the strips are so narrow, a wide cloth requires many of them and therefore a very long warp. The thirteen strips in this cloth, each with a finished length of 62½" plus take-up and the amount allowed for fringe between strips, require a total of 25 yards of warp length, not including loom waste.

Beaming so many yards of such a narrow warp can be awkward, so I recommend dividing the length into two or three separate warps. When you have finished one, you can tie on a new warp and continue weaving (see Peggy Osterkamp in Resources). With only 100 ends, tying on is quick, and you'll enjoy looking at the strips you've removed. To do this, decide what warp lengths you'd like to use, making them divisible by 69", the amount required by one strip plus fringe. Although 27 yards are specified here, I suggest three warps of 10 yards each (30 total yards), so you'll have extra for sampling and plenty for loom waste.

FABRIC DESCRIPTION

Shadow weave and plain weave.

FINISHED DIMENSIONS

One cloth (made from 13 strips sewn together) 38¾" by 62½" plus 1" fringe at each end.

WARP and WEFT

Warp: 10/2 Tencel at 4,200 yd/lb, 1,350 yd (5½ oz) each Black and Gold.

Weft: 10/2 Tencel, 1,086 yd (4⅞ oz) Black, 815 yd (3⅞ oz) Gold, 407 yd (1⅔ oz) each Emerald and Moroccan Blue; 55 yd (¼ oz) Persian Red; about 120 yd dyefast, non-shrinking scrap yarn.

NOTIONS AND OTHER MATERIALS

Synthrapol (a small amount) and Sulky 40 rayon sewing thread, red (color #1037).

YARN SOURCES

10/2 Tencel is available from Textura Trading Company, but supplies are limited and may soon be unavailable (substitute 8/2 Tencel available from Webs and Halcyon Yarn), Synthrapol from Dharma Trading Co., and Sulky sewing thread from fabric stores. For 8/2 Tencel, change the sett to 24 epi for a weaving width of 4⅞" instead of 3½" (and a final cloth width of about 45").

TOTAL WARP ENDS

100 ends (includes 2 doubled ends at each selvage).

WARP LENGTH

At least 27 yd total (allows 18" take-up, 1 yd for fringe between strips, and 2 yd loom waste for dividing total warp length into two or three warp chains).

E.P.I.

27 (3-2-2-2 in a 12-dent reed or 2-2-2-2-1 in a 15-dent reed). For 8/2 Tencel, 24 epi; 2/dent in a 12-dent reed.

WIDTH IN REED

3½" (4⅞" with 8/2 Tencel).

P.P.I.

Weft: 27 ppi in plain-weave sections, 32 ppi in shadow-weave sections. (24 ppi in plain-weave sections, 28 ppi in shadow-weave sections for 8/2 Tencel).

TAKE-UP and SHRINKAGE 15% in width, 5% in length.



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WEAVING

Wind a warp of 100 ends alternating 1 end Black/1 end Gold. Sley the reed as described on page 13, thread the shafts following the 8-shaft or 4-shaft draft, and beam the warp with sticks or heavy paper.

To begin the first strip: Weave 1½" plain weave in scrap yarn (this yarn will stay in place during finishing, so choose a fiber that will not run or shrink, such as 10/2 natural cotton). Leaving a long tail of Black weft at the starting edge, weave 2 plain-weave picks. Use the tail to hemstitch, encircling two reed groups and the two weft rows in each stitch. Weave any remaining tail into the next plain-weave shed and trim. Change sheds. *Weave 1" plain weave with Black, then 1" plain weave with Gold. Repeat from *. End with 1" with Black for a 5" border.

Weave 2 picks plain weave with Persian Red. Alternating Gold and Black wefts, follow treadling a in the 8-shaft or 4-shaft draft. (All of the 3" shadow weave sections in this project are variations of treadlings a and b.)

Weave 2 picks Persian Red in plain weave. For the next 3" section weave plain weave with stripes of Black, Moroccan Blue, and Emerald as desired. Weave 2 picks Persian Red. Follow with another shadow weave section (treadling b, for example) and then 2 picks Persian Red.

Continue in this fashion until eighteen 3" sections are woven, each separated by 2 picks Persian Red. For the shadow-weave sections, play with creating your own designs by alternating treadle pairs (1-2, 3-4, 5-6, 7-8) as you alternate the two colors. Changing DL to LD will change vertical lines into horizontals and vice versa. To avoid a perfect checkerboard in the final cloth, make "mistakes," such as "wrong" weft colors (Moroccan Blue or Emerald instead of Black or Gold) or weave several shadow-weave (or plain-weave) sections in a row and vary the numbers of times.

Then weave the second border in the same way as you wove the first. To end the strip, leave a long tail of weft at the end, hemstitch as at the beginning, and then needleweave any remaining tail into the last weft row.

Weave 3" plain weave in scrap yarn between strips to allow for 1" fringe on each end after finishing. Weave eleven total 6½" strips in this way.

Then weave the two side strips for the side borders. For the left border, I wove eighteen 3" plain-weave sections, rotating Moroccan Blue, then Black, then Emerald, and separated the sections with 2 picks Persian Red. For the right border, I wove eighteen 3" plain-weave sections, each divided into 1" stripes of Moroccan Blue, Black, and Emerald. (For variation, I started each segment with the second color used in the previous segment and maintained this rotation.)

SHADOW-WEAVE TIPS

When there are adjacent threads on the same shaft but from different blocks, sley them through different dents, if possible.

When you change the pattern by putting the opposite color in the same shed as the previous pick, gently press the weft with the beater—don't "beat"—to avoid squashing and mixing the colors.

To lock the two shadow-weave weft threads and/or to catch the outermost selvedge thread, take the leading weft over the other if the next shed has the outermost shaft up, under the other if the outermost shaft is down. However, if you are repeating the same block but switching the order of the two colors, do the opposite to lock the threads. An alternative is to use a floating selvedge (remove one of the doubled selvedge threads on each side and weight).

FINISHING

Remove the strips from the loom. Machine zigzag over the scrap yarn ¼" from the woven cloth at each end. Machine wash (wash by hand if your machine has an agitator) with ½–1 tsp Synthrapol in warm water. Machine dry briefly and then press dry with an iron. Cut the strips apart, allowing 1" for fringe. To protect the fringe yarns, do not remove the scrap yarn until after you have sewn the strips together. Sew a tag on each strip to identify #1, #2, etc. Hang the strips on a wall (you can use blue painter's tape) to see what configuration pleases you. Once you have an order, write it down, identifying the top and bottom of each strip. Then sew the strips selvedge to selvedge using an overhand stitch. (I chose a contrasting thread as a design element.) I like crazy, sloppy stitches to exaggerate the handcrafted effect (much to the chagrin of some of my fiber colleagues!). When all of the strips are sewn together, remove the scrap yarn. Then have a ceremony to celebrate the completion of your creation and the fact that as a textile artist, you are linked to an international community of craftspeople with traditions that span the millennia.

RESOURCES

- Osterkamp, Peggy. *Warping Your Loom & Tying on New Warps*. Sausalito, California: Lease Sticks Press, 1995, pp. 99–110.
- Powell, Marian. *1000(+) Patterns in 4, 6, and 8 Harness Shadow Weaves*. McMinnville, Oregon: Robin and Russ Handweavers, 1980, 4-shaft draft, p. 102.
- Strickler, Carol, Ed. *A Weaver's Book of 8-Shaft Patterns*. Loveland, Colorado: Interweave, 1991, draft 282, p. 72.

8-SHAFT DRAFT

2x										8	8	8	8
L	L	L	D	D	D	L	L	L		7	7	7	7
			D	D	D	L	L	L		6	6	6	6
										5	5	5	5
L	L	L				L	L	L		4	4	4	4
			D	D	D					3	3	3	3
L	L	L				L	L	L		2	2	2	2
D	D	D								1	1	1	1

Double the last 2 ends on each selvage.

4-SHAFT DRAFT

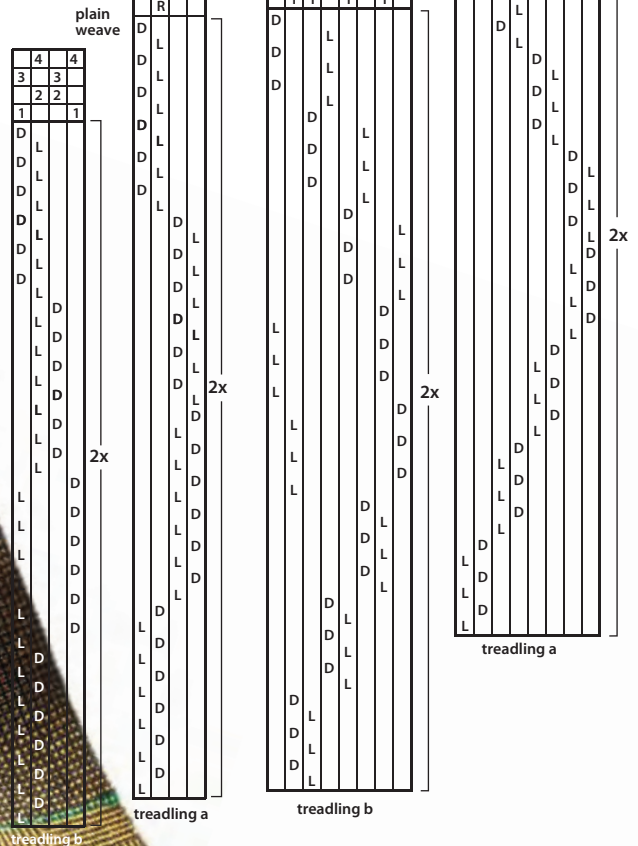
2x										4	4		
L	L	L	L	L	L	L	D	D	D	D	D	3	3
							L	L	L	L	L	2	2
L	L	L	L	L	L							1	1
D	D	D	D	D	D								

Double the last 2 ends on each selvage.

D = Black
L = Gold
R = Persian Red
(between squares)



These strips were woven using the 4-shaft draft.



The 8-shaft draft is from Carol Strickler; the 4-shaft draft is from Marion Powell; see Resources.

CHENILLE SCARF IN SHADOW WEAVE

JEAN KORUS

Chenille is a luxurious yarn that makes a wonderfully rich, drapable fabric. Chenille especially loves shadow weave since the bold patterning is created by color effects, not by long floats that would allow the chenille to worm; the interlacement is mostly plain weave.

PROJECT NOTES

In shadow weave, dark and light yarns alternate in both warp and weft. For the pattern to show well, the two colors should contrast strongly with one another. If you are considering colors other than the burnt orange and gold used here, twist a strand of each color together and squint at them to see if they have enough contrast.

FABRIC DESCRIPTION Shadow weave.

FINISHED DIMENSIONS

8½" by 65" plus 5" fringe at each end.

WARP and WEFT

Warp: Rayon chenille at 1,450 yd/lb, 231 yd (2¾ oz) burnt orange and 226 yd (2½ oz) gold.

Weft: Rayon chenille (1,450 yd/lb), 183 yd (2 oz) each burnt orange and gold. About 82 yd of a slick yarn for fringe areas (nylon or rayon).

YARN SOURCES

Rayon chenille is available from Webs.

TOTAL WARP ENDS 166 (82 burnt-orange ends alternating with 82 gold ends plus 2 burnt-orange ends for floating selvages).

WARP LENGTH

2¾ yd long (allows take-up, shrinkage, and 26" loom waste; loom waste includes fringe). Add 92" for each additional scarf.

E.P.I. 16. **WIDTH IN REED** 10⅞". **P.P.I.** 16.

TAKE-UP and SHRINKAGE

18% in width and 13% in length.

WEAVING

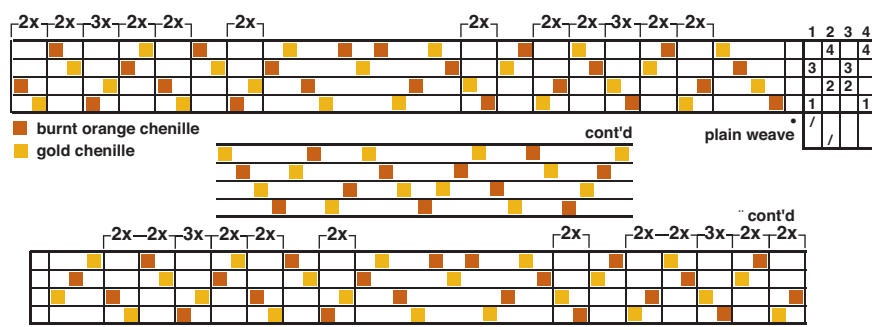
Wind 2 ends together on the warping board, 1 light and 1 dark, keeping them separate with a finger to prevent twisting. Check carefully for errors when you are threading. They can be hard to spot and may not show up until the scarf has been wet-finished. I place the draft on a magnetic board and move the magnet to show about 4 threads at a time.

Weave a heading in plain weave with a slick waste yarn for about 8". The scarf is woven "tromp as writ." This means to use the threading draft as the treadling draft: Step on the treadle number that corresponds to the shaft number in the threading, using the same color for the weft that is used in the threading. After you have woven the first inch, leaving a tail for hemstitching about three times the width of the warp, hemstitch over the first 2 weft rows enclosing 4 ends in each stitch and then weave for 72" total (seven complete repeats of the threading draft). Hemstitch as at the beginning and weave 8" in slick scrap yarn.

FINISHING

Remove the scarf from the loom and tie the ends in overhand knots to secure the slick heading yarn. Your beautiful scarf feels like a board! Don't worry; finishing will make it soft and supple. With a spray bottle filled with water, spray both sides thoroughly. Place the scarf in a plastic bag for several hours to wet evenly; machine dry. Add a dryer sheet, if desired. Trim off the knots that secured the scrap heading yarn and remove the scrap yarn. Twist the fringe very tightly with two hemstitched groups (8 ends) in each fringe. Steam the fringes, holding the iron without touching them and using your hand to do the pressing. Instead of spraying, you can machine wash the scarf using a delicate cycle. I find spraying much easier and haven't noticed any difference in the results.

DRAFT





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FALLING-LEAVES SHADOW-WEAVE SWEATER

ALISON IRWIN AND JEAN SCORGIE

When my local guild, the Tzouhalem Spinners and Weavers Guild, recently volunteered to provide a year's worth of samples for the Guild of Canadian Weavers newsletter, we chose shadow weave. Working within a budget for each of the four issues, I designed the fabrics, and members of the guild wove enough yardage for 500 samples per issue! The samples explored the versatility of shadow weave in a variety of fibers, yarns, and colors. We hoped that our work would inspire other weavers to choose this interesting weave for further exploration—this sweater is just one small result.

SHADOW WEAVE

Shadow weave is a color-and-weave effect with alternating dark and light yarns in both warp and weft. Whereas log cabin, a simpler color-and-weave effect on two shafts, alternates darks and lights using a plain-weave threading, shadow weave produces four blocks on four shafts by using two pairs of shafts twice: each pair is threaded dark/light for one block and light/dark for another. As in log cabin, dark horizontal lines form when a dark weft passes beneath raised dark warp threads and over light warp threads; dark vertical lines form when the pick is light instead. The short floats at the edges of the blocks create a subtle textural contrast to the plain-weave areas.

Mary Meigs Atwater introduced shadow weave in 1942. She developed her designs by placing a “shadow” warp end after each pattern end on the opposite shaft. For a pattern end on shaft 1, the shadow end is on shaft 3; for a pattern end on shaft 2, the shadow end is on shaft 4; for a pattern end on shaft 3, the shadow end is on shaft 1; and for a pattern end on shaft 4, the shadow end is on shaft 2. Several years later, Marian Powell published an alternative arrangement that places the “shadow” thread on an adjacent shaft with a corresponding change in Atwater's standard 2/2 twill tie-up. The drafts shown in this article are in the Atwater system because I find the design pathway easier to recognize in the draft.

I began designing each sample with a profile (block) draft that I then translated into shadow weave. It's interesting to note the similarities between the shadow-weave fabric and the original profile draft. The profile drawdown is visible in the cloth, but because the difference between pattern and background is vertical vs horizontal lines instead of contrasting color or value, the effect is much more subtle than with most other block weaves.

Each square in the profile threading becomes a dark (pattern) warp end; a light or “shadow” end is inserted after each dark end. To write out the new draft, fill in just the dark ends

(doubling those at the top of a twill line for symmetry). Then fill in the light ends. Check that for symmetrical designs the positions of the dark and light threads are symmetrical around turning points.

In addition to using profile drafts, shadow-weave drafts can be designed by adapting threadings from other structures, such as twill or overshot. Miniature overshots and other small motifs are often effective because adding the shadow ends makes the draft more than twice as wide/long and the motif significantly larger without worrying about floats.

Much of the fun of designing shadow weave comes from choosing yarns and colors. The “pattern” and “shadow” colors in both warp and weft can be dark vs light, heavy vs thin, bright vs dull, of different hues, or any combination of these. The greater the contrast between the two, the more dramatic (or busy or dizzying!) the effect. Using elements that differ in several respects, such as a heavy, dark, fuzzy yarn and a thin, light, smooth one, can produce an exciting fabric.

Either side of a shadow-weave fabric can be considered the “right” side. With some drafts, a different color predominates on each face. To weave a fabric with an opposite side faceup, change the tie-up to raise the opposite shafts. Different effects can also be achieved by changing the treadling order. And, switching the positions of the weft colors changes the appearance at the edges of the blocks from smooth to feathery, or vice versa.

FALLING-LEAVES DRAFT

The shadow-weave draft for this sweater grew out of my play with undulating twill, an interesting weave to convert to shadow weave because its lines wax and wane as the focus shifts between warp and weft. If a cloth woven in undulating twill is to be used for a garment, the floats have to be designed carefully—if they're too long, they can easily snag—but when undulating twill is drafted using shadow weave, the long floats become long lines of color in a stable fabric.

RESOURCES

- Barrett, Clotilde. *Shadow Weave and Corkscrew Weave*. Boulder, Colorado: Colorado Fiber Center, 1980.
- Powell, Marian. *1000+ Patterns in 4, 6, and 8 Harness Shadow Weave*. McMinnville, Oregon: Robin & Russ Handweavers, 1976.
- Windeknecht, Margaret. *Color and Weave*. Rochester Hills, Michigan: T. G. Windeknecht, 1981.
- _____. *Color and Weave II*. Rochester Hills, Michigan; T. G. Windeknecht, 1994.



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SHELL TOP IN SHADOW WEAVE (see page 24)

TERRY NEWHOUSE FLYNN

Shadow weave in pastel pearl cotton “darks” and natural pearl cotton “lights” creates a shimmering fabric with the opalescence of a seashell. The fabric, woven of 5/2 pearl cotton sett at 18 ends per inch, requires only four shafts to weave. The garment is just two rectangles joined with a knitted yoke; an armhole edging shapes the garment and reduces underarm bulk. Weave the fabric at home before you leave on vacation and knit the trim as you travel. Before you know it, you’ll have a new addition to your wardrobe, ready to wear.

PROJECT NOTES

In my fabric for this top, I experimented a bit with warp and weft colors; the directions given here are for slightly more regular arrangements than I actually used.

FABRIC DESCRIPTION Shadow weave.

FINISHED DIMENSIONS

Two fabric pieces (a front and a back) 20" by 20" each for a women’s top, sizes 10–12. Circumference at chest 37"; length from shoulder 20" (includes knitted section).

WARP and WEFT

5/2 pearl cotton at 2,100 yd/lb: 470 yd Natural #79, 160 yd each #81 Grotto (dark lavender) and #18 Copen (soft blue), 750 yd #70 Orchid (light lavender), 100 yd #88 Wisteria (bright pink), and 270 yd #46 Champagne (creamy yellow).

YARN SOURCES

UK1 pearl cottons are available from most weaving retailers.

NOTIONS

Lavender sewing thread, 1 ¼ yd hem tape, 8 buttons, size 6 knitting needles, crochet hook, tapestry needle.

TOTAL WARP ENDS 396.

WARP LENGTH

2 ¼ yd (allows take-up, shrinkage, and 27" loom waste).

E.P.I. 18.

WIDTH IN REED 22".

P.P.I. 16.

TAKE-UP and SHRINKAGE 9% in width, 14% in length.

WEAVING

At the beginning and end of each garment piece, use sewing thread as weft to weave a ½" seam allowance. For the front piece (hem to yoke), weave 13" of Orchid and Champagne, 4" of Wisteria and Champagne, and 5" of Orchid and Champagne, alternating the pastel and the Champagne as indicated in the draft, page 23. For the back, weave 22" of Orchid and Champagne.

FINISHING

Remove the fabric from the loom and machine stitch raw edges using two rows of small stitches ⅛" apart (but do not zigzag, as this will ruffle the fabric edge). Machine wash the fabric in warm water and detergent on gentle cycle. Line dry; press lightly.

KNITTING

Knit the front and back yokes and armhole ribbings following the instructions on page 23.

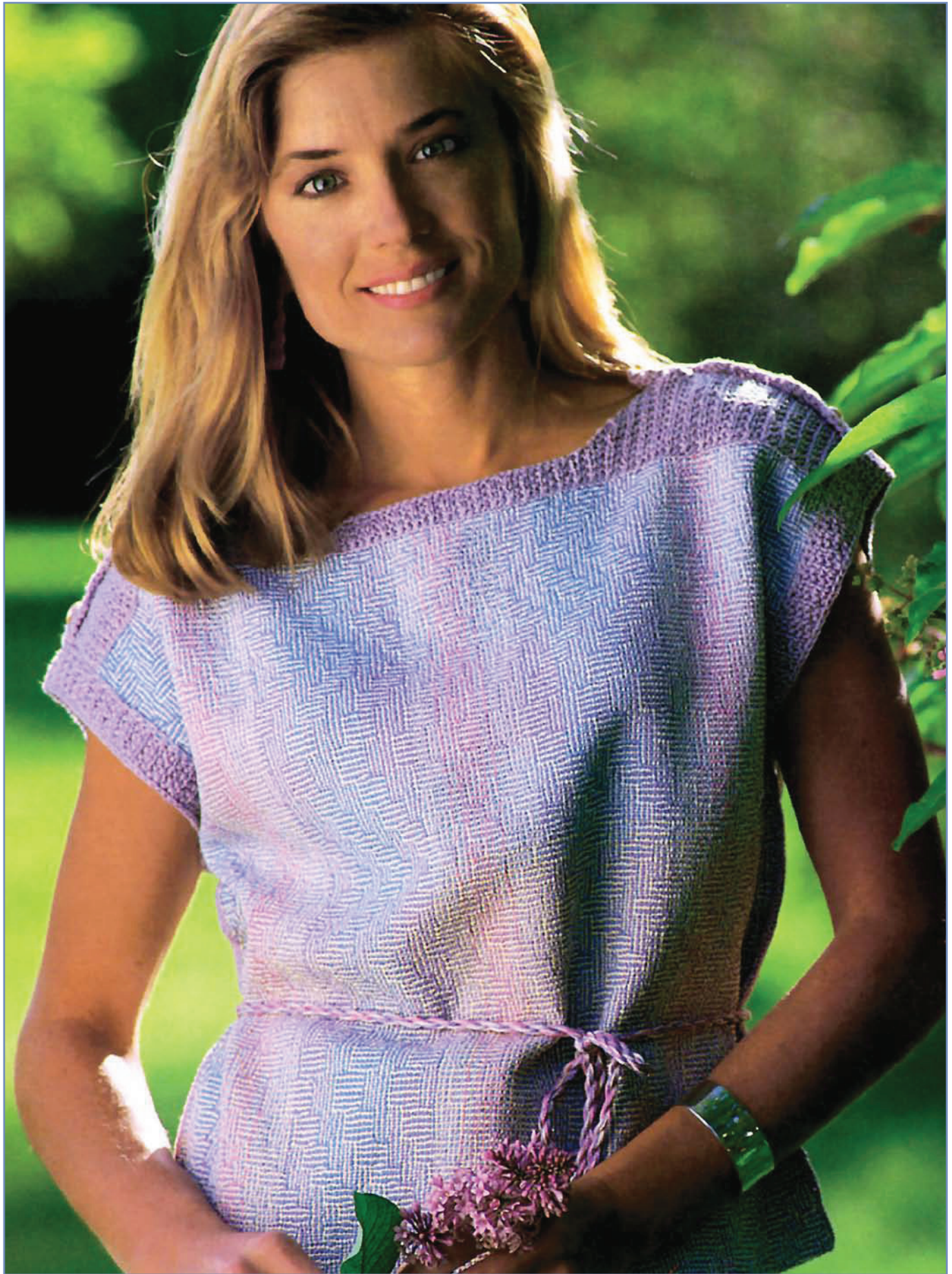
ASSEMBLY

Cut fabric pieces apart. At hem end of each piece, turn under thin seam allowance and turn again. Cover the fold with hem tape and sew hem by hand.

For armholes, on each selvedge of each piece measure 7¼" from top and mark with a safety pin. Using Orchid 5/2 pearl cotton and, working from the right side of the fabric, single crochet along the one selvedge of the back between hem and armhole marker, picking up the weft threads where they turn around the selvedge warp thread; bind off. Repeat on the corresponding selvedge of the front but don’t bind off at armhole; ch 1 (make 1 chain stitch) and turn. Holding the back and the front wrong sides together, attach at seam by slip-stitching through top loops of both rows of single crochet, working loosely. End the joining 2½" before the bottom, leaving the pieces separate for a side vent. Repeat edgings and joining on the other side seam.

Pin the front (buttonholed) yoke to the top edge of the front fabric (with wrong side of yoke to right side of fabric), overlapping them by ½". Using the tapestry needle and Orchid 5/2 cotton to work blanket stitch over the yoke edge and through the fabric, attach the yoke, being careful not to pucker the fabric. Repeat with the back yoke and back fabric. After both yokes have been attached, overlap front and back yokes 1" at armhole tops, pin, and stitch together.

To attach the armhole ribbing: Start at underarm seam and blanket-stitch one long edge of ribbing to the front fabric



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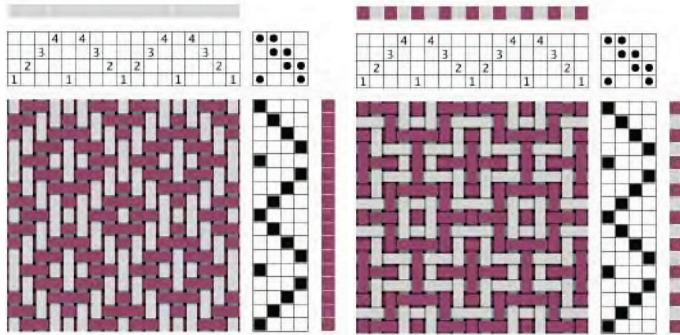
COLOR-AND-WEAVE AND ROSEPATH

MARGARET B. WINDEKNECHT

Color-and-weave is the term we use for a technique that transforms familiar weave structures into intricate patterns through alternating dark and light yarns in both warp and weft. The resulting pattern looks quite different from the weave structure (which is usually presented with a warp of one color and a weft of another) and cannot be predicted from the warp and weft color orders.

Compare the two drawdowns below. Both are threaded and treadled in a simple 4-shaft rosepath. The drawdown at the left shows the pattern resulting from a light-colored warp and a dark-colored weft. In the drawdown at the right, however, dark and light yarns alternate in both the warp and weft, producing an intricate pattern of interlocking squares and crosses. The weave structure is the same, but the color alternation creates a different visual pattern.

ROSEPATH: STRUCTURE AND COLOR-AND-WEAVE



Colors need not alternate one by one. They can alternate in twos, threes or any other combination. At the bottom left (a), the same rosepath draft is threaded and treadled with the color sequence D D L L D L L D in both the warp and weft.

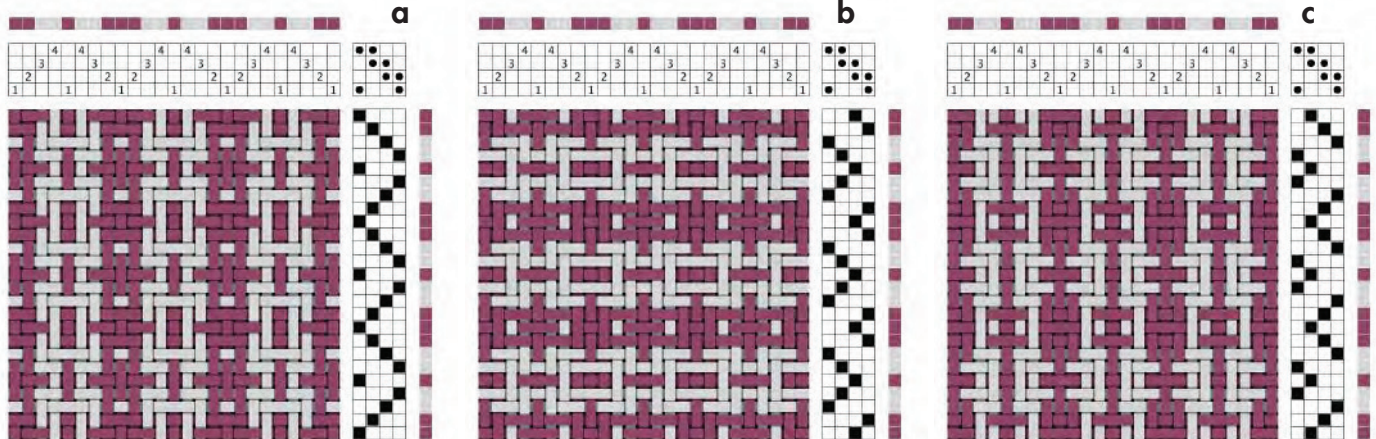
A different visual pattern can result by shifting the treadling sequence so that it begins on the opposite treadle (for example, raising shafts 2-3 instead of shafts 1-4). Doing so can reverse the patterning, bringing the horizontal stripes from the back to the front of the fabric (in b below). Two more variations can be made by beginning the treadling sequence with shafts 3-4 (c) and shafts 1-2 (d). Because these two combinations are also opposites of each other, the patterning reverses from back to front as with a and b.

These four variations (a-d) use the same warp and weft color sequences, differing only by starting the treadling sequence on a different treadle. And there's more! If the treadling sequence can start in different places, so can the threading. The draft for the checkerboard design (bottom right of page 26) is the result of shifting our rosepath threading so that the turning point is on shaft 1 in one section, on shaft 3 in the other, and the treadling sequence begins on shafts 1-4 in one section, on shafts 2-3 in the other. (This is the draft used for the scarf with the checkerboard design on page 28.)

Combining all four treadling effects (a-d) and doing the same to the threading results in a grid of two types of vertical stripes intersecting with two types of horizontal stripes; see the twill design at the top of page 26). Each point in the threading is repeated three times before changing its position to the next shaft. Similarly, the point in the treadling sequence repeats three times before shifting to the next treadle. This is the draft used for the scarf with the twill design on page 28. The actual structural interlacement for this draft is a network of diamonds; see the inset with the color-and-weave draft.

Color-and-weave effects are a great way to alter the appearance of a simple weave structure. Using two colors in the warp and weft can create intricate, complex patterns.

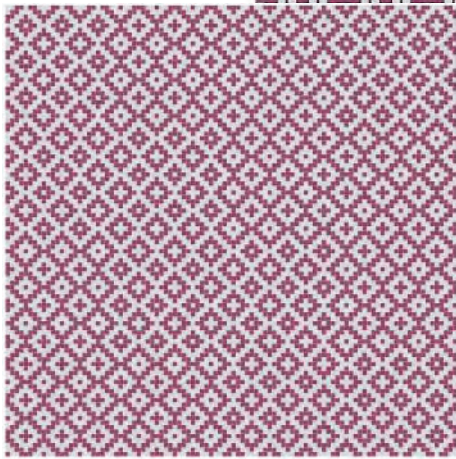
ROSEPATH: FOUR TREADLINGS



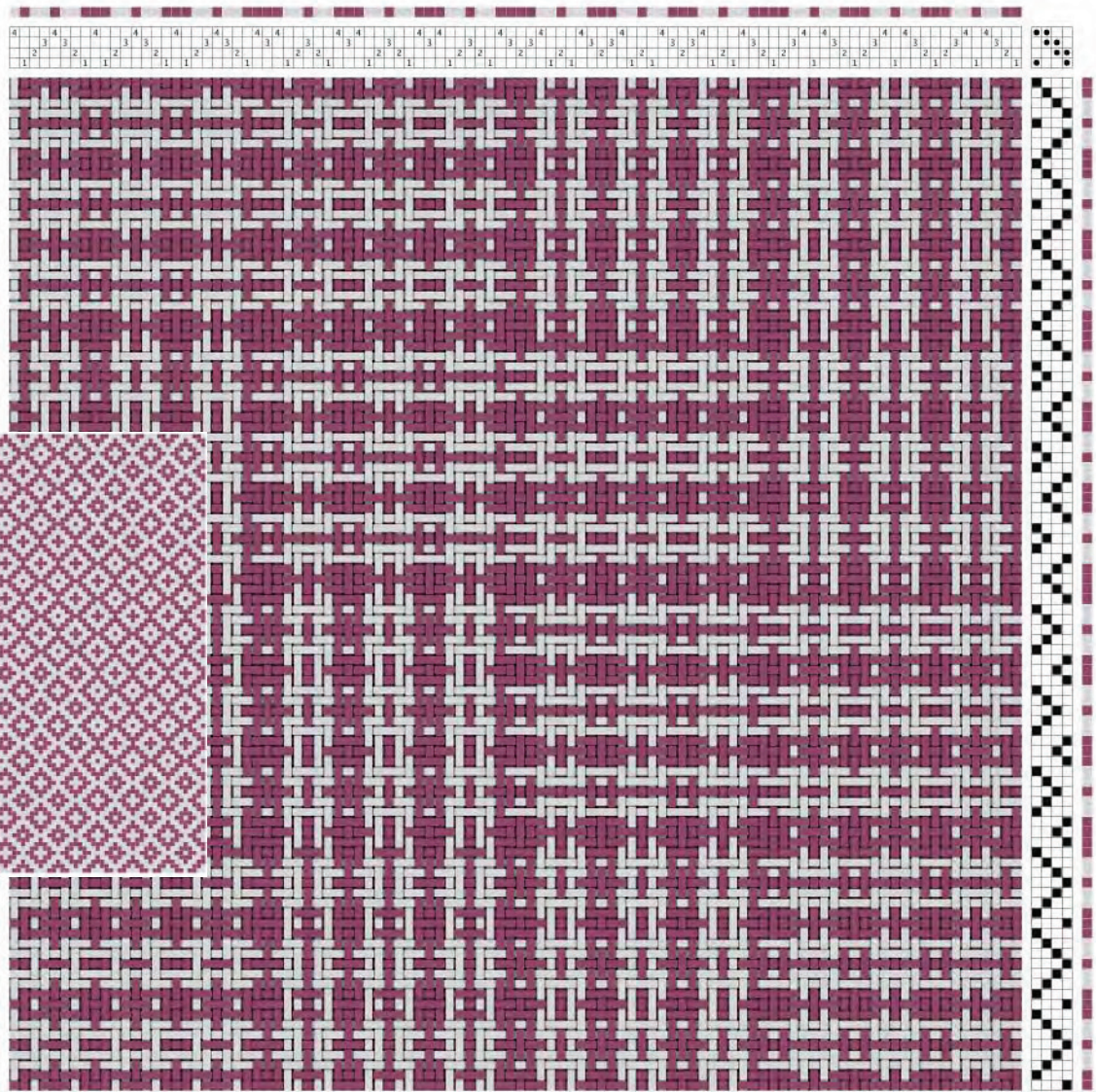
TWILL DESIGN

Four sections in the threading and the same four in the treadling place the turning points on four different shafts to create a large overall design of vertical and horizontal stripes that mimic 2/2 twill.

THE STRUCTURE

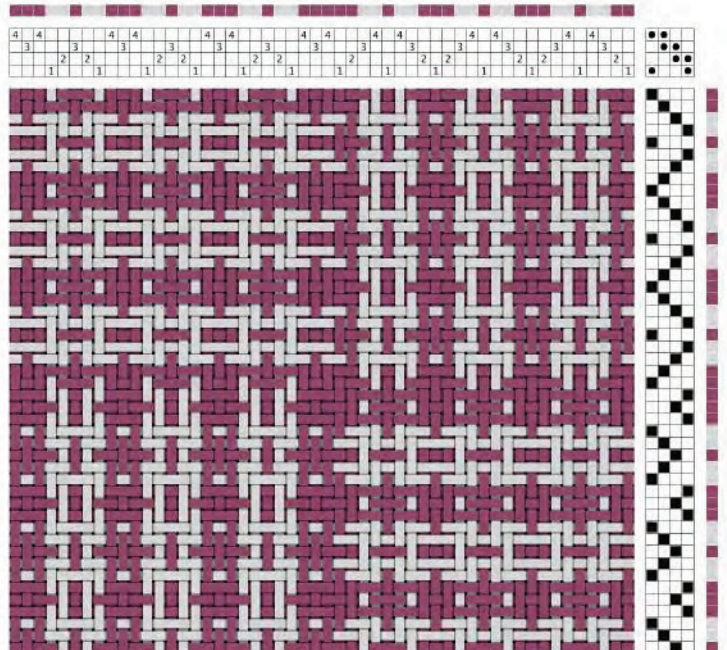
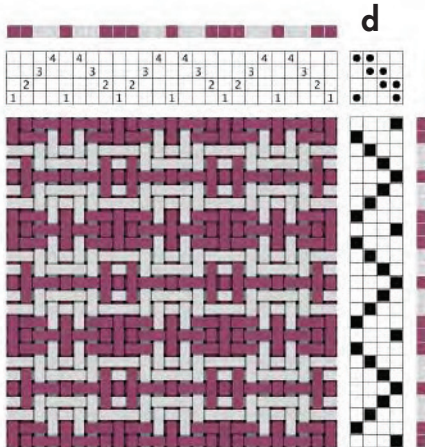


The weave structure is a 2/2 rosepath twill, which looks nothing like the color-and-weave design.



CHECKERBOARD DESIGN

Two sections in both threading and treadling place the turning points on opposite shafts for a checkerboard design. The horizontal and vertical stripes suggest the interlacement of plain weave.



COLOR-AND-WEAVE SCARVES

MARGARET B. WINDEKNECHT

PROJECT NOTES

You can substitute any yarns for these scarves (the heathered wool used for the scarves shown here is no longer available; Harrisville Shetland is suggested as a substitute). Plan a sett suitable for 2/2 twill. In these directions, the scarf with the twill-grid design (top scarf on page 28) is identified by T, the scarf with the checkerboard-grid design (bottom scarf on page 28) by C.

FABRIC DESCRIPTION 2/2 Rosepath twill with color-and-weave effects.

FINISHED DIMENSIONS

10¾" by 63" plus 5" fringe at each end (T);
11" by 54" plus 5" fringe at each end (C).

WARP and WEFT

2-ply wool at 1,800 yd/lb. T: 450 yd Aubergine (eggplant) and 430 yd Wedgewood (gray). C: 450 yd Aubergine (eggplant) and 410 yd Wedgewood (gray).

YARN SOURCES

Harrisville Shetland is available from most weaving retailers.

TOTAL WARP ENDS 175 (T), 181 (C).

WARP LENGTH 2¾ yd (T), 2½ yd (C). (Allows take-up, shrinkage, and 27" loom waste; loom waste includes fringe.)

E.P.I. 15.

WIDTH IN REED 11⅓" (T), 12⅒" (C).

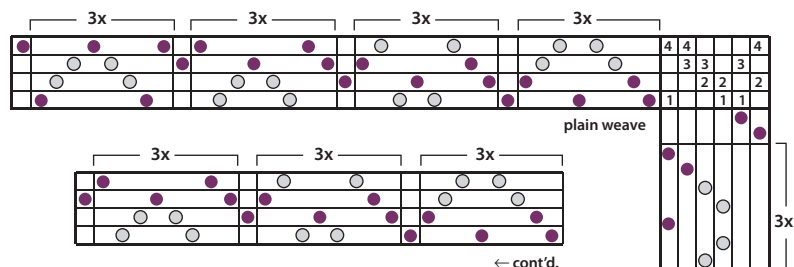
P.P.I. 15.

TAKE-UP and SHRINKAGE 10% in width and length.

WEAVING

Allowing 7–8" for a twisted fringe from the loom waste, begin and end the scarf with 2 picks of plain weave. Then follow the treadling sequence for 70" (T) or 60" (C) or length desired (these are the lengths I wove the two scarves; adjust warp length for a different measurement, if desired). The edges will be smoothest if care is taken to encircle the outside end with each pick. When necessary, take the shuttle around this end by hand. I feel this technique gives a smoother edge than is possible with a floating selvedge.

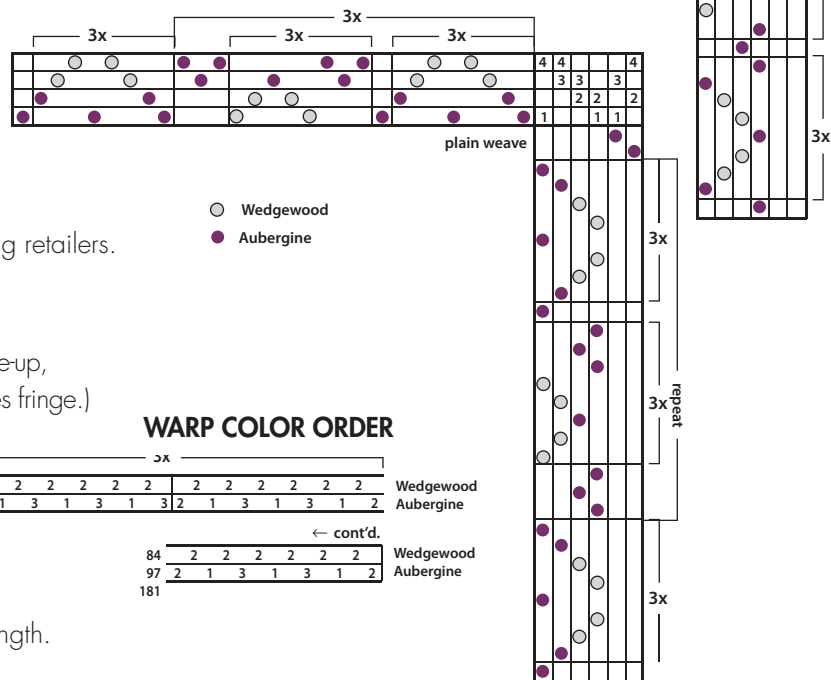
DRAFT FOR TWILL DESIGN



WARP COLOR ORDER

7x						Wedgewood	
84	2	2	2	2	2	2	Aubergine
91	2	1	3	1	3	1	2
175							

DRAFT FOR CHECKERBOARD DESIGN



WARP COLOR ORDER

3x						Wedgewood	
84	2	2	2	2	2	2	Aubergine
97	2	1	3	1	3	1	2
181							

FINISHING

Prepare a twisted fringe of twenty-one groups of 8 ends, one group of 7 ends (T); twenty groups of 8 ends, three groups of 7 ends (C). Fill machine with warm water and agitate with Ivory liquid to make suds and then immerse the scarf; agitate on gentle cycle for 10–15 seconds. Spin out excess water, remove scarf, fill with clear water, agitate briefly, and spin. Dry flat or on a rounded surface. Steam-press; trim the fringe evenly.



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STAR TOWELS IN COLOR-AND-WEAVE

BRITT-MARIE LAMB

I first saw this starry pattern in a photo that appeared in an issue of *Väv Magasinet* (see Resources). In analyzing the fabric, I discovered it to be the simplest of twills with a straight-draw threading (1-2-3-4). The design, however, appears much more complex because of a special technique called color-and-weave.

PROJECT NOTES

In color-and-weave drafts, dark and light colors alternate in a regular order in the warp and in the weft (4 blue threads alternate with 4 white threads in the towel on the far right of page 30). The result is a visual design that appears different from what the threads are actually doing. If the warp were all dark and the weft all light, you would see only a simple twill, but with this color alternation, you see stars!

FABRIC DESCRIPTION Turned twill with color-and-weave effects.

FINISHED DIMENSIONS

Four towels 16½" by 25" including hems.

WARP and WEFT

Warp: 22/2 cottolin (50% cotton/50% linen) at 3,170 yd/lb, 892 yd (4½ oz) bleached white #000; 866 yd (4¾ oz) blue #239.

Weft: 22/2 cottolin, 715 yd (3⅝ oz) bleached white #000; 665 yd (3⅜ oz) blue #239; 59 yd cotton sewing thread for hems.

YARN SOURCES

Cottolin is available from Blomqvist/Nordiska Textil-Garner AB, Vävstuga, and the Lone Star Loom Room.

TOTAL WARP ENDS 406 (includes 2 floating selvages).

WARP LENGTH

4⅓ yd (allows take-up, shrinkage, and 28" loom waste).

E.P.I. 20. **WIDTH IN REED** 20⅓". **P.P.I.** 20.

TAKE-UP and SHRINKAGE 10% in width and length.

WEAVING

Wind the warp following the Warp Color Order on page 31. Cottolin comes packaged on spools. Place a spool of white and a spool of blue each in a container, such as a gallon jar (so the spools won't jump around on the floor). Wind white first (5 total ends), cut and tie blue to white, wind 4 blue ends, and continue cutting and tying at each color change

until you have 406 total ends. Use your preferred warping method to thread the shafts following the draft on page 31 and wind the warp on the beam under firm tension.

If your loom is limited to six treadles, you will need to use what is called a skeleton tie-up. In order to raise all of the combinations of shafts shown in the full tie-up, you will step on two treadles at the same time for some of the rows of weaving. Start and end each towel by weaving 12 picks with sewing thread (the 3x repeat; this section is completely turned under for the hem). Then weave 8 picks (the 2x repeat); this is the part of the hem that shows on the back of the towel.

Then weave the body of the towel (shaded light blue in the treadling). Keep a measuring tape by your side and measure to be sure you are weaving 20 picks per inch. Start the blue weft on one side and the white weft on the other. Carry the colors up the selvedge to the next stripe (see Weaving Tip below). Enter each shed over the floating selvedge and exit under it. Repeat for four towels and separate each towel with a weft in a contrasting color.

FINISHING

Remove the fabric from the loom and machine wash and machine dry on regular settings. Machine zigzag on both sides of the contrasting-color threads between the towels. Cut the towels apart. Turn the ends under twice so that the sewing-thread section is completely enclosed and the turned hem matches the pattern. Press hems. Stitch by hand or machine.

RESOURCES

Ignell, Tina. "Four Shafts and Four Treadles." *Väv Magasinet*, No. 4, 2002, p. 41.

Weaving Tip

When you use two alternating weft colors, it is time-consuming to begin and end them at each color change. To avoid loops along the selvages, treat the weft that is not weaving like a floating selvedge. To make this easy, loop the weft of the inactive shuttle around the beater upright at the side where that shuttle left the shed and rest the shuttle on a chair or bench. When the beater is moved back as the shed is opened, it will pull the weft alongside the floating selvedge so you can encircle both with the active shuttle.



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COLOR-AND-WEAVE PRIMER

To understand how color-and-weave works, first look at a draft that is *not* a color-and-weave draft; see the twill draft below. In this draft, the warp is all blue, and the weft is all white. The threading (top horizontal section) is a straight draw (1-2-3-4 repeated). The tie-up (upper right corner) shows eight treadles. The first four treadles raise one shaft each (1-2-3-4) to produce what is called a 1/3 twill (one shaft up, three down in each row of weaving). The second four treadles raise three shafts each to produce what is called a 3/1 twill (three shafts up, 1 down in each row). If these eight treadles are used in succession, woven stripes of 1/3 twill (mostly white) and 3/1 twill (mostly blue) are produced.

Now look at the twill draft with color-and-weave effects (bottom right). In this draft, 4 blue threads and 4 white threads alternate in both warp and weft. Notice that this draft also produces alternating sequences of 1/3 twill and 3/1 twill. In the twill draft, you see the design made by the contrast between the warp threads (all dark) and the weft threads (all light). In the color-and-weave draft, you see the design made by the contrast between blue warp *and* weft threads and white warp *and* weft threads.

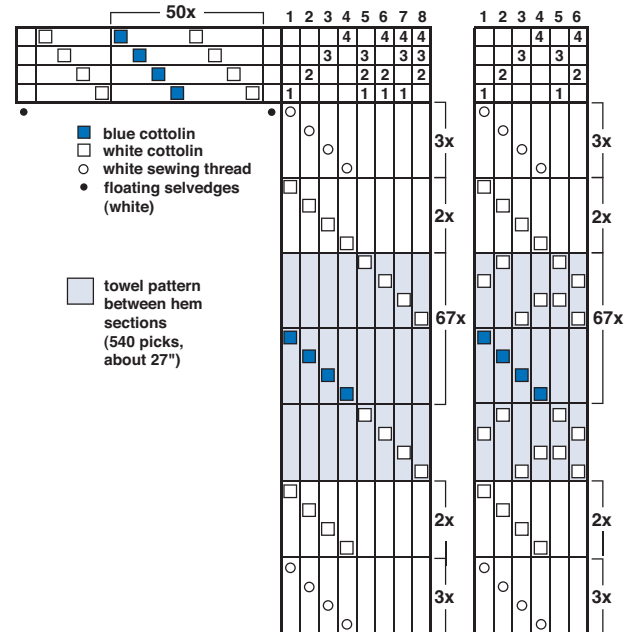
In color-and-weave drafts, the regular alternation of dark and light colors in both warp and weft create a visual pattern that appears different from the actual interlacement. In a fabric woven with the twill draft, the design is the interlacement. In the fabric woven from the color-and-weave draft, you see stars. Notice how the changing directions of the diagonal lines in the two twills create the arms of the stars in the color-and-weave draft.

WARP COLOR ORDER

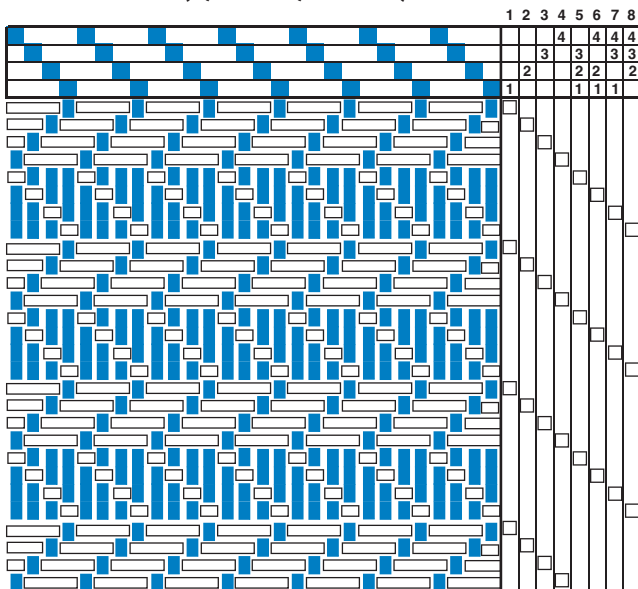
	[50x]				
206	5	4	1		white
200	4				blue
406					

(includes 2 floating selvages)

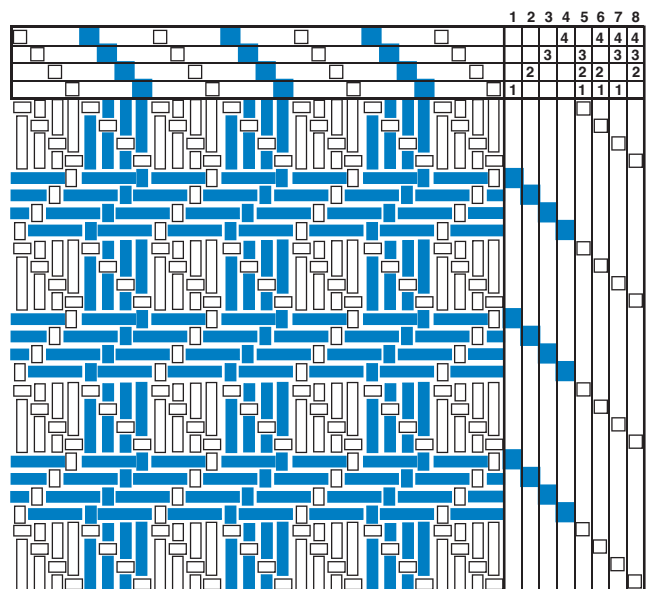
DRAFT



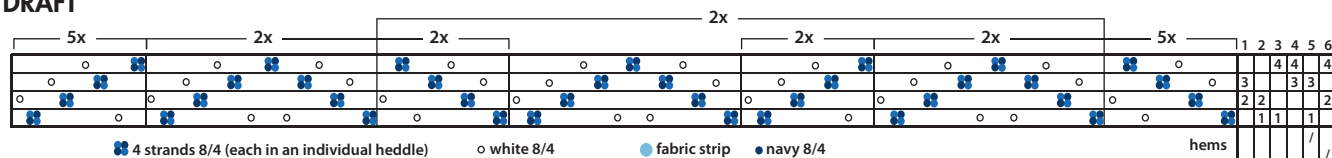
TURNED TWILL (1/3 VS 3/1 TWILL)



TURNED TWILL WITH COLOR-AND-WEAVE



DRAFT



BLUE SHADOWS RUG

Each thick thread in the warp is composed of 4 dark-blue strands of 8/4 cotton (2 navy blue, 2 royal blue). Each strand is threaded in a separate heddle—arranged side by side on the same shaft. This way, the 4 threads appear ribbon-like rather than cord-like in the rug. A single 8/4 cotton thread is used as the shadow warp end. (Other ratios of thick to thin, such as 5 to 1 or 6 to 1 can be used instead, depending on the coverage desired.)

For the greatest clarity of the design, I usually choose a color for the shadow warp threads (the thin threads) that is close to the color of the thick weft—the thin warp is visible on the face of the cloth over picks of thick weft. In the same way, the thin weft is visible on the surface of the cloth over the thick warp, so the design is clearest if these are close in color. The thick warp and thick weft colors should be contrasting but look well together. The higher the value contrast between them, the bolder the pattern. For this piece, I used fabric strips for the thick weft.

Hems are a good treatment for the ends of this rug because a folded hem (woven in thin weft only) is about the same thickness as the body of the rug.

Within these guidelines, you can vary your materials, drafts, setts, and color contrasts. I think you'll find, as I do, that in weaving, one thing almost always leads to another.

WARPING NOTES

The recommended sett for this rug is twenty-four 8/4 cotton carpet warp ends per inch. Four of the 8/4 ends are used together as a single thick end, but threaded in individual heddles on the same shaft. The division of the threads in the reed sometimes splits these groups of 4 ends, but since they are threaded individually, this doesn't affect the slewing, so either a front-to-back or back-to-front warping method can be used.

FABRIC DESCRIPTION Variation of shadow weave alternating thick and thin threads.

FINISHED DIMENSIONS

One area rug 24" by 42" including a 1¼" hem on each end.

WARP and WEFT

Thick warp: 8/4 cotton carpet warp at 1,680 yd/b, 680 yd navy blue and 680 yd royal blue (each thick thread is 2 navy and 2 royal). Thin warp: 8/4 cotton carpet warp, 350 yd white. Thick weft: 100% cotton fabric strips cut from pale blue and turquoise prints in a width that makes the size of a pencil when twisted moderately, 140 yd total strip length. Thin weft: 8/4 cotton carpet warp at 1,680 yd/b, 220 yd navy blue.

WARP COLOR ORDER

128	1	white
256	2	royal blue
256	2	navy
640		

YARN SOURCES

8/4 cotton carpet warp is available from most weaving retailers, fabric from fabric stores.

NOTIONS Sewing thread for hems.

TOTAL WARP ENDS 256 working ends (128 thick ends, 128 thin ends), 640 total ends; each thick end is four 8/4 strands used together.

WARP LENGTH

2½ yd long (allows take-up, shrinkage, and 32" loom waste).

E.P.I. 9–10 working ends, 24 actual 8/4 ends (each thick end is 4 strands, each thin end is 1).

WIDTH IN REED 26⅔".

P.P.I. About 8 (4 thick/4 thin); 14 in hem areas (8/4 weft only). Actual measurement is 19 thick picks in 5".

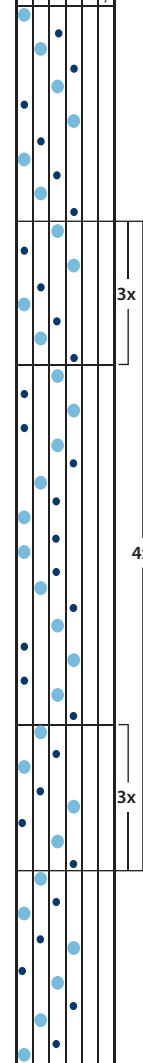
TAKE-UP and SHRINKAGE 10% in width, 25% in length (take-up).

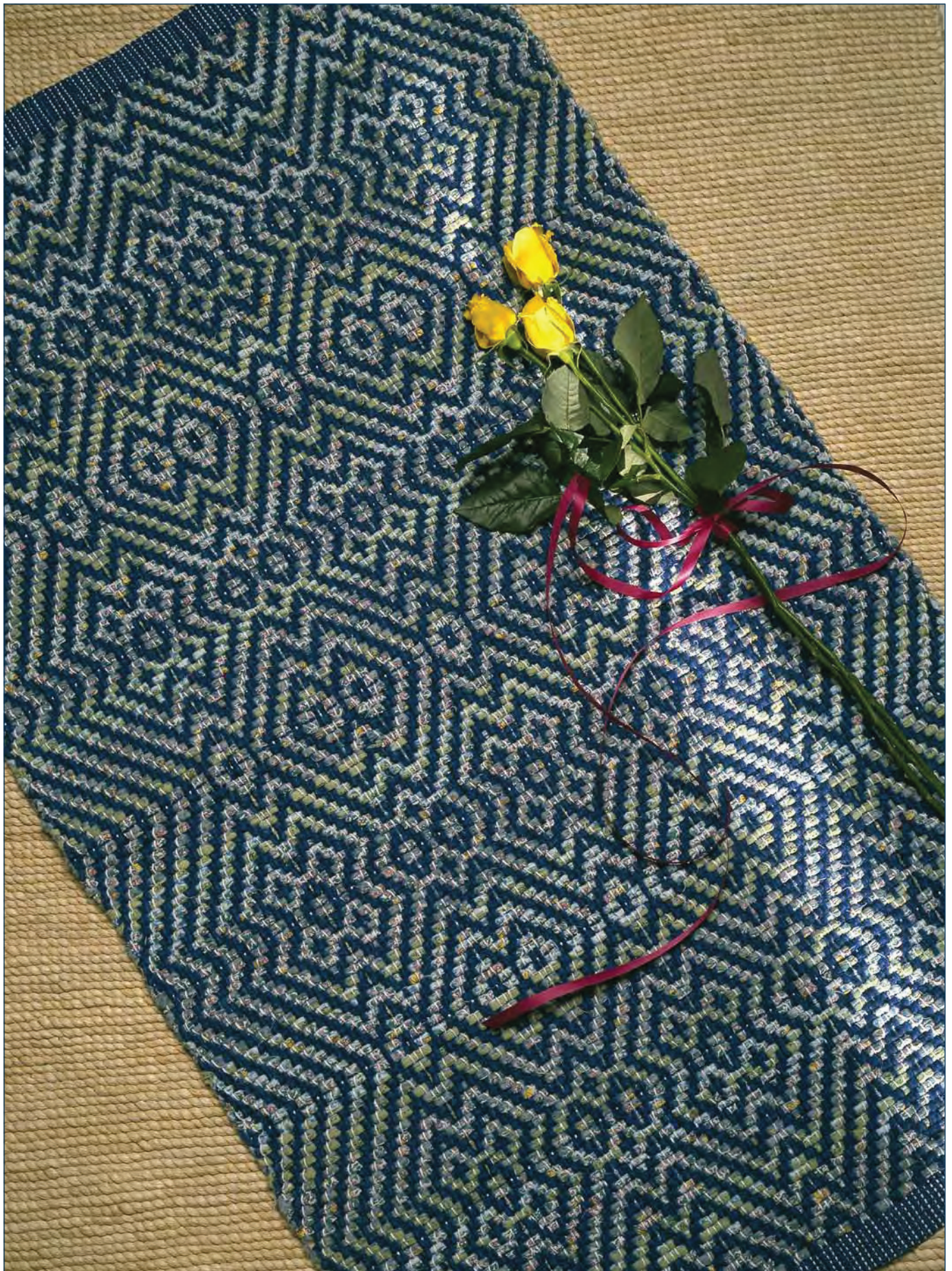
WEAVING

Thread the shafts following the draft (thread 1 end per heddle where the draft shows 4 ends together on the same shaft). Weave 3" alternating treadles 5 and 6 with 8/4 navy cotton at the beginning and end of the rug for hems. Weave the body of the rug following the treadling draft. Beat very firmly, bubble the weft, and advance the warp often.

FINISHING

Remove the rug from the loom and machine stitch raw edges. Turn under ends twice so fold abuts rug body and sew hems by hand. Soak the rug in the washing machine filled with hot water. Agitate very briefly and spin out water. Smooth out on a flat surface to dry.





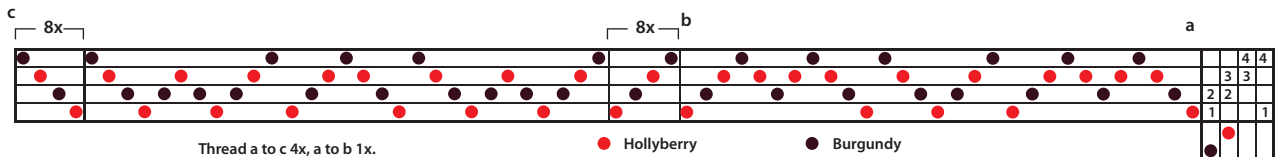
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HUCK-LACE BLOUSE AND SHADOW-WEAVE JACKET

JEAN SCORGIE

SHADOW-WEAVE DRAFT FOR JACKET



Using two different weaves to create a theme for an ensemble is a technique readily available to handweavers. The designs in this jacket and blouse echo each other. Directions given here are for the fabrics only. Choose commercial patterns for a short jacket and a long-sleeved blouse (allow enough fabric to accommodate take-up and shrinkage and meet pattern requirements).

PROJECT NOTES FOR JACKET

Two shades of dark red alternate in both warp and weft for a shadow-weave effect on a twill variation. This jacket is cut on the lengthwise grain from 23" wide fabric. The unlined jacket is single-layer throughout—it has a single-layer collar and no facings. Inverted tucks around the waist and at the wrists add shaping.

FABRIC DESCRIPTION Shadow weave.

FINISHED DIMENSIONS

Yardage 23" by 135" for a medium-size short jacket.

WARP and WEFT

8/2 wool at 2,240 yd/lb: 2,480 yd each Hollyberry and Burgundy.

YARN SOURCES

8/2 JaggerSpun Heather wools are available from most weaving retailers.

TOTAL WARP ENDS 517 (1 Strawberry, 1 Burgundy alternately); begin and end with Strawberry.

WARP LENGTH

5 yd (allows take-up, shrinkage, and 30" loom waste).

E.P.I. 20. **WIDTH IN REED** 25%". **P.P.I.** 20.

TAKE-UP and SHRINKAGE 10% in width and length.

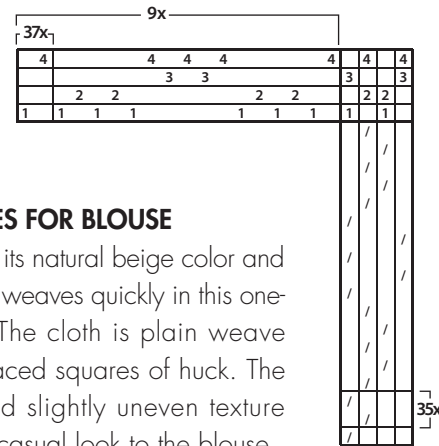
WEAVING

Weave 150" following the draft.

FINISHING

Staystitch raw edges. Wash by hand. Air-dry; steam-press.

HUCK-LACE DRAFT FOR BLOUSE



PROJECT NOTES FOR BLOUSE

Tussah silk, with its natural beige color and crunchy texture, weaves quickly in this one-shuttle fabric. The cloth is plain weave with widely spaced squares of huck. The yarn's crisp and slightly uneven texture gives a sporty, casual look to the blouse.

FABRIC DESCRIPTION Huck lace and plain weave.

FINISHED DIMENSIONS

Yardage 25" by 135" for a medium-size long-sleeved blouse.

WARP and WEFT

30/2 tussah silk at 7,500 yd/lb: 7,750 yd.

YARN SOURCES

30/2 Tussah Silk Fine is available from The Silk Tree.

TOTAL WARP ENDS 810.

WARP LENGTH

5 yd (allows take-up, shrinkage, and 30" loom waste).

E.P.I. 30. **WIDTH IN REED** 27". **P.P.I.** 30.

TAKE-UP and SHRINKAGE 7% in width, 10% in length.

WEAVING

Weave 150" following the treadling sequence in the draft; use a firm beat.

FINISHING

Staystitch raw edges. Wash by hand or machine on a gentle cycle. Air-dry; press while slightly damp.



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TIPS FOR PLANNING, HEMSTITCHING, AND FRINGING

TAKE-UP AND SHRINKAGE

Weft take-up and shrinkage. As you weave, extra weft length (beyond the width of the warp in the reed) must be placed in the shed to allow for weft take-up (in *Handwoven* projects, this amount is included in required weft yardage). The fabric then draws in as the weft bends over and under the warp threads, so that the width of the woven cloth is narrower than the width of the warp in the reed. The cloth narrows further after it is removed from the loom, and shrinkage narrows it even more if it is washed. To calculate the percentage of weft take-up and shrinkage, divide the finished width by the width of the warp in the reed.

Warp take-up and shrinkage. As you weave, the warp bends over and under the weft threads. Fabric length is therefore less than the length of the warp threads that produce it (*Handwoven* projects give the number of inches allowed for this take-up under Warp Order and Length). When you release tension and remove the fabric from the loom, the fabric takes up in the warp direction. If you wash the fabric, shrinkage further decreases its length. To calculate the percentage of warp take-up and shrinkage, divide the finished fabric length by the woven length (measured under tension on the loom) plus the inches given for warp take-up.

To calculate how long to weave a fabric for a specific finished length, use the percentage derived by dividing the finished length listed in the project by the woven length measured under tension on the loom (for this percentage, do not include the inches allowed for take-up in the warp yarn).

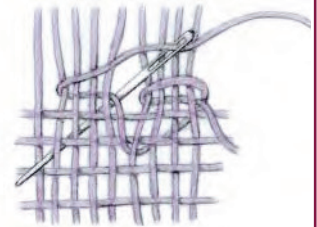
TWISTING (OR PLYING) THE FRINGE

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 counter-clockwise (or twist them together 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.)



SIMPLE HEMSTITCHING

Weave several picks of plain weave, 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 group. Pass the needle under the same group of ends, bringing it out through the weaving two (or more) weft threads below the fell. Repeat for each group of ends across the fell. Needleweave the tail into the selvedge and trim. (See * below.)

DOUBLE (ITALIAN) HEMSTITCHING

Weave several picks plain weave, ending with the shuttle on the right side if right-handed, left side if left-handed. Measure a length of weft four 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 warp ends 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. Then begin again, encircling the next group of ends. (See * below.)

**For both methods: To hemstitch the first end of a piece, weave a header, weave four or five picks of plain weave (or of the basic weave structure used in the piece), and hemstitch over the top two or three weft rows. Weave the piece and then hemstitch the other end over the last two or three weft rows. Remove the fabric from the loom and discard the header and weft threads below the first hemstitching.*

