

**Ann Arbor Fiberarts Guild
Warped Weavers Study Group**

***A Path Less Travelled -
Trying new Weave Structures***

Scarf Warp Swap 2012

Our study group decided to swap warps for scarves. Each participant wound a warp, using whatever yarns they wanted. The only guidelines were that the warp should be 3 yards long and wide enough to finish to a 6" wide scarf if woven in plain weave. Then, we exchanged the warps, so each of us wove a scarf using someone else's warp. We challenged ourselves to weave with a structure that we weren't familiar with.

Several months later, we had finished the weaving and showed off our scarves. The results were fantastic! There's a lot of variety in the warp yarns, in the weave structures, and in the finished scarves. We all agreed that the real challenge was to decide what to do with someone else's choice of yarns and colors.

Many of us wove samples to try out different weave variations and to decide what type of weft yarn and colors would work best with the warp. We all had fun and learned a lot in the process.

Take a look at our scarves, and maybe you'll learn about a new weave structure too!

<u>Weave Structure</u>	<u>Weavers</u>	<u>Page</u>
Crackle	Marion Marzolf Betsy Szymanski	1
Doubleweave Blocks	Joyce Lavasseur	7
Extended Manifold Twill	Georgia Gleason	11
Honeycomb	Bonnie Kay	15
Miniature Overshot	Phyllis Thompson	19
Multiple Tabby Weave	Catherine Roberts	23
Plaited Twill	Marla Smith	27
Rosepath	Marje Mink	31
Swedish Lace	Bob Lavasseur	35
Bibliography		39

Crackle

In Sweden, crackle is called *Jämtlandsväv* or *Jämlandsdräll*. Mary Meigs Atwater renamed the weave to crackle for American weavers because of its resemblance to a crackled pottery glaze. It is an extremely versatile structure that can produce a variety of different patterns and color blendings, even on four shafts.

Crackle is a twill-based block weave with one block for each shaft used. The threading for each block is a three shaft point twill. Incidental warp ends are required between blocks to maintain the odd-even threading order for tabby. No warp or weft floats are longer than 3 threads, so blocks can be as wide and as long as desired. A 2/2 twill tie-up is used to weave crackle, and tabby may or may not be used.

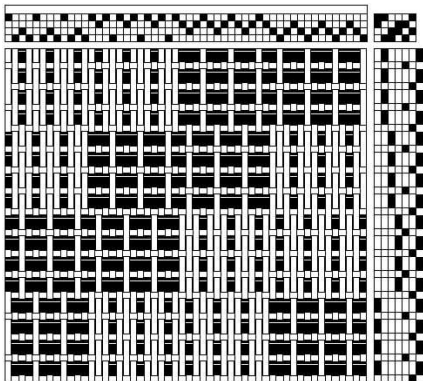
Crackle is not a unit weave because blocks can't be woven independently. On four shafts, two blocks weave pattern and two blocks weave background. Crackle is designed using profile drafts. Profiles based on twill threadings are especially useful.

Many different treadlings can be used on a crackle threading. The treadling method typically seen is an overshot treadling, with one pattern treadle per block alternating with tabby. But crackle can also be treadled like summer and winter, twill, Bronson lace, boundweave, on opposites, and more.

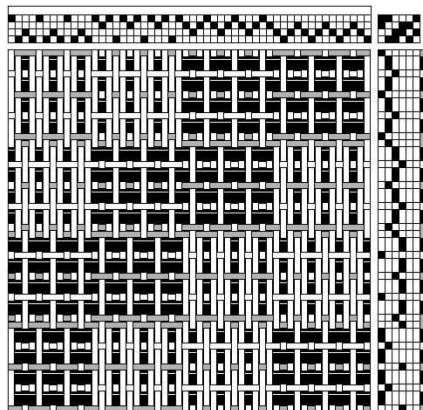
Two particular treadling methods are especially useful for producing a variety of color effects, classic crackle and polychrome crackle. Classic crackle is treadled as-drawn-in with three weft colors, one pattern weft and two ground wefts. Tabby is not used. Polychrome crackle has two pattern treadles per block alternating with tabby and three weft colors, two pattern wefts and one tabby weft. Rotating the weft colors through the blocks in classic and polychrome crackle can produce some surprising color effects.

Crackle can also be extended to more than four shafts for more complex designs with fewer weft colors.

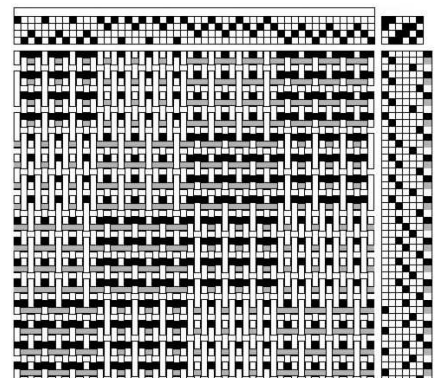
Crackle Woven As Overshot



Classic Crackle



Polychrome Crackle



Crackle

Marion Marzolf

YARNS

Warp

3/2 cotton (rose) – 1260 ypp
Warp created by: Joyce Lavasseur

Weft

Pattern: mercerized cotton boucle (black)
rayon chenille (variegated)
mohair (variegated)
Tabby: rayon (mauve)

WARP

82 ends 3 yards long

SETT

12 epi 22 ppi (10 pattern, 12 tabby)

FINISHING

6" knotted fringe

SIZES

Width in reed: 7"
Finished: 6" x 43 ¾"

SOURCE

The Crackle Weave by Mary E. Snyder

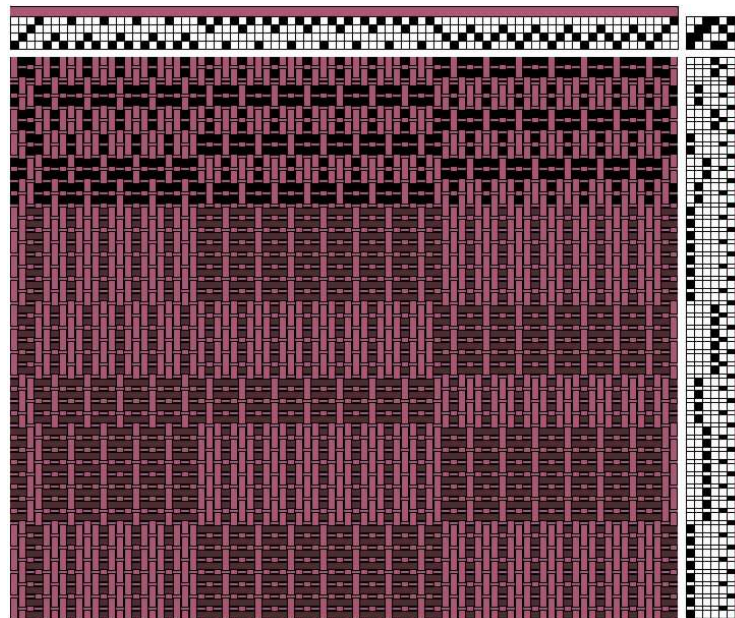
NOTES

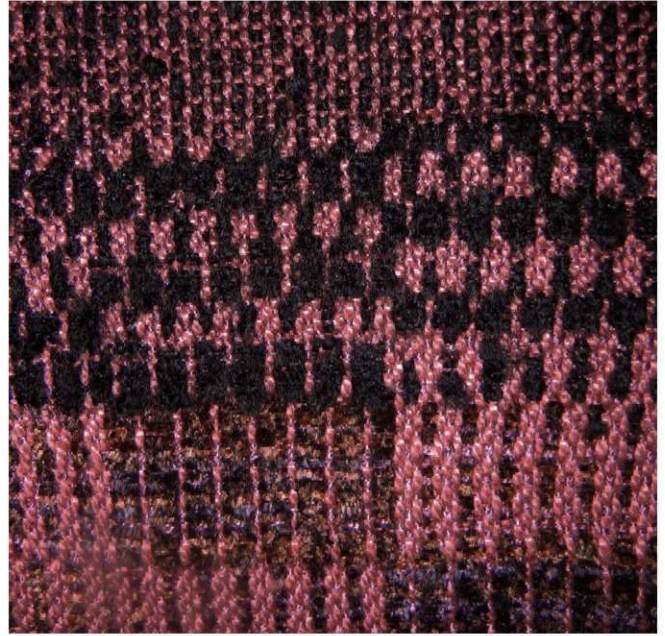
I joined this project because I thought it would be a good challenge – to learn a new Swedish weave structure. But I also faced the challenge of finding appropriate weft colors that worked with the design and the plum color. First, I set up a test warp in order to learn the crackle structure, because I did not want to waste the exchange warp.

Then, I still had to try the exchange warp. Finally, I found a multi-color mohair that worked. I did the scarf with pattern at both ends because I thought the pattern area made the scarf too thick to wrap around the neck. I liked the result.

After doing the project, I experimented more with crackle and found the new book by Lucy M. Brusic, "A Crackle Weave Companion", a helpful source for four-shaft crackle. I made a couple more scarves using this style in wool and mohair. I also tried it for a narrow foot-of-the-bed throw. I liked these pieces.

I realize that there is much more to be done with crackle than doing it in the manner of overshot that I used. That is the value of these challenges – they do open us to new possibilities. But, probably I will try another Swedish structure for our next challenge.





Crackle

Betsy Szymanski

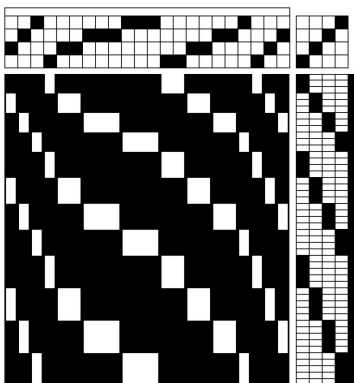
YARNS	Warp rayon rick-rack (brass) - 1200 ypp Warp created by: Bob Lavasseur	Weft rayon rick-rack – 1200 ypp (brass, brown, red, and two greens)
WARP	101 ends 3 yards long	
SETT	12 epi 34 ppi	
FINISHING	Hemstitched with 5 ¼" twisted and knotted fringe	
SIZES	Width in reed: 8 ½" On loom: 8 ½" x 79" Off loom: 7 ½" x 77 ½" Finished: 6" x 70 ½"	
SOURCE	<i>Weave Classic Crackle and More</i> by Susan Wilson	

NOTES I designed this classic crackle scarf on 4 shafts using an undulating twill profile draft. It is treadled as-drawn-in. The pattern weft actually acts as the design's background because it is the same color as the warp. The two ground wefts in each block are different colors. The ground weft colors rotate through the blocks.

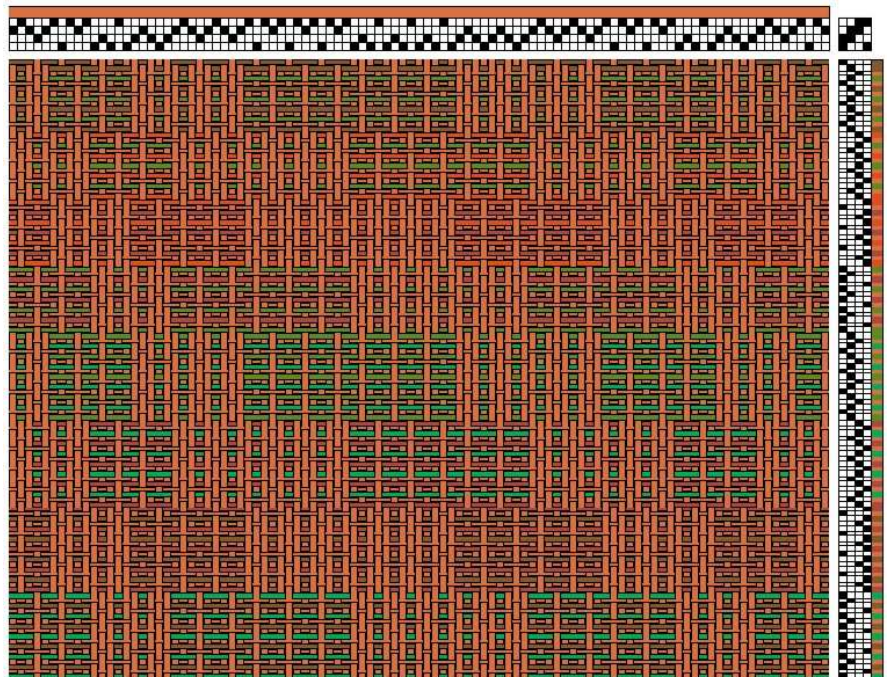
In the treadling, the profile draft repeats after 12 blocks. The color rotations repeat after 10 blocks. Combined, that makes the total treadling repeat 60 blocks long, or 120 picks. Even though this draft uses only 4 shafts, I used my computer dobby loom to weave the scarf so I could concentrate on the color changes and not have to worry about the treadling.

The scarf turned out to be thicker and heavier than I would have liked. I should have used a lighter beat or a closer sett.

Profile Draft



Threading Draft





Doubleweave Blocks

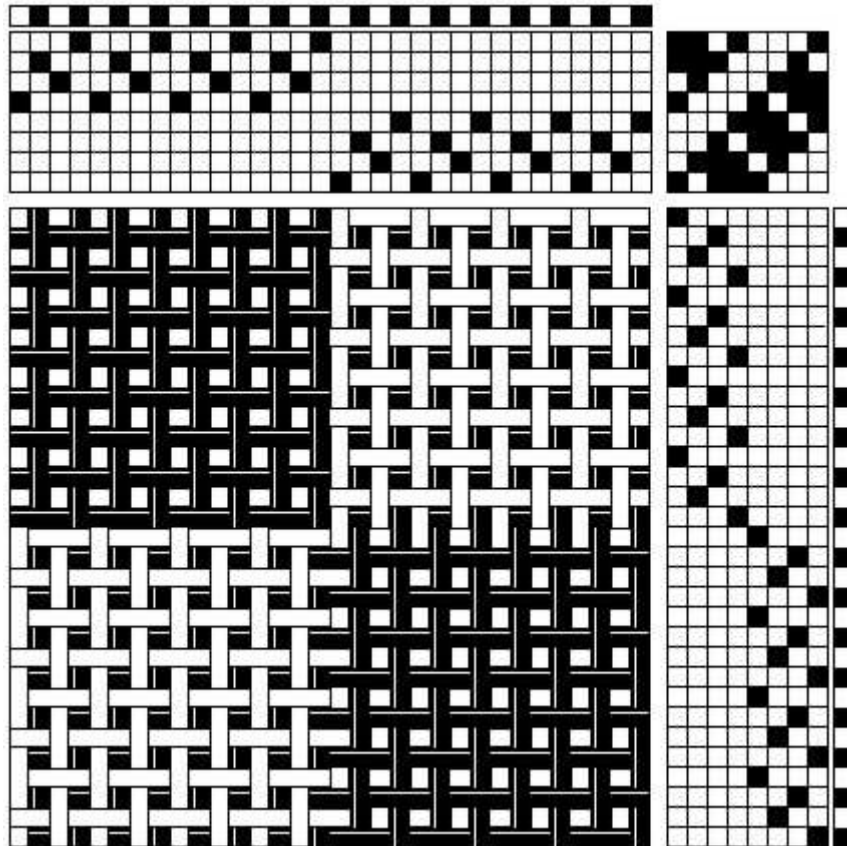
Doubleweave lets you weave two or more layers of cloth at the same time. The layers can be completely separate, can be connected at one or both selvages, or can be interchanged to create designs and color blendings.

Doubleweave requires at least four shafts, two for each layer. Threads on two of the shafts weave plain weave on one layer, and threads on the other two shafts weave plain weave on the other layer. When the upper layer is woven, the threads of the lower layer stay down out of the way. When the lower layer is woven, the threads of the upper layer are raised up out of the way.

The warp sett is twice the normal sett, so that each layer weaves at its normal sett. Tight warp tension must be maintained to get clean sheds and avoid interweaving the layers when not desired. The warp should be strong and smooth, to hold the tension and get clean sheds.

When doubleweave is woven on eight or more shafts, block designs are possible, and patterns may be designed with profile drafts. To weave the blocks independently, four shafts are required for each block. The blocks can be any width or length.

The threading unit contains four ends. The treadling unit uses four treadles. Different books show different threading and treadling units. The threading and treadling used here has a light lower layer on the lower two shafts and a dark upper layer on the upper two shafts.



Doubleweave Blocks

Joyce Lavasseur

YARNS

Warp

bamboo (mushroom)
wool/silk (natural)
bamboo warp created by Marje Mink
Joyce added the wool/silk warp

Weft

bamboo (mushroom)
wool/silk (natural)

WARP

122 ends 3 yards long

SETT

40 epi (20 epi each layer) 20 ppi (10 ppi each layer)

FINISHING

3" fringe

SIZES

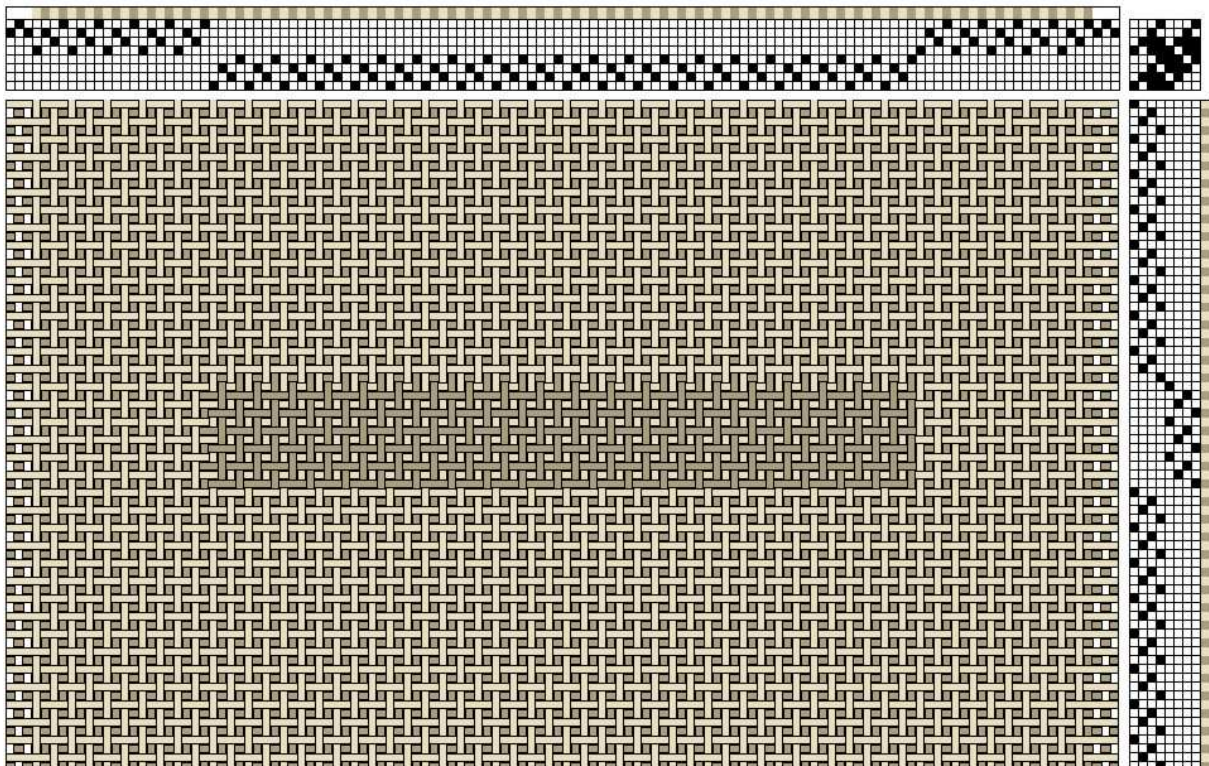
On loom: 8" x 72"
Finished: 6 $\frac{3}{4}$ " x 63 $\frac{1}{2}$ "

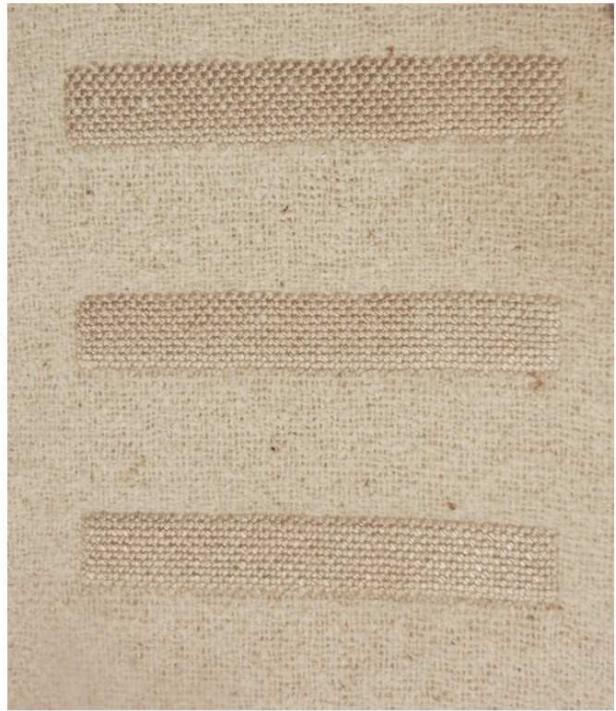
SOURCE

Handwoven magazine, January/February 2010 #148, p 34.
"Play with Layers for Doubleweave Scarves" by Jennifer Moore

NOTES

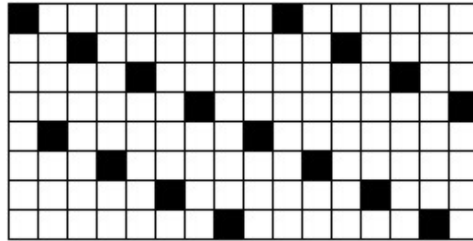
In the magazine article that I used for my source, Jennifer Moore said that she didn't achieve as much differential shrinkage as she wanted from her two warps. So I made some changes from her pattern to mine that I thought would create more shrinkage. I used a wool/silk warp, that I knew would shrink and felt, for the second layer. It was a finer size yarn and I set it more loosely so it would have room to move and shrink, hoping to get some buckling in the larger bamboo warp that would not shrink. After washing the scarf, the bamboo layer did not buckle as I'd hoped. It seemed like the bamboo was large enough and strong enough to hold its position against the wool/silk layer. So I think more sampling with different sizes and kinds and setts of fibers in both layers is needed to get the desired result.





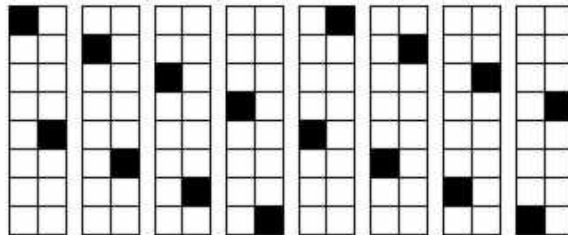
Extended Manifold Twill

A *manifold twill*, also known as a corkscrew or interlocking twill, is created by merging two or more twills together. The different twills are usually threaded on alternate ends on shafts as far apart as possible. Here's an example of a manifold twill that merges two 8 shaft straight twills.

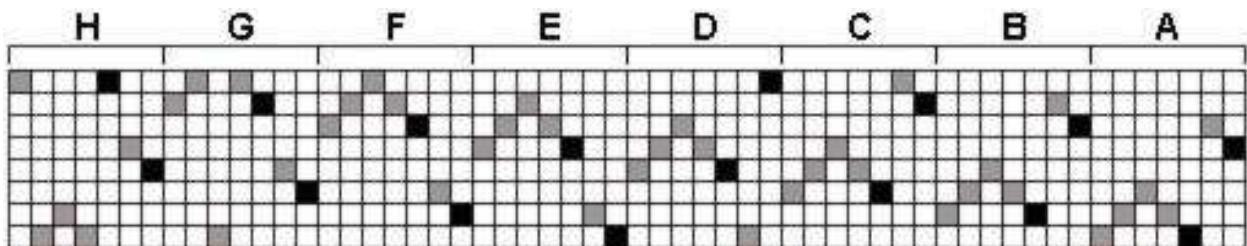


Beginning in the late 1950's Dr. William G. Bateman, a retired chemistry professor, began weaving variations of well known weaves, like twill, overshot, summer and winter, and crackle. His experiments eventually led to the development of several new weave structures. The extended manifold twill is one of the new structures that Dr. Bateman developed.

To create an *extended manifold twill*, divide a manifold twill threading into sets of ends, with each set containing one end from each contributing twill.



Then add threads to each of the original ends to extend the twill. The added threads should maintain the odd-even threading that is required to weave tabby, and usually form twill lines or chevrons. Each set of ends then becomes a separate block. The blocks can be arranged using a profile draft, though care should be taken to maintain the odd-even threading.



The tie-up can be any twill tie-up. The treadling can be any twill treadling, or woven as-drawn-in. Tabby is usually woven between pattern picks, but isn't required.

Extended Manifold Twill

Georgia Gleason

YARNS

Warp

8/2 cotton (pale blue) – 3360 ypp

Warp created by: Betty Behan

Weft

Pattern: 10/2 cotton (dark blue) – 4200 ypp

Tabby: 10/2 cotton (white) – 4200 ypp

WARP

160 ends 2 ¾ yards long

SETT

16 epi 28 ppi (14 pattern, 14 tabby)

FINISHING

Hemstitched with 5 ¼" twisted and knotted fringe

SIZES

Width in reed: 10"

Off loom: 9 ½" x 92 ¼"

Finished: 9" x 83"

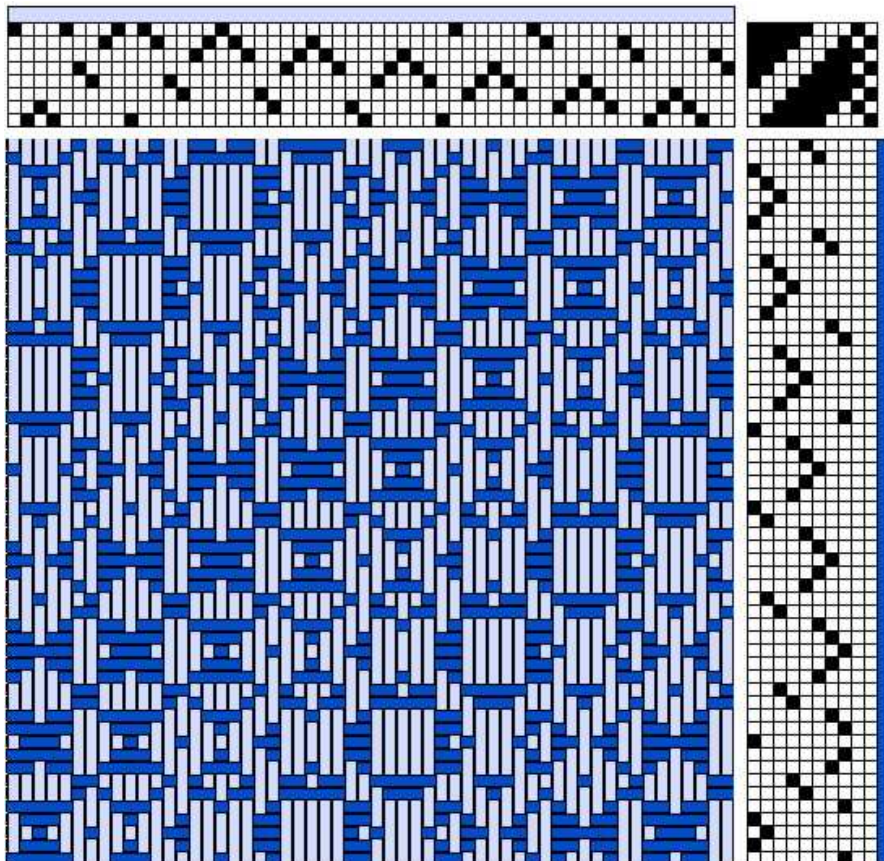
SOURCE

A Weaver's Book of 8-Shaft Patterns by Carol Strickler, page 66, draft #264

Also, *Extended Manifold Twill Weaves* by Virginia Harvey, page 26, draft #201-1

NOTES

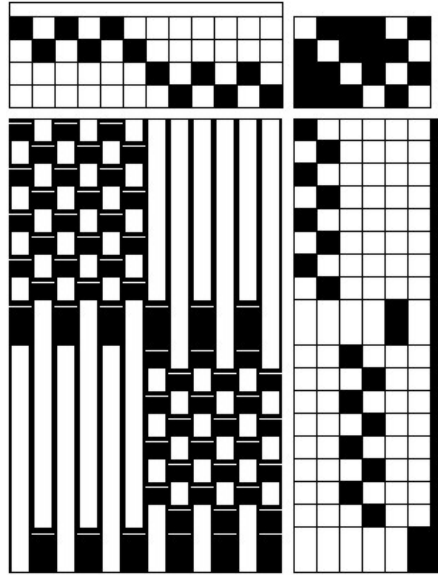
I was given a pale blue warp, quite wide and long. I decided to make the kind of scarf that you see now that is wide, patterned, and wraps around the neck several times. I chose dark blue and white for the pattern and tabby wefts. The weaving was very labor intensive. The treadling goes in two different directions so it is easy to lose track of where you are.





Honeycomb

In honeycomb, a thick weft undulates around cells of plain weave. On 4 shafts, there are two blocks, with two shafts per block. Unwoven areas between the plain weave cells have warp floats on the front and weft floats on the back. Between the blocks, one or two picks of tabby are woven across the width of the warp to outline the cells. The thick weft curves down into the unwoven areas to form the undulations.



There are many different threading, treadling, and color variations. Typically, the thin weft is the same size as the warp but a different color, and the thick weft is the same color as the warp, and may be textured. The warp sett is usually that for plain weave, but may be wider to make the cells weft-faced. The cells don't have to be woven in plain weave, but can be woven in any structure.

The warp tension should be slightly looser than normal to allow the thin wefts to beat down. The thick weft should be laid in the shed very loosely to allow it to curve.

The blocks can be any width or length, but keep the length of the floats in mind when deciding on the size of the blocks. On more than 4 shafts, more blocks are possible. But if all the blocks aren't woven the same number of times, there may be uneven tension and a second warp beam may be required.

Honeycomb can be woven double-faced. There can be a single layer for the cells, but different thick wefts for the front and back of the cloth. Or, both the cells and the thick wefts can have two layers.

Honeycomb treadling can be used with any block weave that can produce plain weave. Examples are Monk's Belt (which has the same block threading as honeycomb), Overshot, Summer and Winter, M's and O's, Huck and twills.

Honeycomb

Bonnie Kay

YARNS

Warp

8/2 rayon – 3360 ypp
(5 hand-dyed colors in a gradation from
red-violet to yellow-orange)
Warp created by: Betsy Szymanski

Weft

Thin: 8/2 Tencel (burnt orange) – 3360 ypp
Thick : 3/2 cotton/rayon – 1260 ypp
(burnt orange)

WARP

208 ends 3 ¼ yards long

SETT

32 epi 20 ppi

FINISHING

Hemstitched with 5" twisted and knotted fringe

SIZES

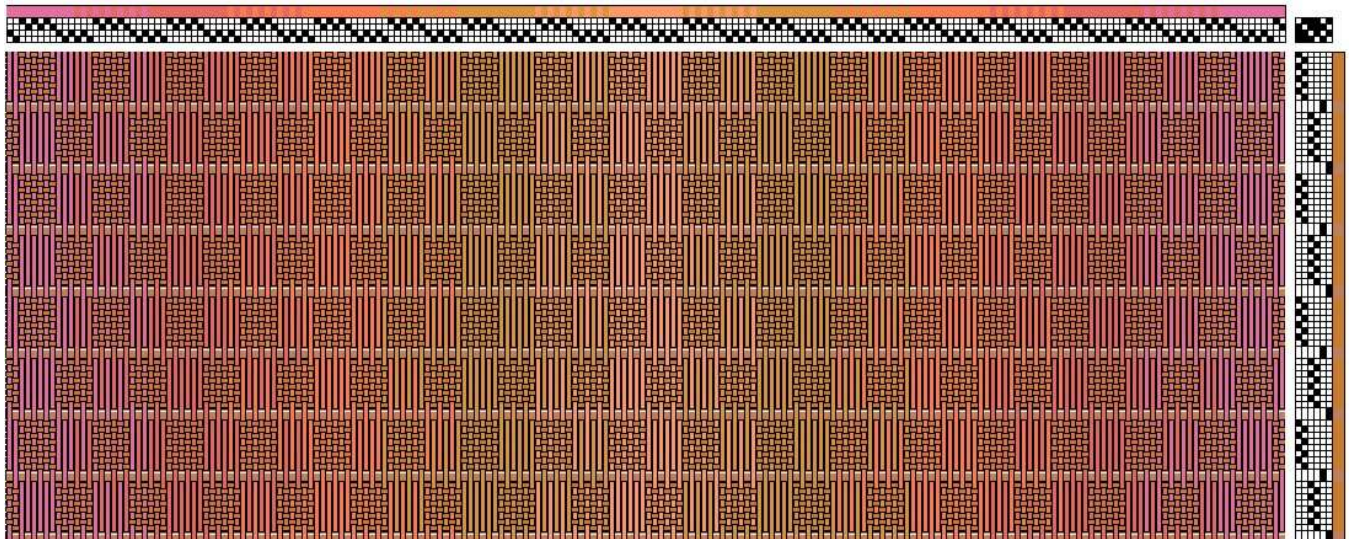
Width in reed: 6 ½"
Finished: 6 ¼" x 74 ½"

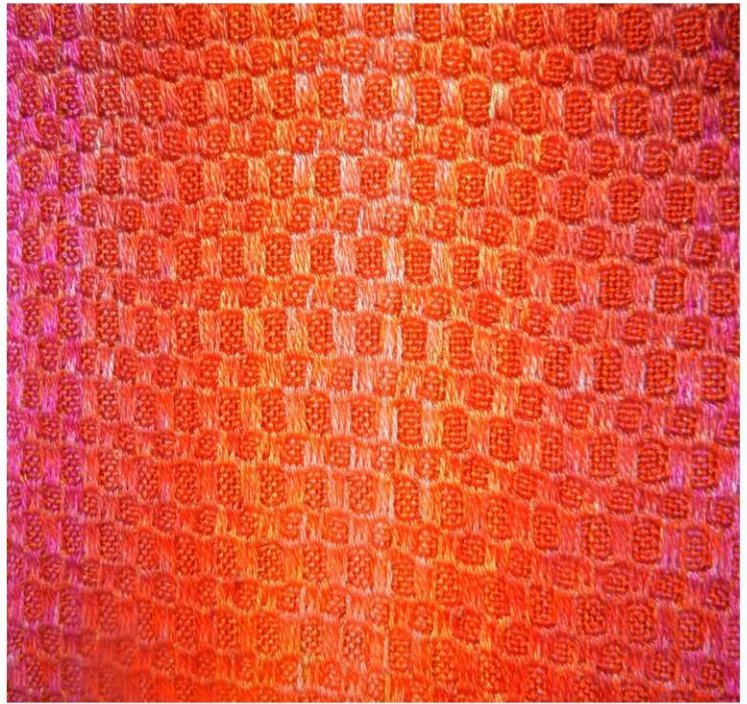
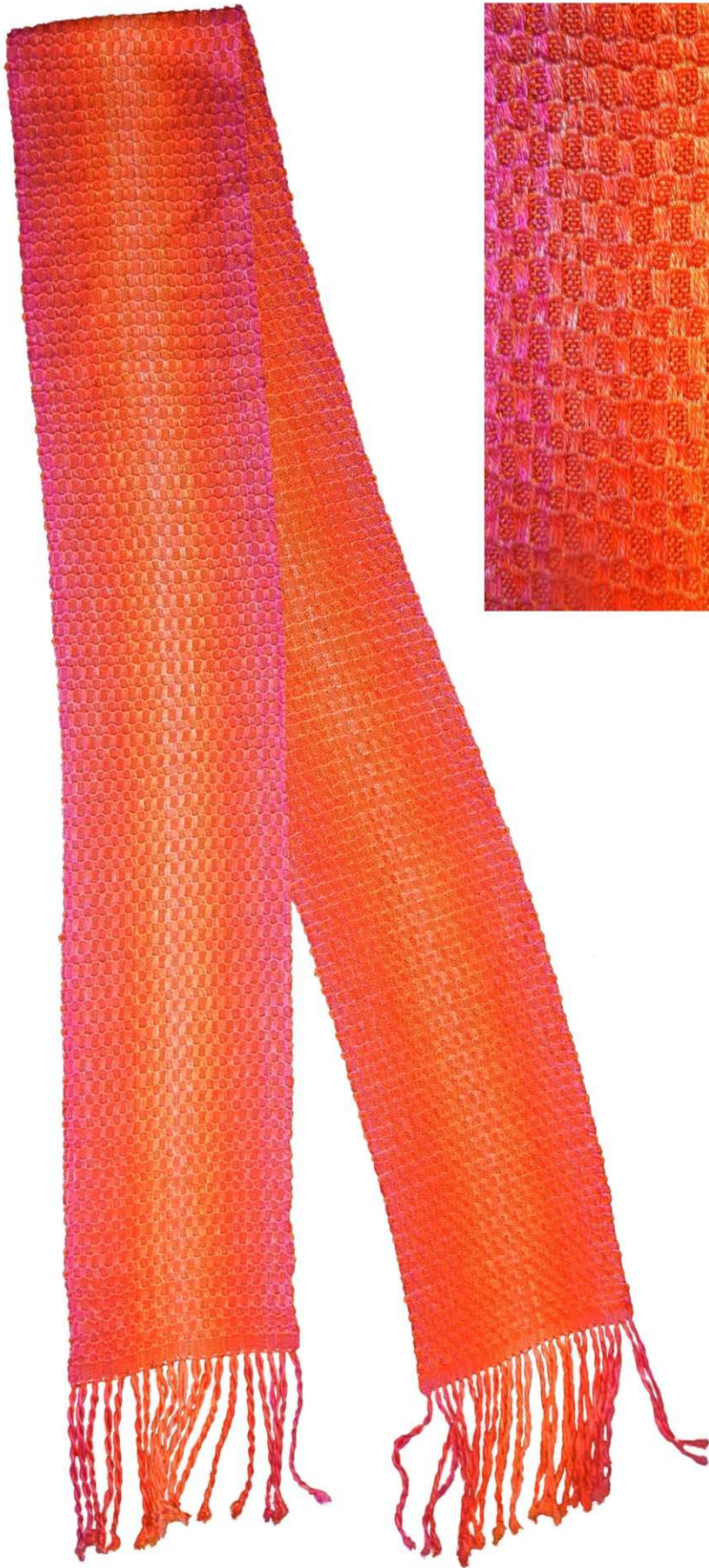
SOURCE

The Best of Weavers: Fabrics That Go Bump edited by Madelyn ver der Hoogt, pg 30, figure #1.

NOTES

I first made a gamp of 6 different threadings and treadled them tromp as writ. The "combs" on the piece were very indistinct and didn't look at all like pictures of the threadings. I brought the gamp to the next meeting of Warped Weavers and got some valuable input: my sett was too loose. I reset the warp and the effect was distinct "combs". Voila! For group input!





Miniature Overshot

Overshot is a twill-based block weave that is usually woven with 2 wefts. It was introduced to the United States from Europe and was very popular in the 19th century, especially for coverlets. Overshot typically has a plain weave ground fabric that is created by the interlacement of the warp and the “tabby” weft, which are often the same size and color. The “pattern” weft, which is usually thicker and loftier than the warp, floats on the front and the back of the ground fabric to create patterns. A tabby pick is woven after every pick of the pattern weft.

Overshot is usually designed with profile drafts. On four shafts, four blocks are available.

Block A is threaded on shafts 1 and 2. Block B is threaded on shafts 2 and 3.

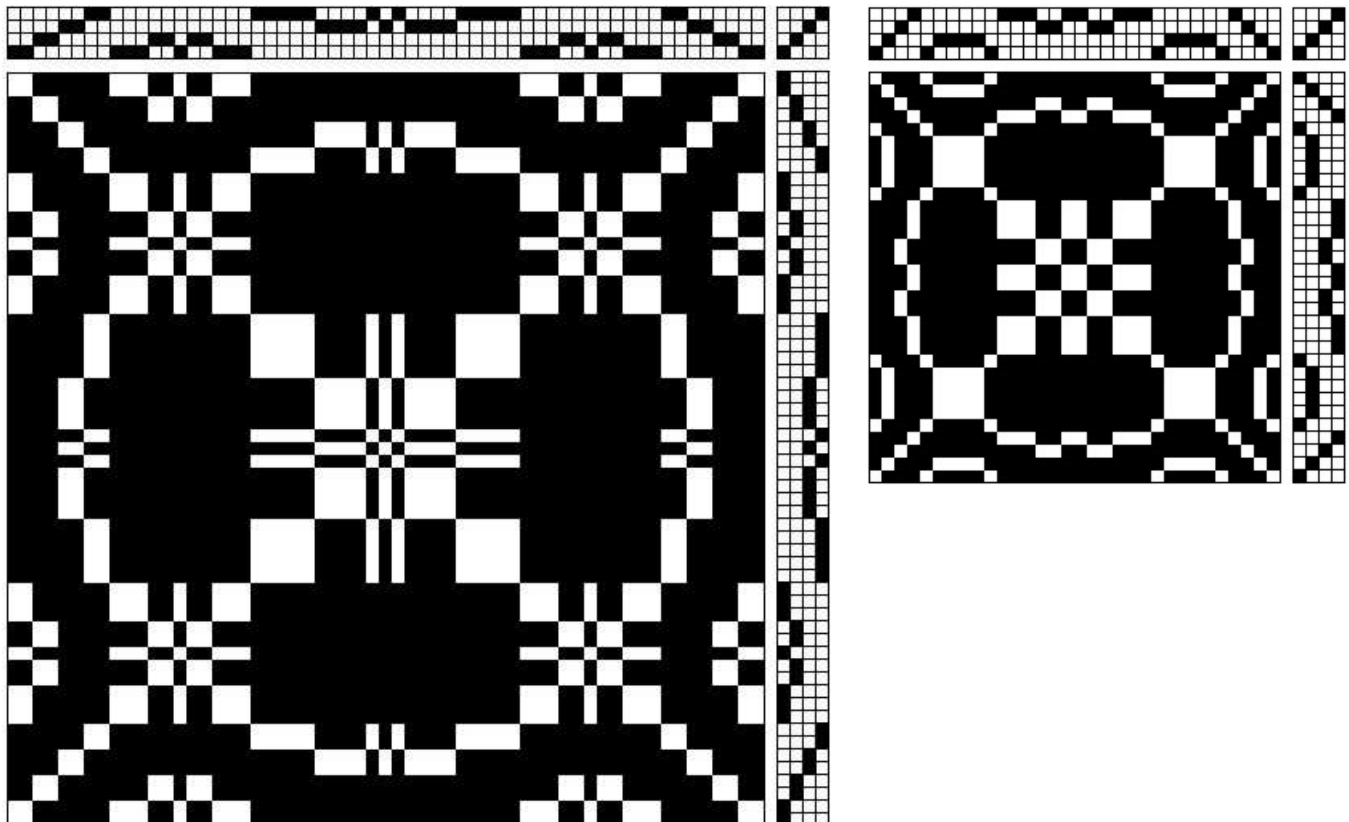
Block C is threaded on shafts 3 and 4. Block D is threaded on shafts 4 and 1.

The width and length of the blocks are limited by the practical maximum float length. Blocks are usually woven in twill order, but the pattern can reverse on any block.

To miniaturize an overshot pattern you should first convert the thread-by-thread pattern to a profile draft. Then, take a good look at the profile. The overall appearance of the pattern depends on the order and the relative sizes of the blocks. See if you can eliminate any blocks, especially small ones and those that will simplify the pattern. Then, make the remaining blocks narrower until you are satisfied with the design. Finally, convert the new profile to a thread-by-thread draft.

When you choose the warp thread, use a sett of between 24 and 60 ends per inch. A closer sett will allow you to show more detail, but will take longer to thread and weave. If the float lengths are short enough, you may be able to omit the tabby picks. If you keep the tabby picks, consider turning the draft so you can weave with one shuttle.

In *Josephine Estes' Miniature Overshot Patterns for Hand Weaving* by Peter Mitchell and Marjie Thompson, Miss Estes miniaturized the traditional Whig Rose pattern on page 19. The full size pattern was taken from *The Shuttle-Craft Book of American Hand-Weaving* by Mary Meigs Atwater on page 173, draft #91. Here are the profile drafts for both patterns. The original has 59 blocks in the profile threading. The miniature has 32 blocks.





Multiple Tabby Weave

Beginning in the late 1950's Dr. William G. Bateman, a retired chemistry professor, began weaving variations of well known weaves, like twill, overshot, summer and winter, and crackle. His experiments eventually led to the development of several new weave structures. The multiple tabby weave is one of the new structures that Dr. Bateman developed.

Multiple tabby weaves are block weaves, but not unit weaves because the blocks can't be woven independently. On four shafts, there are three blocks, each with different tabbies:

Block A is threaded 1-2-3-4 and has the tabbies 1-3 and 2-4.

Block B is threaded 1-3-2-4 and has the tabbies 1-2 and 3-4.

Block C is threaded 1-2-4-3 and has the tabbies 1-4 and 2-3.

These three blocks can be combined into a design and woven with a 2/2 twill tie-up. When one block is woven in tabby, the other two blocks have two thread floats. Almost any treadling can be used, including twill treadlings with or without tabby, overshot, honeycomb, crackle, M's and O's, and as-drawn-in.

Dr. Bateman then created other blocks by rearranging the threading of each of the three basic blocks while maintaining the same tabbies. He then combined these block variations with each other and with the basic blocks. And then, he extended the block threadings to four or five threads and used these new blocks with the other block variations. And then, he extended the block threadings to even more threads based on overshot threadings and ... Well, you get the idea. And then he did all of this on six shafts, and then on eight shafts. Whew!

Suffice it to say that you can create a huge variety of designs with this weave structure, and produce fabrics with all-over patterns and textures that can't be made with other weaves on so few shafts.

Multiple Tabby Weave

Catherine Roberts

YARNS

Warp

10/2 Tencel – 4200 ypp
(variegated blues and violet)
Warp created by: Leah Adams

Weft

5/2 pearl cotton (magenta) – 2100 ypp

WARP

168 ends 3 yards long

SETT

24 epi

FINISHING

1" fringe

SIZES

Width in reed: 7"
Finished: 6 5/8" x 65"

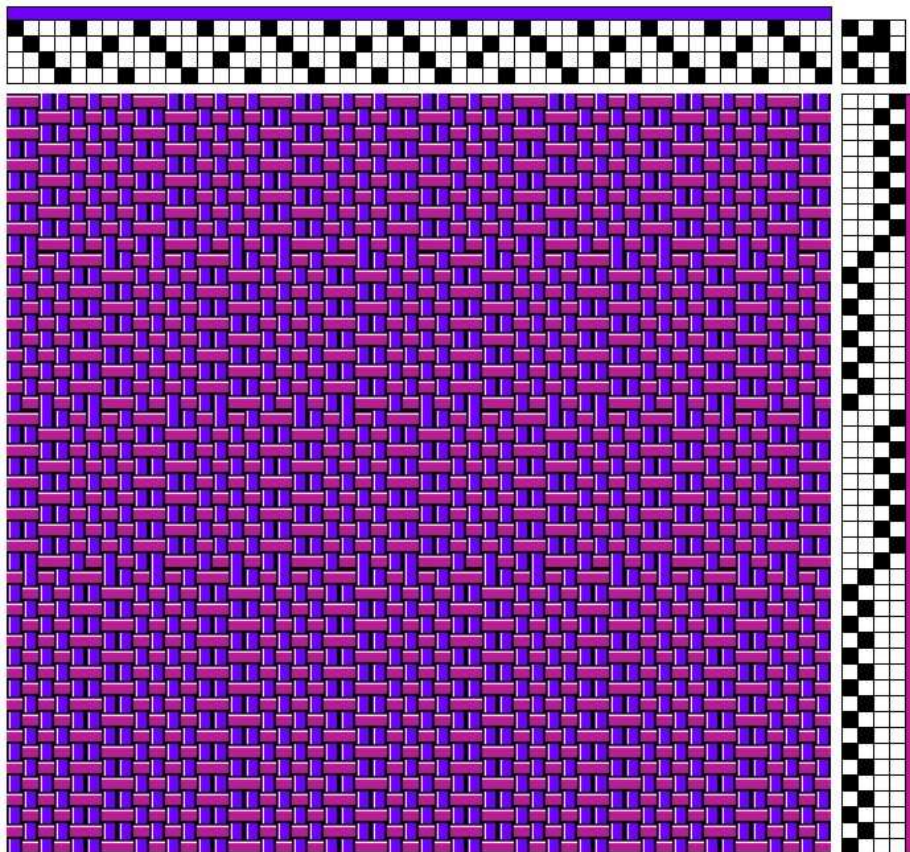
SOURCE

Multiple Tabby Weaves by Virginia Harvey, page 22, draft #267-3

NOTES

My first try was a six shaft weave (page 63, draft #277-3) using blue 5/2 perle cotton. The warp did not show up. I liked the pattern but needed to take the warp off the loom in order to take the loom to a workshop. I lost the cross in the process.

When I put the warp back on the loom after the workshop, I went for a simpler pattern. I used the basic weave as shown, but varied the length of the blocks.

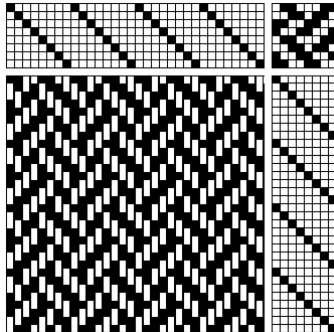




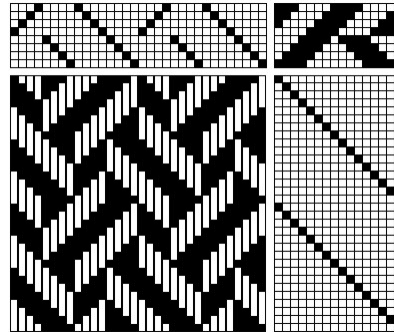
Plaited Twill

A plaited (or braided) twill has diagonal lines going in opposite directions that appear to interlace. Plaited twills are threaded on either a twill or a double two-tie threading and are usually treadled with either a twill or double two-tie treadling. A twill threading or treadling for a plaited twill is usually a straight twill, a broken twill, or a combination of the two. Plaited twills can be designed in the tie-up or drawdown in several different ways. See the books in the bibliography for details. Here are some plaited twills with various threadings and treadlings.

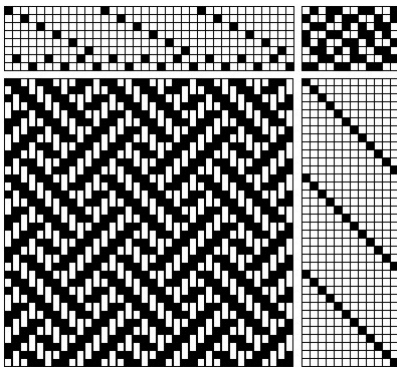
Straight twill threading and treadling
Strickler pg 101 #358



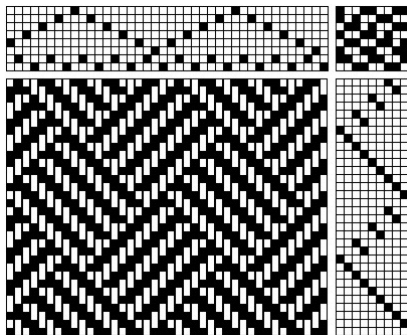
Broken twill threading, straight twill treadling
Adapted from Strickler pg 101 #359



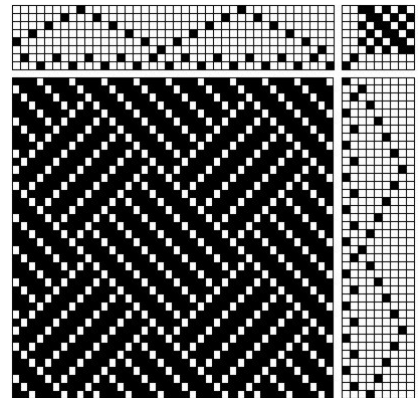
Double 2-tie threading, straight twill treadling
Barrett pg 45 #6.14



Double 2-tie threading, broken twill treadling
Strickler pg 103 #369



Double 2-tie threading and treadling
Strickler pg 105 #380



A double two-tie threading is very versatile. You can weave a number of different structures on the threading, including plain weave, basket weave, twills, double weave, spots, huck texture, and summer and winter. The threading can be used to create blocks in these weaves, as well as to combine more than one weave in one piece. In the threading, shafts 1 and 2 are used as tie-down shafts so weft floats are limited to 3 ends.

Plaited Twill

Marla Smith

YARNS

Warp

Brown Sheep Cotton Fleece – 980 ypp
80% cotton / 20% Merino wool
(truffle brown)
Warp created by: Pat Martin

Weft

3-ply worsted wool (turquoise)

WARP

112 ends 3 yards long

SETT

12 epi 10 ppi

FINISHING

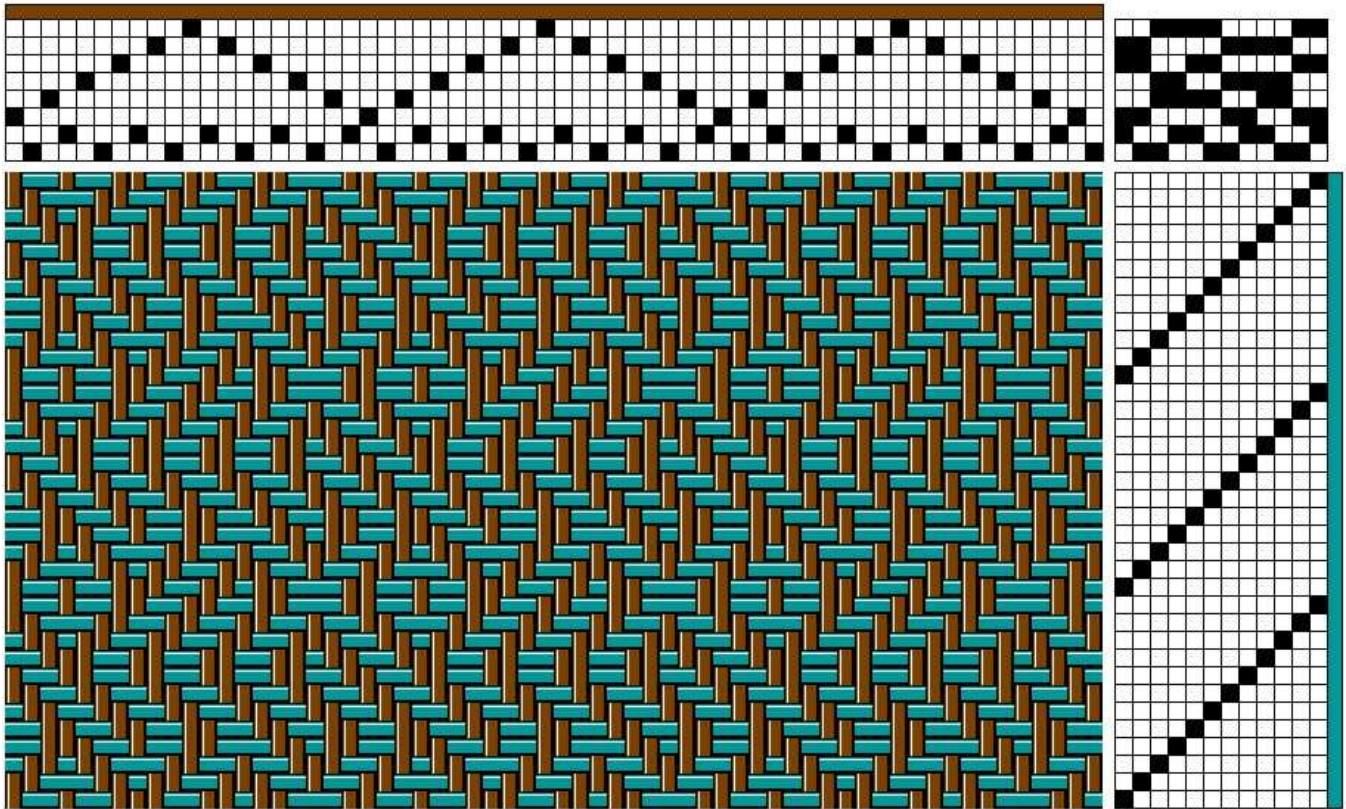
Hemstitched with 5" fringe

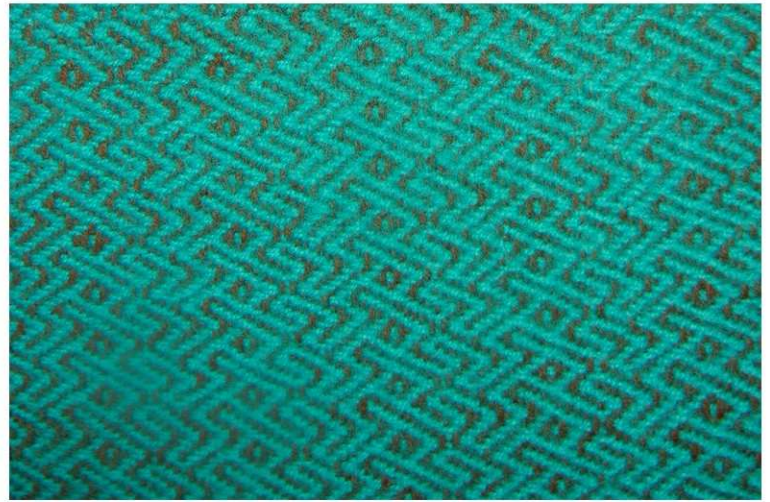
SIZES

Width in reed: 9 $\frac{3}{8}$ "
Off loom: 8" x 72"
Finished: 7" x 68 $\frac{1}{2}$ "

SOURCE

A Weaver's Book of Eight Shaft Patterns edited by Carol Strickland, pg 105 #379





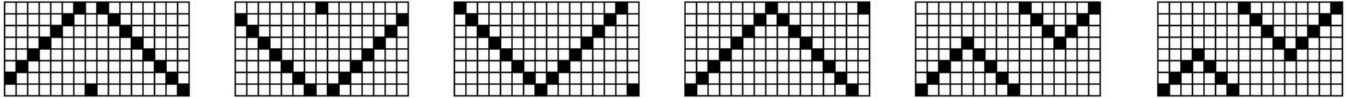
Rosepath

Rosepath is a point twill threading that extends one shaft beyond the total number of shafts. In Sweden, rosepath is called rosen gang, and it is used extensively in Swedish weaving. Weaving pattern books sometimes show rosepath threadings that appear different, but are actually the same. Here are some examples:

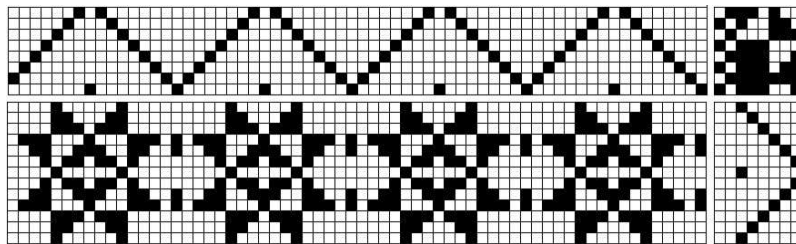
4 shaft threadings



8 shaft threadings



Rosepath can be used to make small, weft-faced, pictorial motifs in multiple colors. The motifs are woven with a thick weft and tabby is used. The designs may require a lot of treadles, so you may need to use a skeleton tie-up. The designs may have long floats on the back.



Strickler pg 131 #32

Rosepath also works well with color and weave effects, and with boundweave, a weft-faced weave with multiple colors.

Rosepath

Marje Mink

YARNS **Warp** **Weft**
5/2 cotton – 2100 ypp, 8/2 rayon – 3360 ypp Tencel (variegated violet & light blue)
(gradated in blues and purples)
Warp created by: Marion Marzolf

WARP 112 ends 3 yards long

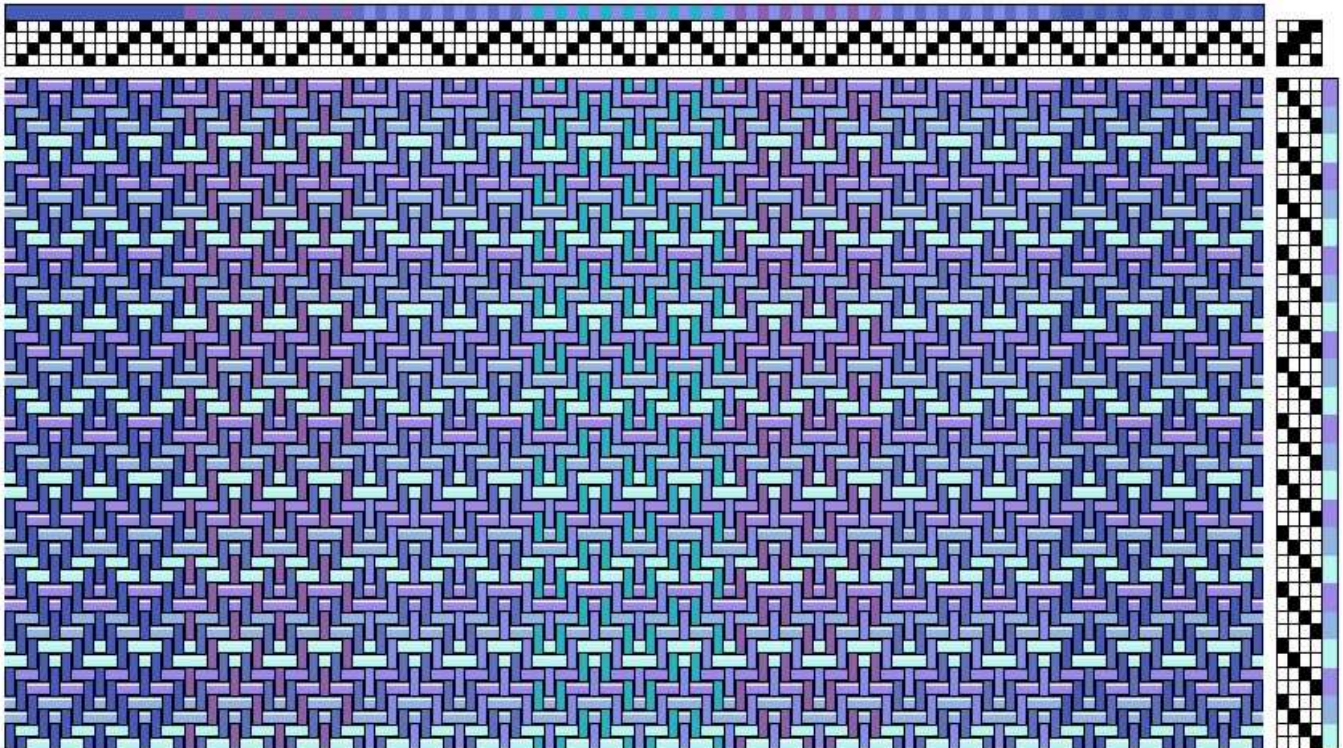
SETT 16 epi 16 ppi

FINISHING 4" twisted and knotted fringe

SIZES Width in reed: 7"
Finished: 6" x 63"

SOURCE *A Handweaver's Pattern Book* by Marguerite Porter Davison, pg 15.

NOTES I made a sample to try out different wefts, a dark blue cotton boucle, a dark blue rayon chenille, this variegated Tencel, and a slightly darker variegated bamboo. This lighter variegated weft worked best with the changes in the warp color. I used a floating selvedge on both sides.





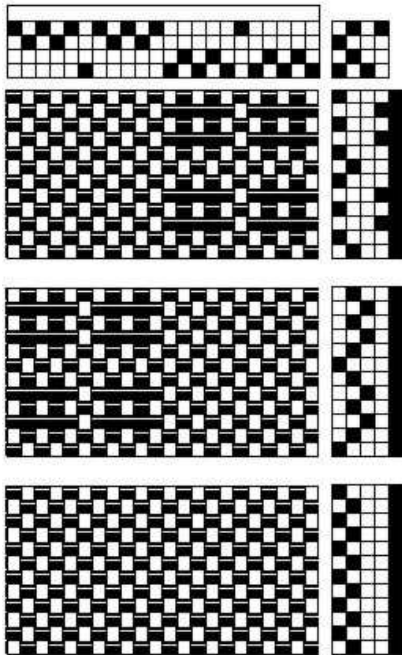
Swedish Lace

Swedish Lace is a very old weave. It is related to both Bronson Lace and to Huck Lace. It is usually woven on four shafts, where it can produce two blocks plus plain weave.

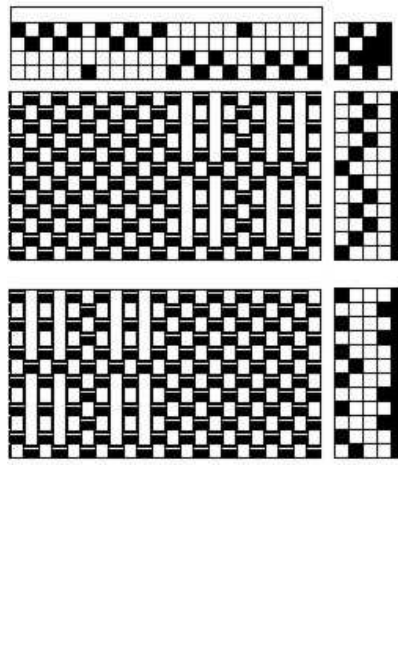
Each block contains one or more groups of an odd number of threads in both threading and treading. The groups are separated by a tie-down thread. There is no tie-down thread between the blocks. The length of the groups is usually five threads, but can vary subject to the limits of a reasonable float length. The tie-down threads form a “window pane” between the lace floats.

Each block can be treadled to weave weft floats, warp floats, or plain weave. Swedish Lace is not a unit weave however, because the blocks share a shaft they cannot be woven completely independently. It is not possible to weave warp floats in both blocks at the same time. Nor is it possible to weave weft floats in both blocks at the same time.

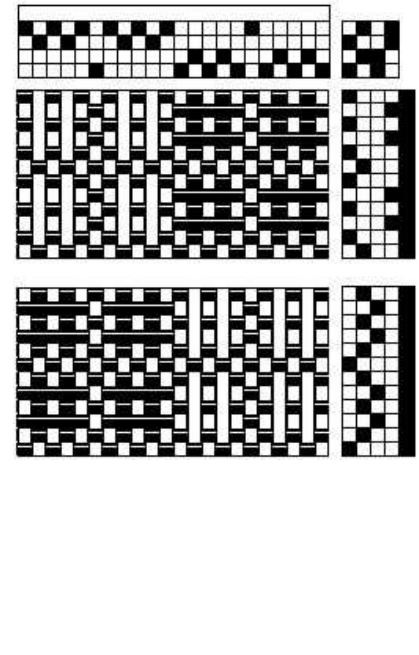
Weft floats with plain weave



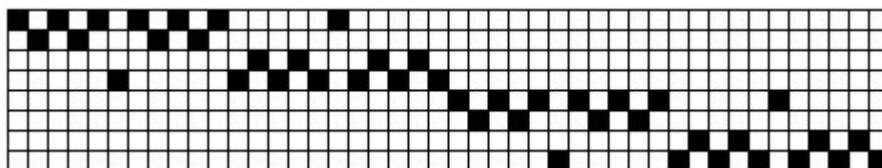
Warp floats with plain weave



Weft floats with warp floats



Swedish Lace can be extended to more than four blocks by copying the threading to the next four shafts. For each set of four shafts used, two more blocks are available.



Swedish Lace

Bob Lavasseur

YARNS **Warp** **Weft**
100% alpaca, 70/30 alpaca/silk blend, rayon 2-ply wool (black)
(rust, purple, and green)
Warp created by: Georgia Gleason

WARP 116 ends 3 yards long

SETT 16 epi

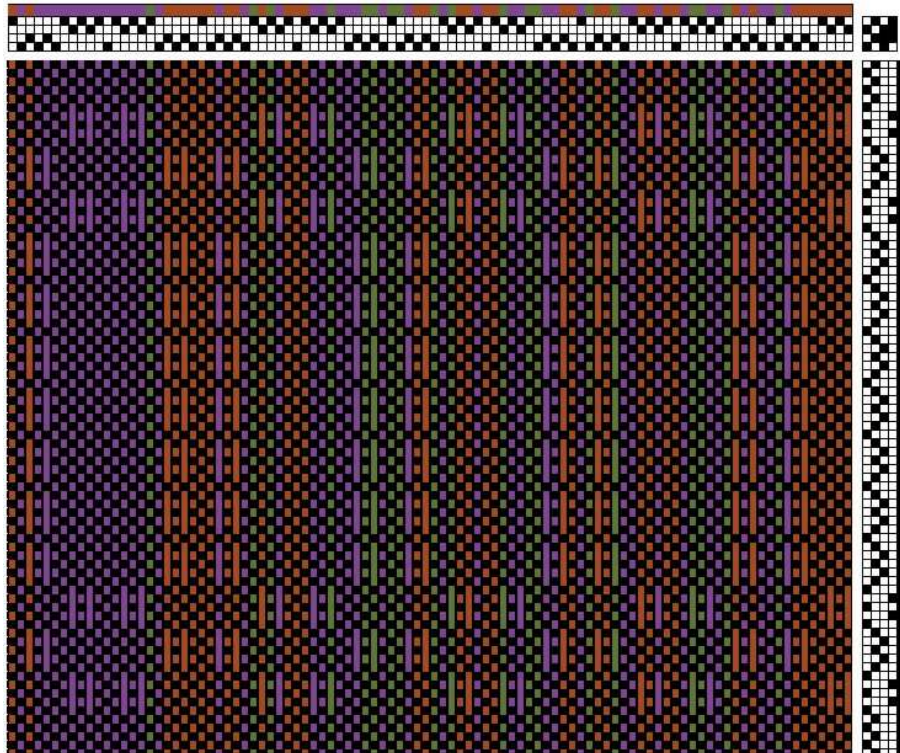
FINISHING Hemstitched with 1" fringe

SIZES Width in reed: 7"
Finished: 5 ¾" x 61 ½"

SOURCE *The Handweaver's Pattern Directory* by Anne Dixon, pg 188

NOTES The warp I received was 100% alpaca (in brown and olive), plus a space-dyed knitting yarn of 100% merino wool. Having never used these fibers before, I didn't notice that the merino wool was very stretchy. So, after trying to weave and not being able to maintain an even tension, I replaced the merino wool with some 70% baby alpaca / 30% silk yarn we had. This worked, but I found that the selvages were breaking all the time. So I replaced that with a similar color of rayon yarn.

I learned not to use a knitting yarn for weaving and that alpaca is not resistant to abrasion when used as part of the selvedge. As an afterthought, if I had left the knitting merino wool in the warp and tried to use it, I might have gotten some interesting results, but maybe not.





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