SWATCH PAGE

DOUBLE WEAVES WITH 4, 6, AND 8 HARNESSES

by Paul O'Connor

In the Spring 1973 issue of *Shuttle Spindle and Dyepot,* Virginia West shows an interesting use of double weave of separate layers in her article "Wear Your Wallhanging." In horizontal sections of the skirt that is illustrated, she wove a background of tabby in the lower layer and allowed the top warp threads to float on the surface for several inches before weaving all the warp threads in a single layer. Then various fingerweaving techniques of twisting, twining, and wrapping of the float threads were used to develop special interest. Another article in *SS&D,* Winter issue 1974, by Ena Marston gives instructions on how to do this. It is really quite easy to do. Harnesses 1 and 3 are held up while tabby is woven using harnesses 2 and 4 (see figure 1 for the skeleton tieup; hold treadle "a" down with one foot and alternate treadles 2 and 4 to weave the lower layer). I have used leno weave in some of the skirts I have woven where the weft from the lower layer is brought up to the top layer for one pick of leno weave and then taken back to complete the tabby section on the lower layer. This is shown in figure 2. Give you imagination free rein in treating the floating warp ends. One thing to remember is that there will be a difference in tension between the top warp which has not been woven and the lower warp that has been woven. This is usually not much of a problem for short sections of weaving.

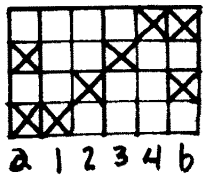


Figure 1: Skeleton tie-up

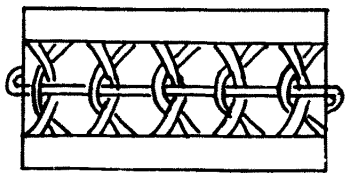


Figure 2: Leno weave in floating warp ends, 1, 3

We can complete this section of double weaves of separate layers with a discussion of blending warp colors. Suppose you have four colors in the warp: 1, 2, 3, and 4. There are six possible warp pairs that can be used in the top layer of double weave and of course their complentary pairs in the lower layer.

Top layer	12	13	14	23	24	34
Lower layer	34	24	23	14	13	12

So if you are willing to change the tieup or if you use the skeleton tieup, you can have any of the six color blends in the top layer whenever you want. In the Spring 1974 issue of *SS&D,* there is a beautiful example of this technique (although eight harnesses rather than four were used) in Mary Schlegel's weaving called "Rainwindow." Refer to the skeleton tieup of Figure 1. The treadling sequence for the six warp blends in the top layer would be as follows (and the complementary pair would be in the lower layer). The tieup is written two ways because I want to point out something in the next paragraph.

Color blend in top layer	**Treadling Sequence**		
12	1; 2 + a; 2; 1 + b	or	1; 123; 2; 124
13	1; 2 + a; 3; 4 + a		1; 123; 3; 134
14	1; 1 + b; 4; 4 + a		1; 124; 4; 134
23	2; 2 + a; 3; 3 + b		2; 123; 3; 234
24	2; 1 + b; 4; 3 + b		2; 124; 4; 234
34	3; 4 + a; 4; 3 + b		3; 134; 4; 234

There is one precaution to mention so that you do not have a float as you change from one color blend to another. Suppose that you want to change from warp colors 12 to warp colors 23. The treadling sequence for color 12 ends with treadles 2 and 124; the treadling sequence for color 23 starts with treadles 2 and 123. This means that thread 2 is held up for two successive picks of the top layer and would be a float error. This can be corrected by starting the treadling for color 23 with treadle 3 instead of 2. Figure 3 shows the last two picks for color 12 and the first two picks for color 23. (In this example there are no float errors for the lower layer but it is a good idea to draw the weave structure to show you what the treadling sequence should be.)

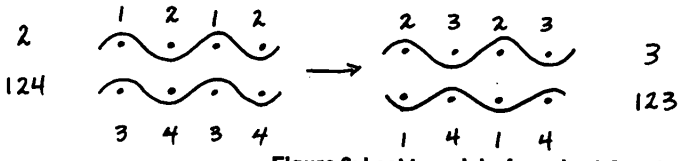


Figure 3: Last two picks for color 1-2 and first two picks for color 2-3

A rule of thumb to help you with this problem: do not have two successive treadles (for one of the layers) the same when you want to change the color blend. Reverse the treadle order for that layer. In the example above, the top layer treadling sequence would have been 1; 2; 2; 3 so change the order to 1; 2; 3; 2, and avoid the error. In the same example the lower layer treadling sequence would have been 123; 124; 123; 234 so no error occurs. Clear?

C. Double width weaving

Not many of us are blessed with a loom wide enough to carry out all the projects we want to try. Never mind! Double weaving will let you weave fabric twice as wide as you can with single layer weaving. Everything that has been said about weaving separate layers applies here, except only one shuttle is needed and the treadling sequence will be different. Figure 4 shows the weave structure with the right hand selvage joined. The treadling sequence using the skeleton tieup is: 1; 2 + a; 4 + a; 3 and repeat. When you finish weaving, the fabric can be opened to double width. Be sure that you have the proper cross of the weft at the right selvage. Figure 5 shows the weave structure that you would get with the wrong treadling sequence (1; 4 + a; 2 + a; 3) and threads 3 and 4 end up in the same shed. Of course it is possible after taking the material from the loom to pull out one of these warp threads but, really, it is just as easy to check the treadling sequence before you start to weave.

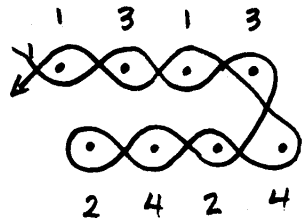


Figure 4: Weave structure for Double Cloth

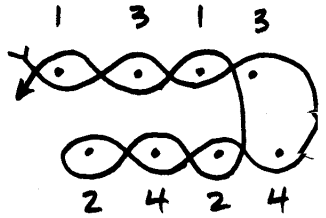


Figure 5: Treadling error in Double Width Cloth

A more difficult problem arises from the fact that there may be a tendency to pull in the right selvage which would pack the warp threads down the middle of the fabric. If you find this is happening to you, you might try single rather than double sleying of the warp threads on the right side for several dents of the reed (although not in the last dent on the right, that should be double sleyed). Or you could pull out two warp threads down the middle and hope that the other threads adjust to even out the fabric.

The slit you weave does not have to be at one selvage. It could as easily be made in the center of the top layer. Figure 6 shows the weave structure for this. This may be just the technique you need for weaving material for a jacket, tubular in form with a slit down the front. The treadling sequence is a bit more complicated but you should not have any trouble with it if you follow the weave structure diagram. Starting at the left selvage: 1 to center; 3 to left selvage; 134; 3 to center; 1 to right selvage; 123 and repeat. Check the cross of the weft at each selvage before you start to weave by drawing your own weave structure.

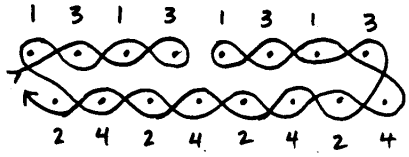
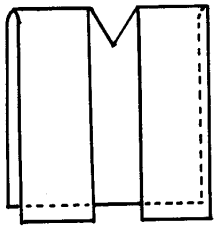


Figure 6: Double Width Cloth with slit in top layer.

Let's end this article by giving directions for weaving a ruana, where the techniques discussed in these first two articles will be utilized. Figure 7 diagrams one way to weave a ruana (the dimensions are only approximate) with the back woven as a double width piece and the front woven as two separate layers. You probably will want to reinforce the V-opening at the back.

In the next article I will discuss tubular double weaving and some more projects you may want to try.



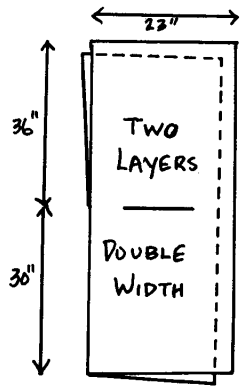


Figure 7: Ruana with separate layers and Double Width weaving. (Add fringe if desired).