Shaft switching for versatile patterning in taqueté

Shaft switching is a technique developed by Peter Collingwood. Because warp threads are manually “switched” from one shaft to another, shaft switching works best with the open sets (and fewer warp threads) of weft-faced weaves.

My love of weaving rag rugs grew in leaps and bounds when I discovered shaft switching. What pattern freedom! I get inspiration from my collection of some hundred pounds of used clothing and washed fabrics, arranged according to color on open shelves—as well as from paintings, photos, and nature. I sketch first with water colors on graph paper and then transfer the designs to finer graph paper to use for the shaft switching (see Figures 6 and 7, page 64).

This article gives directions for making a shaft-switching device for a counterbalance or countermarch loom. I used materials available in Sweden, so you may have to do some scouting around for similar materials in your area.

Taqueté is an ideal weave structure to use for shaft switching. Sometimes called “summer and winter polychrome without a tabby” (the threading is identical to that of summer and winter) or “warp stuffer rug weave,” taqueté is a complementary-weft structure in which one weft color shows on the face in the “pattern” area, the other weft color on the face in the “background.” The colors are reversed on the back (see Figure 4, page 65). In a two-block threading (Block A = 1-3-2-3; B = 1-4-2-4), the colors show on the face or back depending on the lifting orders of shafts 3 and 4. If you could change warp threads at will from shaft 3 to shaft 4 or vice versa, you could weave either color wherever you like across the entire warp. This thought is undoubtedly what inspired Peter Collingwood to develop his innovative shaft-switching device.

RESOURCES

TIP: For rag rugs, two thinner strips of cloth cover better than a single heavier strip. Experiment with strip width and number before you start weaving. When you use a folded cloth so the print shows on both sides, folding and ironing as you cut is faster than folding as you weave.
Shaft-switched rugs

Because everything about the rug’s design (except the width) depends on weft colors and the almost unlimited pattern choices with shaft switching, you can weave many different rugs on the same warp. You’ll find yourself fully absorbed, rug after rug, as new designs and weft color combinations occur to you. You can use yarn as weft, of course, instead of rags. (Note that take-up is less on the pattern threads; to keep warp tension even, cut off and retie after each rug.)
Making a shaft-switching device

PARTS AND SUPPLIES

The shaft-switching heddles shift between two suspended open-topped reeds that replace shafts 1 and 2; see Figures 1 and 2. You'll need:

- Two 10-dent “half reeds” as long as your weaving width (or one reed cut in half lengthwise so the teeth are 2" long); both half reeds must have one rigid metal edge and open teeth on the other edge (like a comb).
- A U-shaped metal channel the same length as the reed and wide enough for the reed to fit inside it.
- Four pieces of sheet metal about 1" × 8" (two per shaft) that can be bent to enclose the supports and drilled with a hole for an S-hook.
- 200 shaft-switching heddles. These are easiest to make and will be the most durable if you simply adapt standard Texsolv heddles. Use a piece of strong cotton twine to tie a ¼" diameter bead to the top loop and add a ¼ to 1 oz weight to the bottom loop so that the weight hangs 1" or so below the bottom of the heddle.
- About 4 yd Texsolv link-loop cord.

CONSTRUCTION

For each shaft-switching shaft: Fold the metal straps around the metal channel, drill holes in the top part of the doubled edges of the straps, insert S-hooks, and place the half reed in the channel. Suspend one of these shafts in front of shafts 3 and 4. Slide the bead of each shaft-switching heddle through the appropriate dents of the half reed on the new shaft 2. Place the new shaft 1 in front of shaft 2 after threading. (Because the shaft-switching heddles must be accessible to the weaver, the pattern shafts and binder shafts are reversed from their usual order in taqueté; 3 and 4 are the binder shafts, 1 and 2 the “pattern” shafts.)
Weaving the rug

Use Figures 5–7 with shaft switching or weave a similar rug (horizontal and vertical lines alternate from row to row) on six shafts following Figure 3.

1. Wind a warp of 407 working ends (828 actual ends) 2½ yd long. Thread the shafts as in Figure 5 for shaft switching with pattern heddles on shaft 2 (remove shaft 1 for threading). Thread following Figure 3 to weave a similar rug without shaft switching.

2. Allowing about 6" for fringe, weave plain weave with scrap yarn to spread the warp. Weave several firm picks of plain weave using the rug warp as weft. To weave the pattern for this rug, notice that the design (excluding the selvedges) is divided into five sets of 80 threads each. Within each 80, there are 20 pairs of pattern threads, 20 pairs of pattern heddles. Once you have started the first part of the pattern, it's easy to identify the squares for quick counting.

3. To start the pattern, place all shaft-switching heddles for light blue on shaft 1, for dark blue on shaft 2. To do this, examine the start (bottom) of Figure 6. The first 40 pattern heddles (20 pairs) go on shaft 1, the second 40 on 2, the third 40 on 1, the fourth 40 on 2, and the final 40 on 1. Use Figure 7 for the sets of 40 in which the design changes from light blue to dark blue and back. Weave two sets of 4 picks (two graph-paper rows). Then, for the vertical stripes in the second square on the right, change pattern-heddle pairs 5–8 and 13–16 from shaft 2 to shaft 1. You don't have to worry about the exact slot in the reed to use; just grab the heddles and slide them in the reed as a group.

4. Continue, following Figure 6 (from bottom to top) to see which squares are all light blue and which show both colors and Figure 7 to make the color changes within the dark blue squares. Start both shuttles on the same side. End with several picks of plain weave and scrap yarn.

5. Allowing 6' for fringe, remove the rug from the loom and finish the edges removing scrap yarn as you go: Take two doubled warp threads on one side and tie a square knot firmly against the fell. Place the tails against the fell and tie the next two doubled ends around them. Continue, so that square knots enclose tails from previous knots. Wrap the remaining ends that extend from the opposite edge to form a tassel, or you can braid them.

6. Sketch of Toasters rug design

1 square = 10 pattern (shaft-switching) ends

7. Graph for shaft switching

1 square = 2 pattern (shaft-switching) ends and 4 picks (LDLD)
Place shaft-switching heddles for light blue on shaft 1, for dark blue on shaft 2.