Shadow weave & network drafting for a hat

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Many years ago I attended a guild meeting with my hair dyed dark green. I like to be dramatic, whether it's with what I wear or what I weave.

Take shadow weave, for example. My introduction to shadow weave was a simple variation of log cabin in bland, neutral colors. I instantly visualized shadow weave in neon and black patterns bold enough to make punk rockers cheer—or in complementary colors that turn from gray to iridescence with the wearer's movement. I've mellowed since, but my love for shadow weave has not.

Shadow weave and blocks

Shadow weave is often thought of as belonging to the twill family. This is because traditional shadow-weave threading and treadling drafts look like twill: dark ends threaded in twill order on one set of shafts alternate with light ends threaded in twill order on another set of shafts; dark and light picks alternate in twill orders on separate sets of treadles in the same way. The tie-up, however, produces a structure that is mostly plain weave.

Shadow weave is, in fact, a block weave. In block weaves, two different interlacements appear in the same cloth, a pattern interlacement and a background interlacement. The pattern vs background effects in shadow weave are vertical stripes vs horizontal stripes.

Marian Powell, in *1000 (+) Patterns in 4, 6, and 8 Harness Shadow Weave*, gives a simple system for block substitution using shadow-weave threadings and treadlings. In her system Block A = 1(D), 2(L); B = 3(D), 4(L); C = 5(D), 6(L), D = 7(D), 8(L). In these notations, numbers indicate the shafts, D indicates dark ends, L light ends.

Since switching the shaft (or color) order of the pairs of ends in any block will change the resulting effect from vertical lines (i.e., pattern) to horizontal lines (i.e., background) or vice versa, the same eight shafts can provide four additional blocks: Block E = 2(D), 1(L); F = 4(D), 3(L); G = 6(D), 5(L), H = 8(D), 7(L). A design limitation is that when Block A produces vertical lines Block E (threaded on the same shafts but in reverse order) produces horizontal lines and vice versa. The same relationship exists between Blocks B and F, C and G, and D and H. Switching shaft order to create these additional blocks is preferable to switching color order since both warping and weaving are easier if the same color order is maintained throughout.

Shadow weave and network drafting

The technique of network drafting can add graceful, irregular curves to the design potential of block weaves, which otherwise tend to produce chunky, geometric—blocky—shapes. What an exciting discovery to find that network drafting's tools can also be applied to shadow weave! The result is bold sections of vertical and horizontal stripes that move in wonderful, fluid curves.

The following cut-and-paste directions for network drafting in shadow weave can be used with or without a computer weaving software program. (See Resources for a list of articles and books that give detailed information on the techniques of network drafting.)

Create a networked threading

The first step is to draw a pattern line. To create a pattern line for eight blocks of shadow-weave on eight shafts, mark a section of graph paper that is a multiple of eight rows high. The pattern line in Figure 1, page 3, is drawn on a section of graph paper 24 rows high.

The length of the pattern line (the width of the section of graph paper) can be any number of columns desired. The actual shadow-weave threading repeat derived from the pattern line will have twice as many ends as the number of columns used for the pattern line (240 columns in the pattern line in Figure 1 result in the threading repeat of 480 ends in Figure 4).

To reduce the 24-row pattern line to a profile threading draft for eight blocks, cut between sets of eight rows and paste the top two sections on the bottom section. The resulting profile threading draft for Blocks A–H in Figure 3 can be used to derive a specific threading draft for any unit weave. To derive the a shadow-weave threading draft from the profile threading in Figure 3, substitute the corresponding threading key for each square in the profile (a square on the Block A row = 1D, 2L; B = 3D, 4L, etc.). For example, the first square in Figure 3 is in Block H. Thread a dark end on shaft 8 followed by a light end on shaft 7 (Block H = 8D, 7L).

Standard tie-up and treadling

When eight blocks of shadow weave are threaded on eight shafts, the tie-up can be designed to produce either vertical or horizontal lines as desired in each of Blocks A, B, C, or D—the opposite effect will occur in each of the corresponding Blocks E, F, G, and H.

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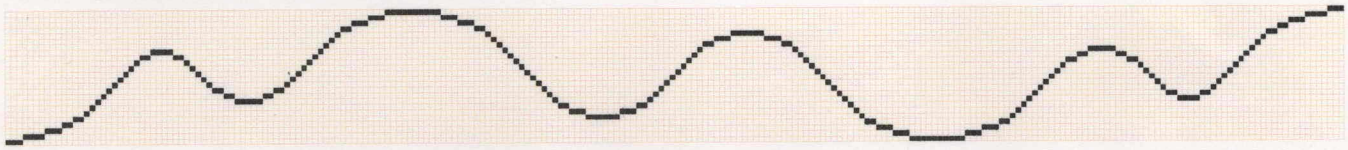
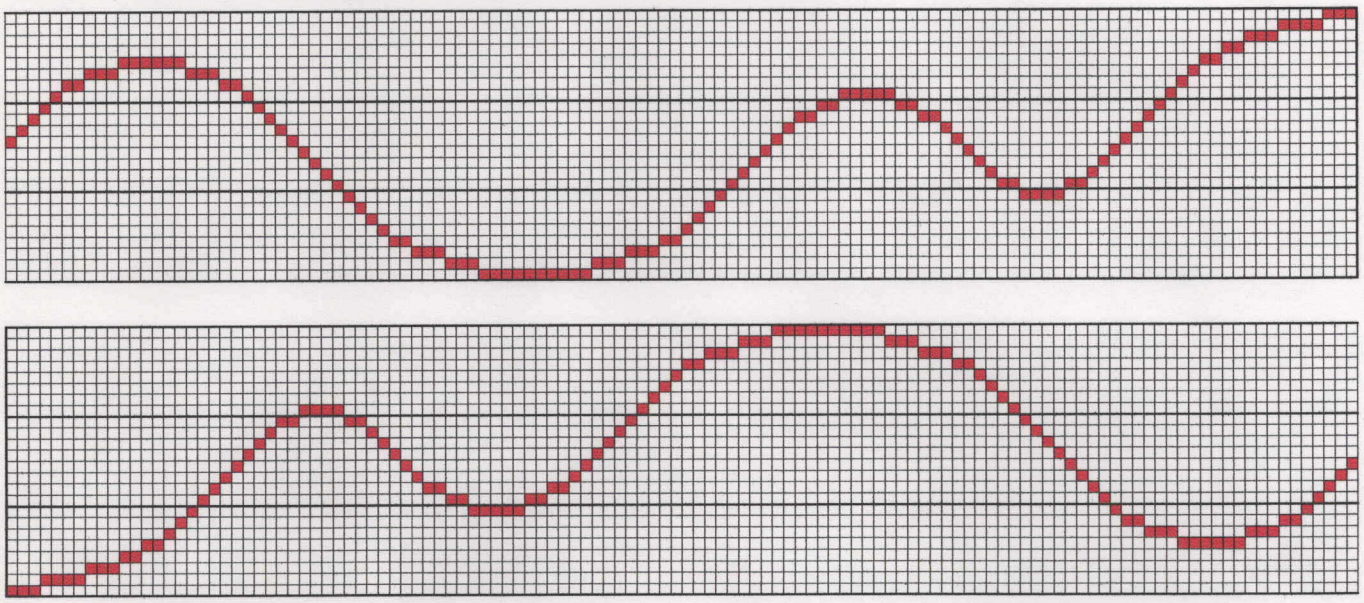
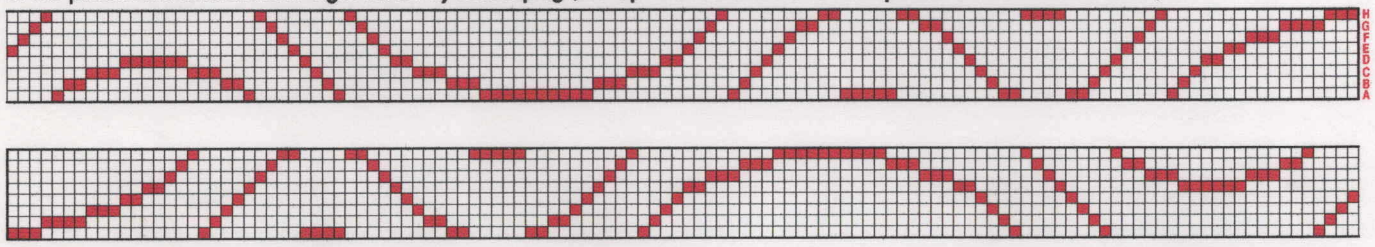
1. A pattern line is drawn on 24 rows of graph paper



2. The pattern line in Figure 1 (enlarged) with cutting lines between sections of eight rows



3. The pattern line is reduced to eight blocks by telescoping (the top two sections are cut and pasted on the bottom section)



PROJECT at-a-glance

Weave structure for hat fabric
Shadow weave.

Equipment
8-shaft loom, 12" weaving width; 10-dent reed; 2 shuttles.

Yarns
Warp: 20/2 pearl cotton (8,400 yd/lb), black and white, 720 yd (1⅛ oz) each.
Weft: 20/2 pearl cotton (8,400 yd/lb), black and white, 526 yd (1 oz) each.

Yarn sources
20/2 pearl cotton is available from most suppliers.

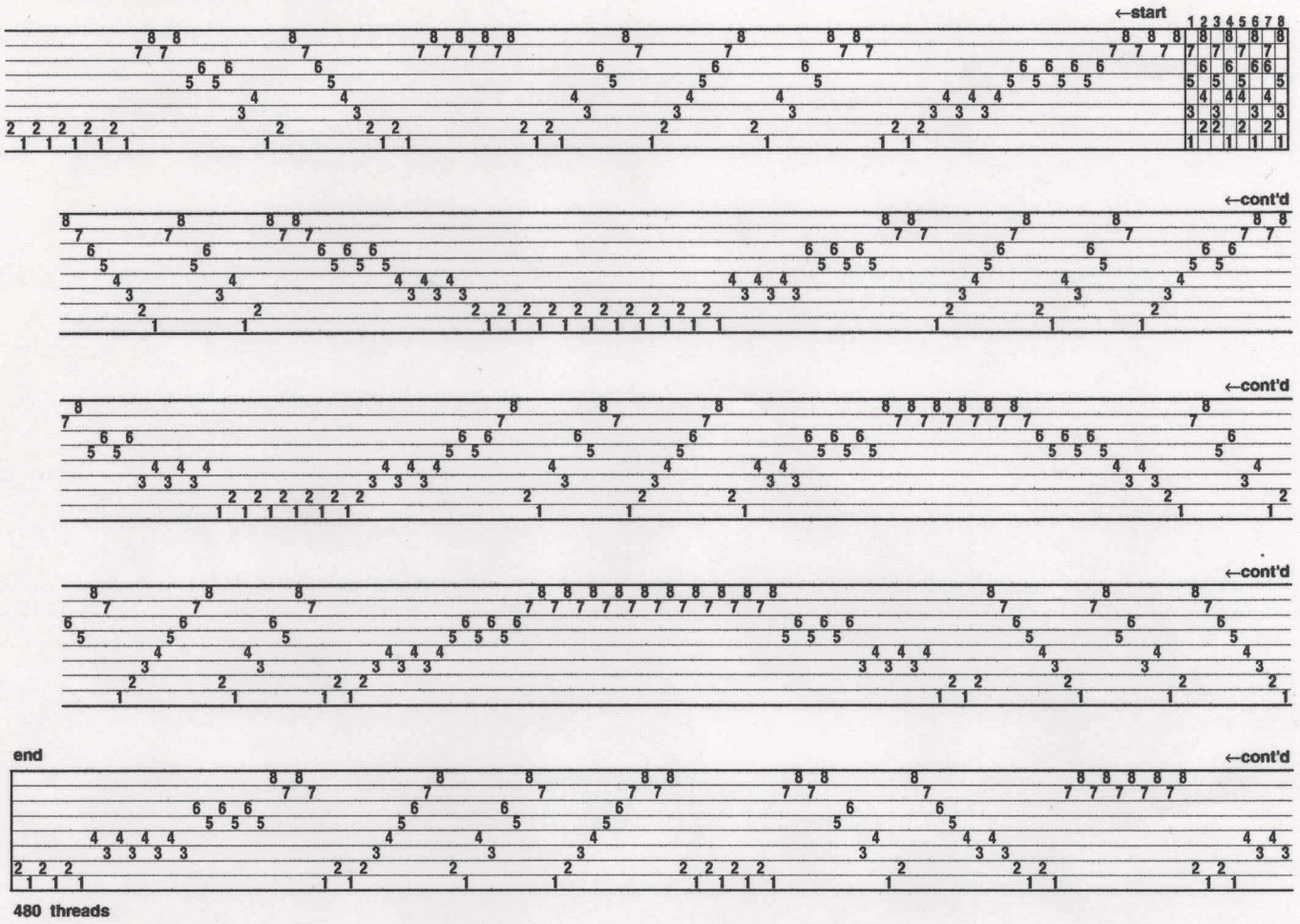
Warp order and length
480 ends 3 yd long alternating 1 black/1 white (allows 26" loom waste).

Notions and other materials
½ yd black rayon velvet for lining, black sewing thread.

Warp and weft spacing
Warp: 40 epi (4/dent in a 10-dent reed). Width in the reed: 12". Weft: 40 ppi.

Take-up and shrinkage
After washing, 8% in width, 8% in length (3% take-up, 5% shrinkage). Amounts produce a piece of fabric 11" × 75", enough for two hats.

4. The threading draft for the hat fabric



In the tie-up in Figure 4, for example, the first two treadles used alternately produce vertical lines in each of Blocks A, B, C, and D and therefore horizontal lines in Blocks E, F, G, and H. The second two treadles produce horizontal lines in Block A and vertical lines in B, C, and D, vertical lines in E, horizontal lines in F, G, and H. The third pair of treadles produces horizontal lines in Blocks A and B, vertical lines in C and D, vertical lines in E and F, horizontal lines in G and H. The last pair of treadles produces horizontal lines in Blocks A, B, and C, vertical lines in Block D, vertical lines in Blocks E, F, and G, and horizontal lines in Block H. Again, note that A is always opposite to E, B to F, C to G, D to H.

Many tie-up arrangements are possible. To derive a tie-up, remember that if the pair of shafts for Blocks A, B, C, or D is tied so that the odd shaft is raised first and the even shaft second on a pair of treadles, vertical lines are produced in these blocks (and horizontal lines in Blocks E, F, G, or H). If the pair of shafts for Blocks A, B, C, or D is tied so that the even shaft is raised first and the odd shaft second on a pair of treadles, horizontal lines are produced in these blocks (and vertical lines in Blocks E, F, G, or H).

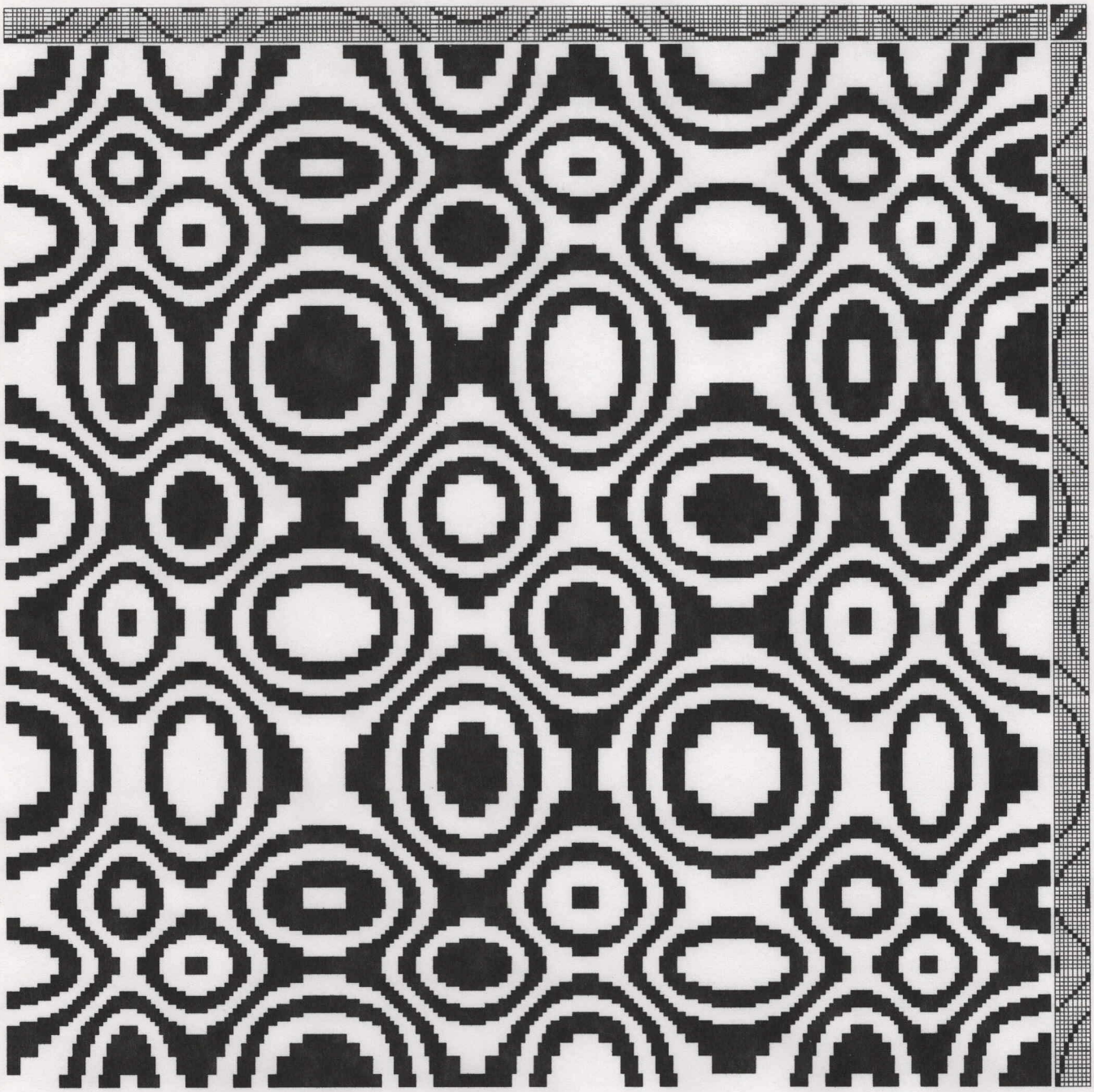
Peg plans can be used for networked shadow weave. Prepare one peg plan template showing all odd shafts in the first of each pair of columns and all even shafts in the second column (this plan will produce all vertical lines in A, B, C, and D and horizontal lines in E, F, G, and H). Then prepare a peg plan template in which the first column of each pair shows all even shafts and the second column all odd (this plan will produce all horizontal lines in A, B, C, and D and all vertical lines in E, F, G, and H). Then, draw ribbon-like curves, circles, or other shapes on one of the templates and cut and paste the shape on the other template (see Alice Schlein in Resources).

Weaving the hat

Wind a warp and prepare the loom following Project at-a-glance and Figure 4. Weave "tromp as writ" for 75–80" (Read the threading draft as the treadling draft. Step on the treadle whose number corresponds to the shaft number in the threading draft.) Alternate 1 pick black with 1 pick white throughout.

Remove the fabric from the loom and machine zigzag raw edges. Machine wash, warm water, gentle cycle. Machine dry, warm. Press with warm iron. Machine wash and dry commercial lining fabric.

5. The complete profile draft for the telescoped pattern line in Figure 1 (Blocks A–D are opposite from Blocks E–H)



Cutting and sewing the hat

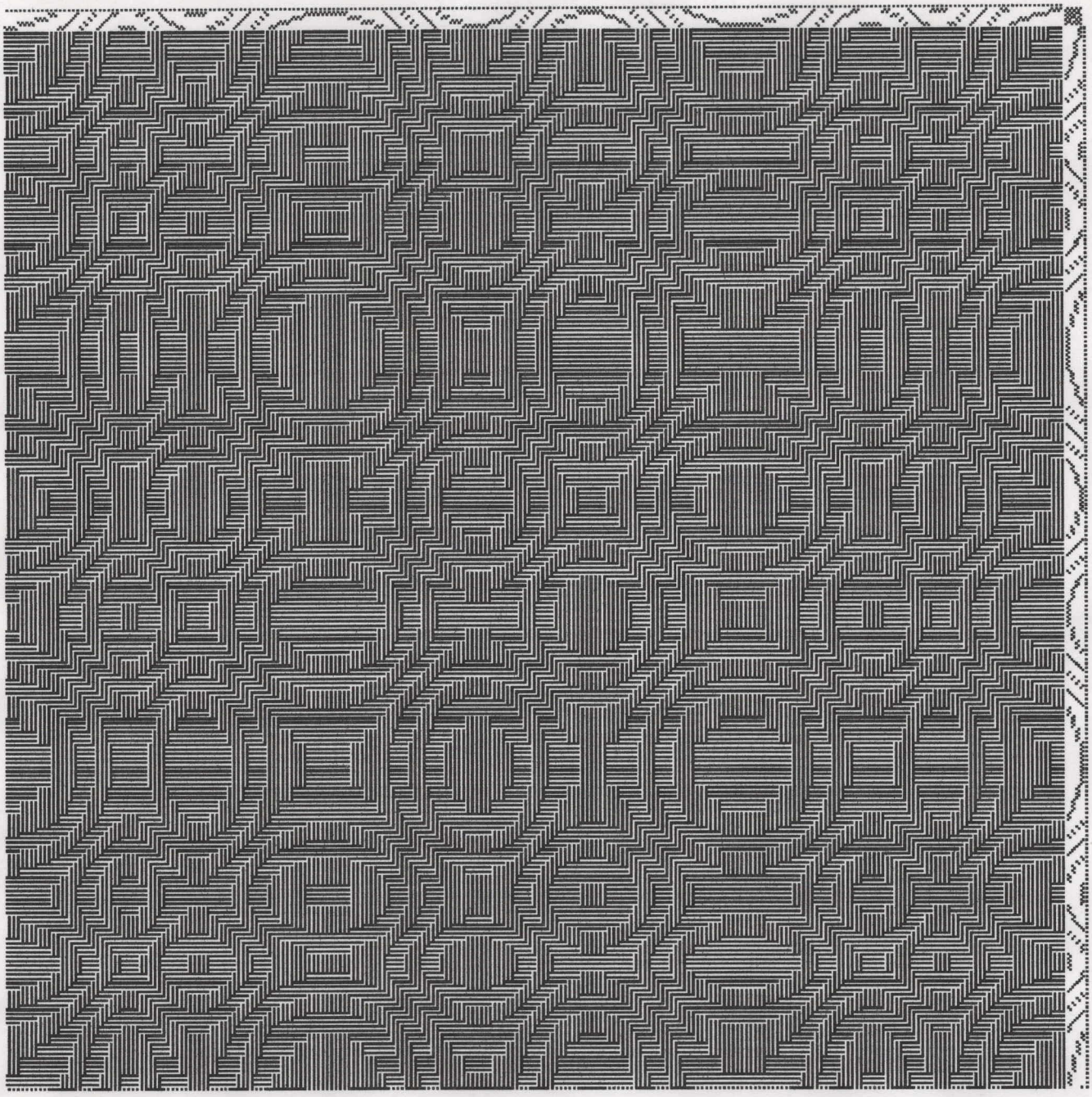
Cut both pattern pieces in Figure 7 from the handwoven and from the lining fabric. Machine zigzag all raw edges.

Use a ½" seam allowance for all seams. With right sides together, sew a seam joining the short ends of the side piece of the handwoven fabric, forming a tube. Press the seam open. With right sides together, pin the top (oval) piece to side piece with the seam of the side piece at one end of the oval and sew. Assemble and sew the lining fabric pieces in the same way.

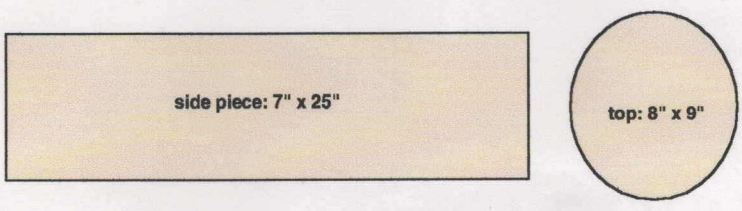
Both the hat and lining should now look like two buckets with wrong sides out. As though you are joining two buckets bottom to bottom, pin the handwoven hat top (oval) to the lining hat top (oval) in the seam allowances close to the seams that joined the tops and side pieces. Stitch through both seam allowances just outside the original seams. Trim the seam allowances to reduce bulk.

Turn the handwoven fabric over the lining fabric (you will now have one bucket with the handwoven fabric right-side out and the lining on the inside). Fold in, join, and pin the raw edges of both fabrics to make a hidden ½" hem. Top stitch ⅛" from edge. Turn up the brim and wear!

6. The complete thread-by-thread shadow-weave draft for the profile draft in Figure 5



7. Pattern layout for hat



Resources

Powell, Marian. *1000 (+) Patterns in 4, 6, and 8 Harness Shadow Weaves*. McMinnville, Oregon: Robin and Russ Handweavers, 1976.

Schlein, Alice. *Network Drafting: An Introduction*. Greenville, South Carolina: Bridgewater Press, 1994.

_____. "Network Drafting: More for Less," *Weaver's*, Issue 6, pp. 28–32/

_____. "Network Drafting: Part II," *Weaver's*, Issue 7, pp. 23–29.

_____. "Network Drafting for Eight," *Weaver's*, Issue 20, pp. 26–31.