Pattern Drafting by Formula

by JOSEPHINE E. ESTES

For the average weaver, much of the joy in using a new pattern is in getting as much variety as possible from the one threading. But sometimes, much effort, material and time are used up in more or less random trials before a certain desired effect is secured. Perhaps the weaver sees a threading draft and an illustration of the finished design made from that draft, but with no treadling directions given. Or, it may be that illustration and treadling for only one design are given and he wishes to make another design.

The object of this article is to give, in definite, concise form, the fundamental processes for making at least three designs from one pattern, each design being a true all-over; that is, a design that reads the same, in the matter of detail, both vertically and horizontally. Such a design squares up so that there are the same number of pattern shots in one repeat that there are of warp ends in the threading draft used.

General directions for the various all-over designs are given in the shape of formulas which can be applied to any overshot pattern on four harnesses; also to four-block patterns in Summer and Winter Weave for six harnesses.

For the sake of clarity, the following terms, as used in this article, are defined:—

Pattern—the arrangement of warp threads as they are drawn through the heddles.

Design—that effect that is produced by certain use of the pattern.

Group—a number of threads (or squares) arranged on the harnesses so that, by the operation of the loom (or the development of the draft), an overshot is made with the weft thread (or the pencil).

Block—a figure made by using two or more groups.

To bring down—to fill in, on the line or shot being developed, *every* square on a harness that is represented in the group being worked out.

As drafts are usually read and used from right to left, the drafting in these illustrations is done in that way. If one prefers to work from left to right, it does not matter. The diagonal seen in drafts by Formula A will appear, but will be in a slightly different position.

The numbers used in naming the groups are those of the harnesses which carry the lower threads when the shed is open, allowing for the pattern thread to show in the web what the pencil does on the paper. Each weaver will understand what operation of treadles or levers in his particular loom will secure this result, and can work accordingly.

All patterns used in this article are taken from The Shuttle-craft Book of American Hand-weaving, by Mary M. Atwater. Pages are given.

FORMULA A—for drafting as drawn in.

1st step—Select the group to be developed. (The group at the right-hand end of the draft is usually taken as the first one.) Draw a circle around it.

2nd step—Bring down *every* square on a harness that is represented in the group being worked out. This will give one pattern shot way across the paper under the draft.
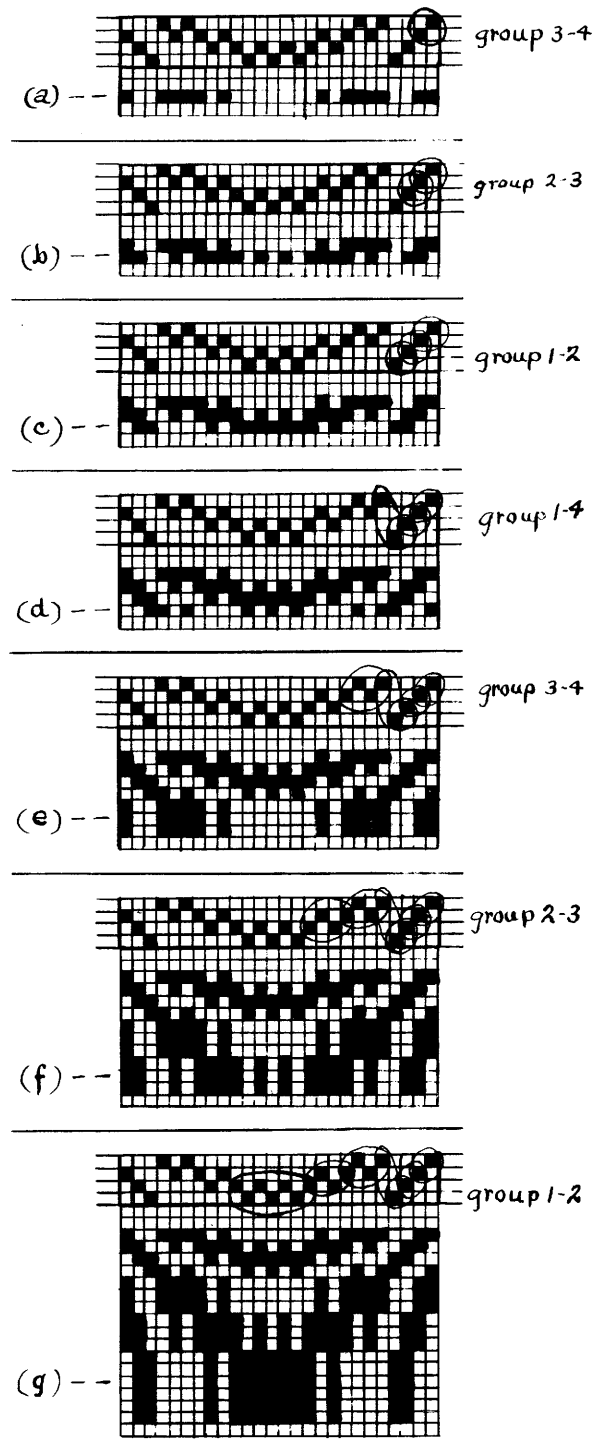

Illustration No. 1

Detail of Drafting

3rd step—Find the number of threads (or squares) in the group and subtract one, leaving a remainder to be used in the 4th step.

4th step—Make the pattern shot way across under the draft as many times as this remainder indicates.

Work out the groups thus in their order, working from right to left.

Illustration No. 1 shows Honeysuckle Pattern, p. 158, no. 6, in the various steps of development, as follows:—

Copy the pattern draft at the top of the paper.

The first group is 3-4 (at right-hand end). Draw a circle around it. Bring down all 3's and all 4's. As there are 2 threads in the group, the 3rd step of the formula indicates that this group will be done only once. Your work should now look as at (a) in the illustration.

Bring down the 2nd, 3rd and 4th groups in the same way, as shown at (b), (c) and (d) respectively.

Draw a circle around the next group. This consists of 4 threads, so circle must include all 4. The 3rd step of the formula leaves a remainder of 3, so this shot will be done 3 times. Do not, at this point, confuse this 3-4 group with the first 3-4 group. You are done with that first one. Confine your work to the last circle you drew, even though the shot passes way across the draft including that first 3-4 with the rest. Your work should now look as at (e).

Develop section (f) the same as you did (e).

The next group has 7 squares, so this shot will be done 6 times, making your work look as at (g).

Continue thus until the draft is completed. Then, it is well to set down the treadling draft, if it has not been done as the work progressed. It can be placed at the edge of the draft or written in column form as is shown with Formula B. The entire draft by Formula A is shown in Illustration No. 2, at (a).

After one draft has been completed by this formula and the method is well understood, a new pattern may be selected, and the treadling draft can be made directly from the threading draft.

Attention should be given, at some time, to the diagonal that appears in this draft. One person may like to make the diagonal first, then work along it. Another may use it as a test, to check on the work done strictly by the formula.

(Note)—In two-block patterns on opposites (such as Monk's Belt), there is no overlapping of the groups, so no subtracting is done in the 3rd step of the formula. The number of times a shot is done is the same as the number of threads in the group.

FORMULA B—for drafting in rose fashion.

1st step—Write out the treadling draft by Formula A.

2nd step—Divide the draft into blocks. To do this, select the most prominent *center* group and the group that comes on either side of it. These two groups form a block.

3rd step—Interchange the two groups composing the block, not only for the block, but wherever they appear in the draft. Then, interchange the two groups that are left. Keep the number of shots the same as before. This will give the treadling draft for rose fashion.

4th step—Draft the design from this treadling draft.

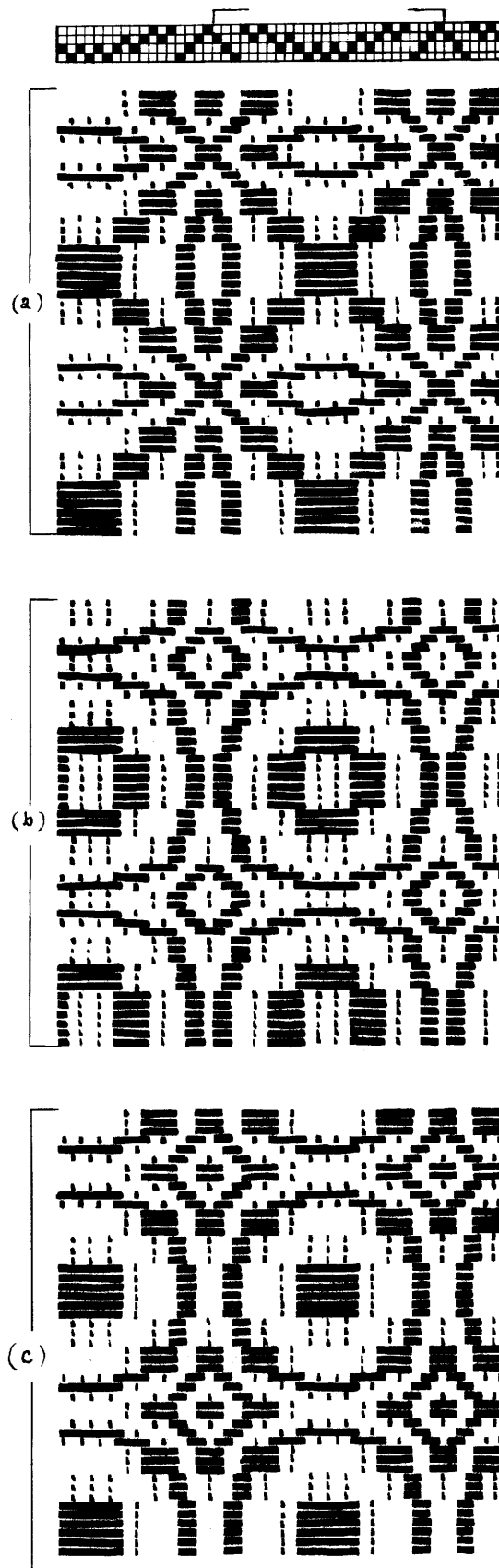For example:—compare these treadling drafts for Honeysuckle.

(a)

(b)

(c)

Illustration No. 2
Honeysuckle
by Formulas A, B and C.

Times	Formula A Harnesses	Formula B Harnesses
1	3-4	1-4
1	2-3	1-2
1	1-2	2-3
1	1-4	3-4
3	3-4	1-4
3	2-3	2-3
6	1-2	1-2
3	2-3	1-2
3	3-4	3-4
1	1-4	1-4
1	1-2	2-3
1	2-3	1-2
1	3-4	1-4

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The draft developed by Formula B shows at (b) in Illustration No. 2.

There is no point in applying Formula B to patterns that consist of two block on opposites, nor to alternating patterns (such as Star of Bethlehem or Wheel of Fortune). The result would be practically the same as the reverse side of the draft by Formula A.

FORMULA C—for a second form of rose fashion.

1st and 2nd steps—as in Formula B.

3rd step—Keep one group of the block the same as before. Keep its opposite the same as before. Interchange the two groups that are left. Keep the number of shots the same as before. This will give the treadling draft for the second form of rose fashion.

4th step—as in Formula B.

For example:—compare these treadling drafts for Honeysuckle:—

Times		Formula A Harnesses		Formula C Harnesses
	1	3-4		3-4
	1	2-3		1-4
	1	1-2		1-2
	1	1-4		2-3
	3	3-4		3-4
	3	2-3		1-4
block	6	1-2	-keep-	1-2
	3	2-3		1-4
	3	3-4	-keep-	3-4
	1	1-4		2-3
	1	1-2		1-2
	1	2-3		1-4
	1	3-4		3-4

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The draft developed by Formula C shows at (c) in Illustration No. 2.

It is curious to find that if Formula C is applied to an alternating pattern (one in which successive repeats of one figure occur on the diagonal), the result is a design having two figures, one the reverse of the other, and neither one following the diagonal. Such a draft, developed by Formula C, is shown in Illustration No. 3. This pattern is on p. 167, no. 34, where it is illustrated (a) as drafted by Formula A.

FORMULA D

This formula is for use with patterns that are partly on opposites (especially those with a large table on opposites)
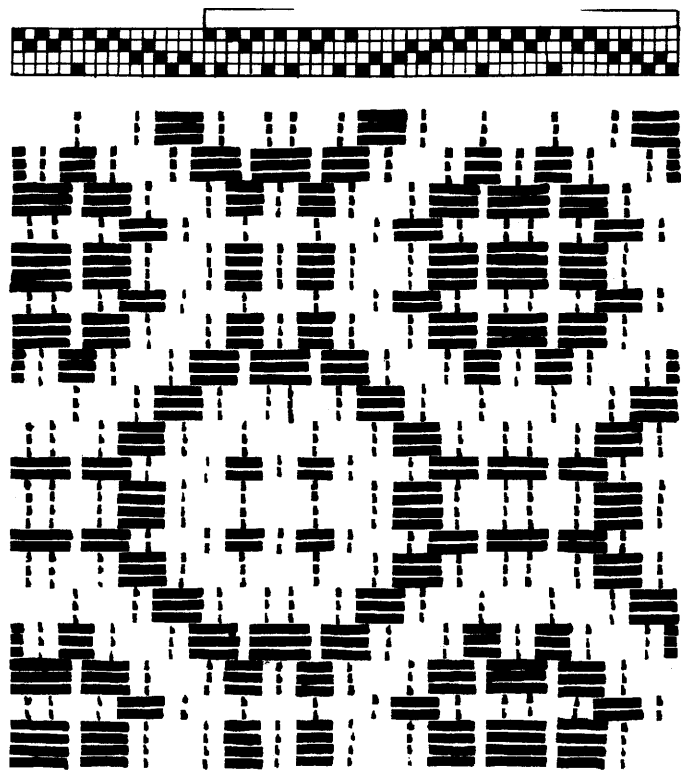

Illustration No. 3
Solomon's Delight, by Formula C.

to secure the rose fashion between the tables.

1st and 2nd steps—as in Formula B.

3rd step—Keep the table or block as it is, and keep the groups that form the table wherever they appear in the rest of the draft. This leaves two groups. Interchange them. Keep the number of shots the same as before. This will give the treadling draft for rose fashion on such a pattern.

4th step—as in Formula B.

Illustration No. 4 shows such a pattern, The Morning Glory, p. 172, no. 59, by Formula A at (a) and by Formula D at (d).

SUMMER AND WINTER WEAVE

In applying these formulas to four-block patterns on six harnesses in Summer and Winter Weave, the short form of draft shown at (f) on p. 147, is the form to work from. Here, each square represents four threads, and is to be treated the same as a group in the common overshot draft. Since these squares do not overlap, there will be no subtracting in the 3rd step of Formula A. (See note under Formula A.) Otherwise, Formulas A, B & C are used as before.

Illustration No. 5 shows the application of Formulas A, B & C to the Wheel and Star Pattern, p. 225, no. 195. Here, the resulting drafts can be used as foundations for more elaborate designs if desired. In the Summer and
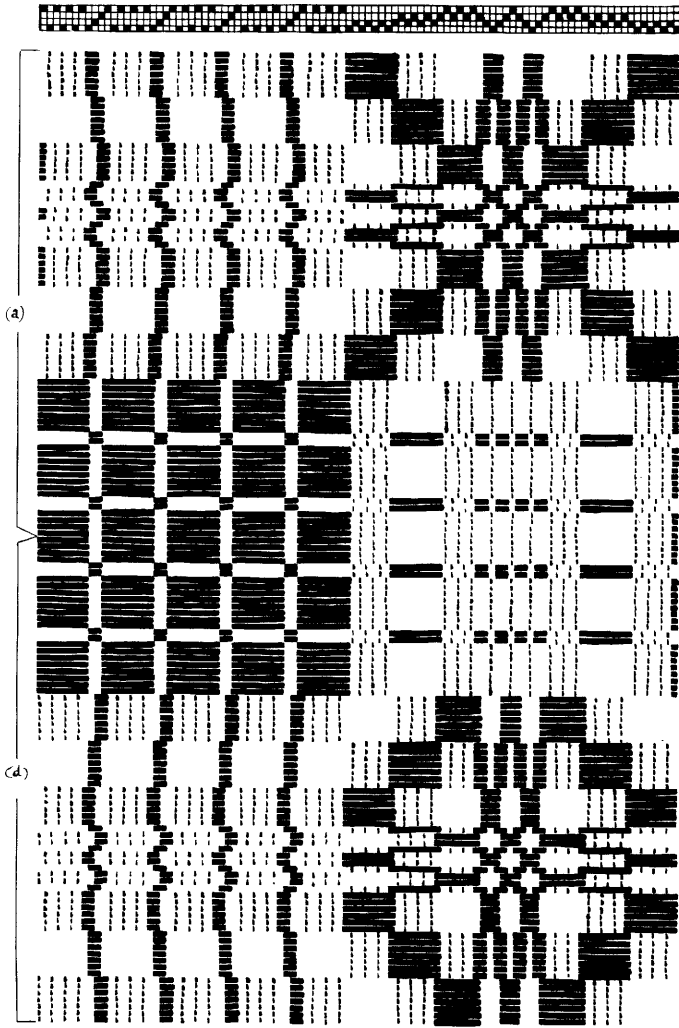
Illustration No. 4
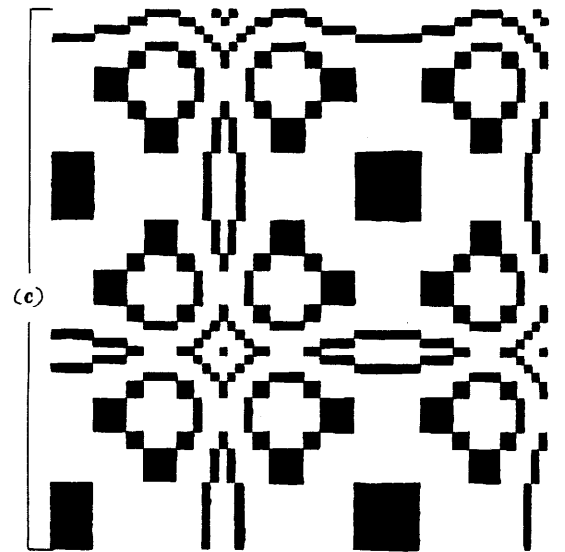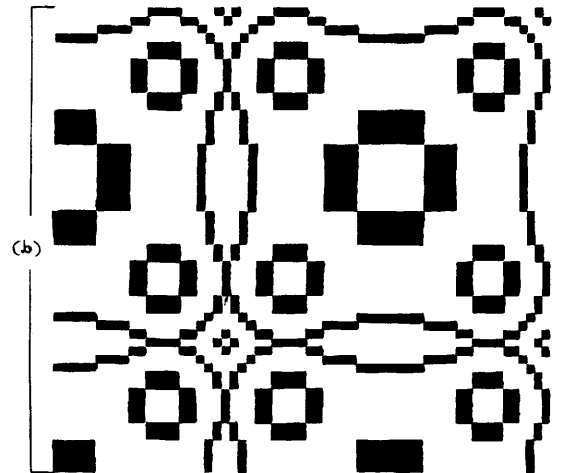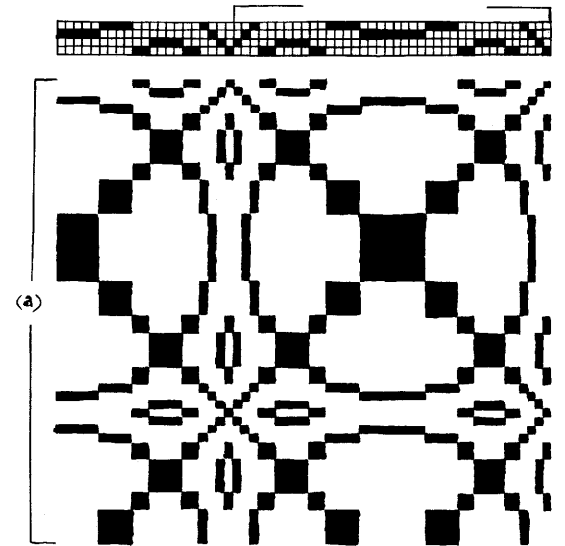
Morning Glory,   by Formulas A and D.

Illustration No. 5
A Summer and Winter Pattern
by Formulas A, B and C.

Winter Weave, it is quite customary to use more than one pattern harness at a time, at certain points in the pattern, thereby adding to the richness of the design. For instance, the draft made by Formula A, while a very definite and well-balanced design, is rather thin-looking. It can be improved by using both pattern harnesses 1 and 3 wherever either one is given in the draft. The design resulting from Formula C can be made slightly heavier by using pattern harnesses 2 and 4 wherever 4 is given. Further weight can be given by using both 1 and 3 wherever either one occurs. It is very interesting to work up a complete design in this weave by using one's own choice as to combinations of harnesses. In all these drafts, the numbers naming the groups refer to the harnesses. When it comes to the weaving in Summer and Winter, the use of more than one harness at a time can best be governed in the tie-up, each weaver knowing best the most satisfactory method for his own loom.