

# Designing with Shadow Weave, Shrepp and Repp

Shadow Weave is probably my favourite weave structure. It is structurally so firm. It is suitable for all types of end uses and can be woven in a huge range of weights. In this article I am covering basic weave construction.

SHADOW WEAVE is principally a block weave construction. The block design is created with areas of vertical and horizontal lines, woven on the two faces of Plain Weave. These vertical and horizontal lines occur when a balanced sett, plain weave cloth is woven with two colours alternating in the warp meeting the same two colours alternating in the weft. A beautiful flexible cloth is woven with a subtle patterning.

REPP IS A SETT VARIATION of Shadow Weave. Structurally it is identical BUT it does not have a balanced sett. The warp ends are sett very, very close together so that the weft yarn is not visible. Two weights of yarn are used in the weft, a very fine thread alternating with a very thick thread. Generally the two weft yarns are both the same colour.

The horizontal and vertical lines disappear

and a clean coloured, stiff, ribbed cloth can be woven.

The warp sett for a Repp cloth can be anything between two and four times the normal balanced sett of a cloth.

A balanced sett is determined by winding a yarn around a ruler and counting the number of threads that lie very closely together in the space of 10 cm or 1 inch. A balanced Shadow Weave sett would be half this number of ends.

A loose Repp warp sett would be the same number of threads that occur in that space.

A tight Repp warp sett might be twice the number of threads that occur in that space.

A Shrepp warp sett is anything between a balanced Shadow Weave sett and a loose Repp sett.

THE SHAFT REQUIREMENTS of a Shadow weave or Repp cloth are the most

economical of any block weave structure. Because it is based on the two end interlacings of Plain Weave it should need just two shafts per block BUT if any vertical block in a design is an opposite block, it shares shafts:

A two-block design can be woven on 2 shafts. A four-block design can be woven on 4 shafts. An eight-block design can be woven on 8 shafts. How this works we will show you on page 45.

LIKE ALL WEAVE STRUCTURES, once the ends and pick interlacement has been plotted out it is possible to determine the threading plan and sinking plan to enable the loom to actually weave the cloth. Once this has been done, it is essential to try and work out the short cut code to finding this information, so that the design process can be much quicker. This article will attempt to explain all this to you.

SOME SAMPLES SHOWING SHADOW WEAVE, SHREPP AND REPP.



Shadow Weave structure. *Diamond Facet* wall hanging. 60/2 Silk alternating with 20/2 silk in warp and weft.



Parisian Pink handbag woven as a Shrepp, using a thick, Cashmere and Silk warp and the same yarn in the weft doubled, alternating with a 8/2 Cotton.



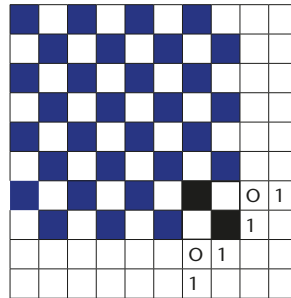
24 shaft Repp designed by my Master Class students, Marilyn Burton: 20/2 Mercerised Cotton in the warp sett at 60 ends per inch (24 ends per cm).

Let us look at some block designs and see how many shafts they might need to weave them. For Shadow Weave and Repp this is plain weave. Therefore each square of the designs represents at least two ends and two picks. One of which is a light coloured thread and the other a dark coloured thread. All drafts are drawn in the Swedish way of SINKING the shafts.

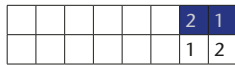
**CHECKERBOARD DESIGN**

This is a 2-block design. The bottom four squares are coloured Black and White. This is one repeat of the overall design. If you look closely at this repeat unit you can see these two blocks are in fact one vertical block plus its exact opposite.

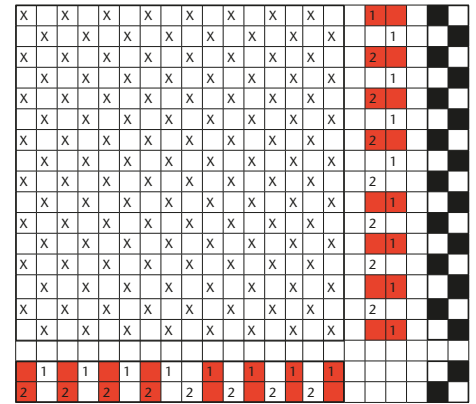
As stated above each block represents the two ends of Plain Weave and therefore needs two shafts BUT because the second block is the opposite of the first block, the whole cloth can be woven on the same 2 shafts. It is the same concept in the weft. Whatever sinking sequence the dark pick goes into, the light pick will have the opposite shafts lowered. Therefore the weft requires only 2 treadles.



1 = the first block we look at.  
O1 = the opposite of block 1.



The two horizontal rows underneath the design represent the shaft numbers and colour of each of the two ends per block that the threading will be if only two shafts were used. The block on the right will have the dark ends on shaft 1, while the light ends is threaded onto shaft 2. Next block to the left will have the dark ends threaded onto shaft 2 and the light ends threaded onto shaft 1.



This is a diagram of the full weave structure, 8 ends/block. Each vertical line is one end and each horizontal line is one pick. Where these two lines meet a square is formed. This is called the point of interlacing. The crosses and blanks represent the ends and picks weaving over and under each other. Pages 46–47 show the full drawdown with colour and weave effect plus four subtly different ways this design – LOG CABIN – can be woven in Shadow Weave. (As many of you will know usually a simple plain weave cloth is woven of 4 shafts.)

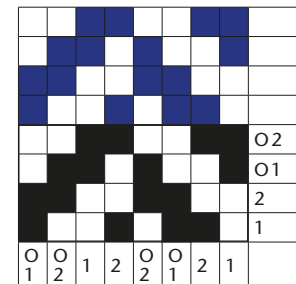
**HERRINGBONE TWILL DESIGN**

This is a 4-block design, two vertical blocks and their opposites. It can therefore be woven on four shafts.

The weft will have 4 different treadles. The two horizontal rows underneath the design represent the shaft numbers and colour of each of the two ends per block that the parallel threading will be. Note how the blocks, which are opposite to each other in the design, use the same two shafts, it is the colour of the ends that change shafts:

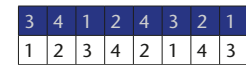
1:3 and 3:1    2:4 and 4:2

THE FIRST BLOCK on the right will have dark ends threaded onto shaft 1, while the light ends are threaded onto shaft 3.  
THE THIRD BLOCK on the right will have the dark ends threaded onto shaft 3, while the light ends are threaded onto shaft 1.  
THE SECOND BLOCK in from the right will have the dark ends threaded onto shaft 2, while the light ends are threaded onto shaft 4.  
THE FOURTH BLOCK in from the right will have the dark ends threaded onto shaft 4, while the light ends are threaded onto shaft 2.



1 and 2= the first block we look at.  
O1 and O2 = the opposite blocks.

The full drawdown for this design will be shown on page 48 and 50.



By colouring the top row dark, I have made the decision to do the threading dark/light.



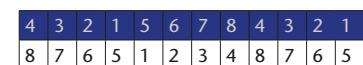
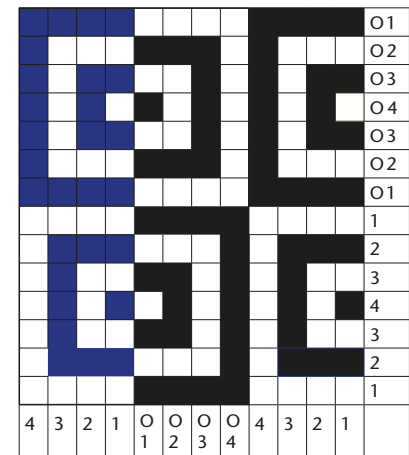
This is the block design used to weave the silk scarf published in VAV 3/10 – (Autumn 2010). The whole project can be downloaded on vavmagasinet.se

**INTERLOCK DESIGN**

This is an 8-block design however in fact it has 4 vertical blocks and its opposites. It can be woven on 8 shafts. Because it has 4 different weft blocks plus their opposites it will have 8 different sinking sequences/treadles.

The two horizontal rows underneath the design represent the shaft numbers and colour of each of the two ends per block that the parallel threading will be. Note how the blocks, which are opposite to each other in the design, use the same two shafts, it is the colour of the ends that change shafts:

1:5 and 5:1                      2:6 and 6:2  
3:7 and 7:3                      4:8 and 8:4





# THE FOUR LOG CABIN DESIGNS

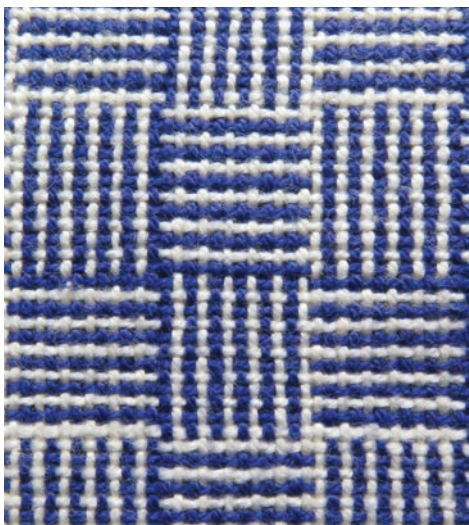


Photo 1

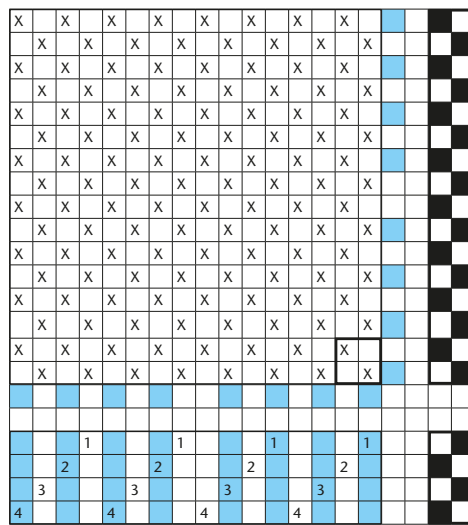


Fig. 1 Even number of ends per block (8 ends). Straight threading over four shafts. Classic plain weave, sinking sequence. Shaft 1 and 3 alternating with shaft 2 and 4.

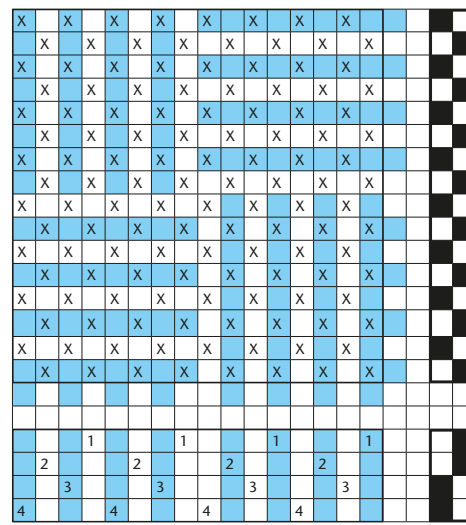


Fig. 2 Same construction as Fig. 1 (left) with ends and picks colouring inserted. Here we use Parallel threading.

## WARP AND WEFT COLOUR METHOD

To get into the thinking of how Shadow Weave is constructed we start with the pattern LOG CABIN. Photo 1 and Figure 1 illustrates the most common method of weaving LOG CABIN with a straight threading. Plain Weave is constructed across the whole cloth. There are an EVEN number of ends/picks in each block (8 ends and 8 picks in the diagram and 12 ends and picks in the woven cloth).

The two alternating colours in warp and weft are changing order at the point where I want the blocks to change. Dark ends and picks occur at one change over point and the light ends and picks occur at the other change over point. In the cloth you can clearly see the defined light and dark lines occurring at the change over points. *I think this is where Shadow Weave gets its name.*

The benefit in using a parallel threading is that if the warp ends are sett close to each other this gives them more space, and the complete warping, threading, and weft colour order can be obtained from the initial motif design, without having to construct the whole weave diagram. Which you will see later in the article.



Photo 2

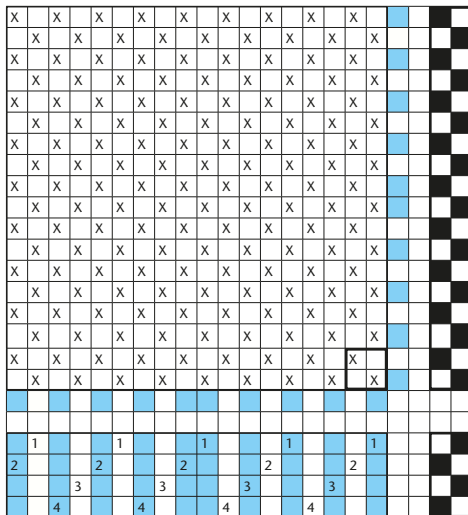


Fig. 3 Odd numbers of ends and picks in each block. 9 threads (5 dark and 4 light threads)/block. Straight threading.

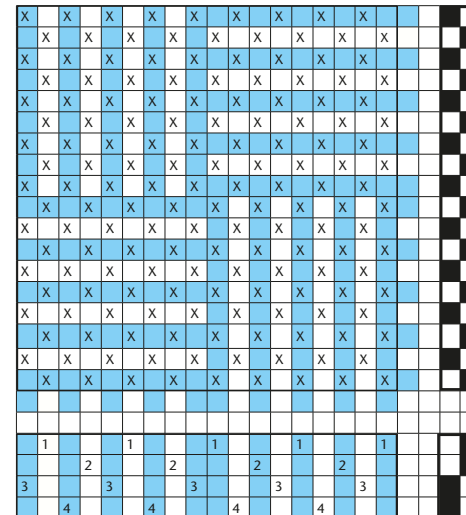


Fig. 4 Same construction as Figure 3 to the left with end and pick colouring inserted. Parallel threading.

Photo 2 and Figure 3 illustrates a simple variation of the warp and weft colour order method of constructing LOG CABIN with a straight threading. Plain Weave is still the overall structure.

Now there are an ODD number of ends and

picks in each block (9 ends and picks in my diagram and woven cloth). The two colours in the warp and weft are still changing order at the point where the blocks change, but now only the dark ends and picks occur at these points. We have still woven a checkerboard

design of vertical and horizontal lines again but the light and dark shadow look has disappeared.

Figure 4, above to the right, shows the same design constructed with parallel threading. Shaft 1+2 and 3+4 are sinking.

## STRUCTURAL METHOD

Photo 3 and Figure 5 illustrates the *structural method* of weaving Log Cabin. Now the threading is a parallel threading. The colour order in warp and weft are alternating all the way across the cloth. At the point of change in the blocks it is the weave that changes. The opposite Plain Weave. There is a float of two, in a warp and weft direction, occurring at the change over point. I have used two different

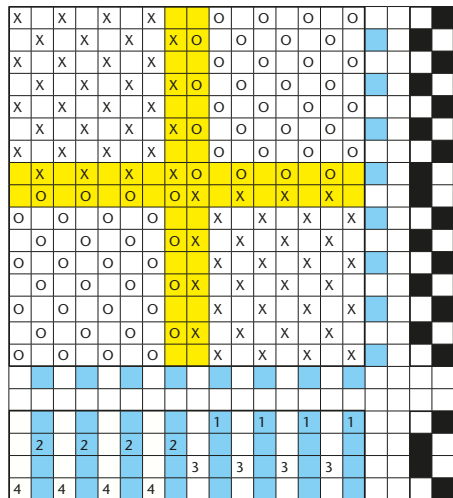


Fig. 5 Even number of ends per block (8 ends). Parallel threading. Note: two ends and picks of different colour going through the same shed at the change of block (marked yellow).

notation marks to highlight the two different Plain Weaves, X and O. Both means sinking threads. The first cloth has an EVEN number of ends and picks in each block (8 ends and picks in Fig. 5 and Fig. 6. 12 ends and picks in the woven cloth). There is still a light side and a dark side to each square in the design but not as defined as in Photo 1 and Figure 2.

It is still a checkerboard design but quite

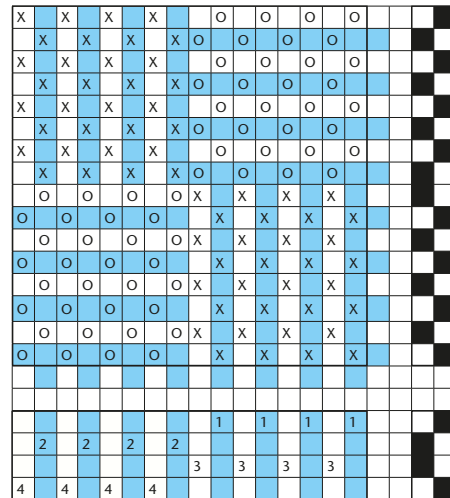


Fig. 6 Same construction as Figure 5 with ends and pick colouring inserted. Parallel threading.

different in appearance. I think it looks more like striped ribbons interlacing with each other. Can you see from looking at Photo 3, Figure 5 and 6 that there is a light and dark end and pick in the same shed at the block change over points, marked yellow.

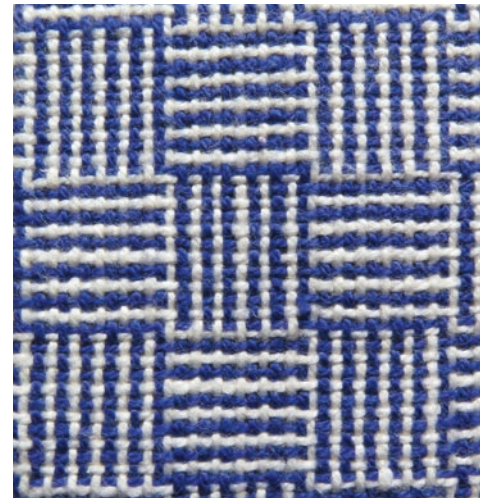


Photo 3

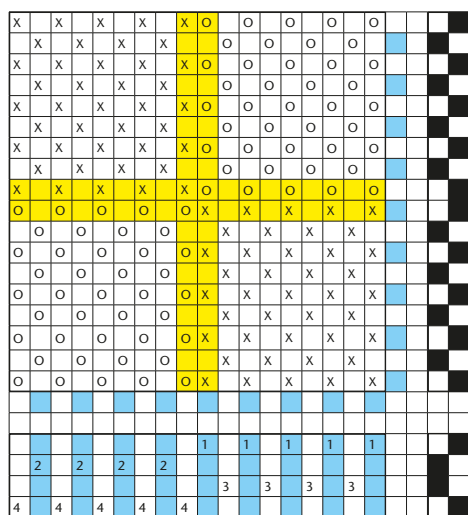


Fig. 7 Odd number of ends per block. Note: two ends and picks of different colour going through the same shed at the change of block (marked yellow).

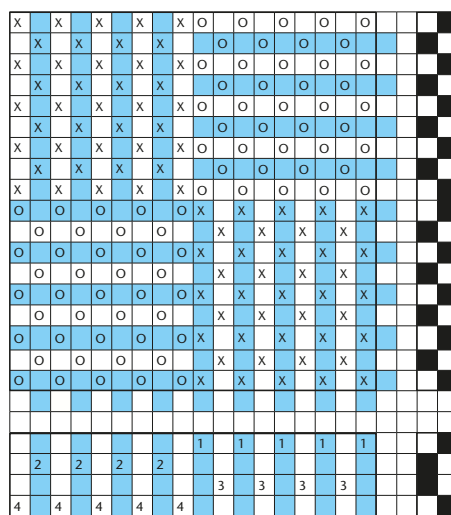


Fig. 8 Same construction as Figure 7 with ends and pick colouring inserted. Parallel threading.



Photo 4

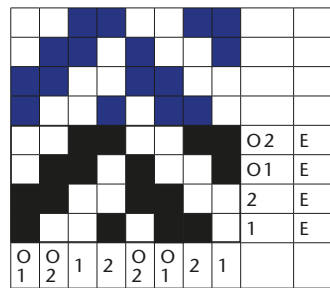
Photo 4 and Figure 7 and 8 illustrates the structural method used again. It again has a continuously alternating warp and weft colour order but now there is an ODD number of

ends and picks in each block (9 ends and picks). Now there are distinctive squares surrounded by light lines as well as distinctive squares surrounded by dark lines.

In the next issue we will show four different weaves with these designs.

In this design all blocks have even numbers of threads. We use a parallel threading. On pages 50–51 there is a full project with this design, TEA for TWO.

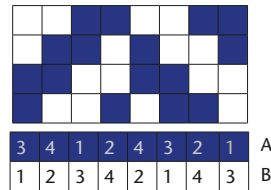
Fig. 1



3	4	1	2	4	3	2	1
1	2	3	4	2	1	4	3
E	E	E	E	E	E	E	E
80	80	80	80	80	80	80	80

The block design is based on the Herringbone Twill motif from page 45. I know it can be woven on 4 shafts because the initial plotting of the vertical blocks discovered 2 blocks and their opposites. EVEN (E) number of ends and picks/block – Row C. Actual number of ends in each block – Row D.

Fig. 2

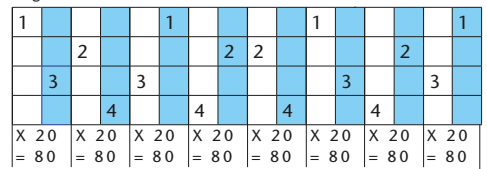


By colouring the top line dark I have made the decision to start threading this design with 1 dark/1 light.

The top line of numbers underneath my block design represents the shaft number of the DARK coloured ends in my warp (A) and the lower line represents the parallel shaft numbers of the LIGHT ends in my warp (B).

The warp has 1 dark/1 light starting from the right hand side, across the whole warp. The first dark end will be threaded on shaft 1 and the first light end will be threaded on its parallel shaft 3.

Fig. 3



This block threading will be repeated for as wide a block as I wish. I have already decided that it will have an even number of ends in this block, 80 ends/block.

Figure 3. From this information I have been able to write out a full threading plan allocating the required number of ends to each block. I find it essential to have the dark/light warp ends marked onto the threading plan.

### SINKING-SHAFT PLAN

Fig. 4

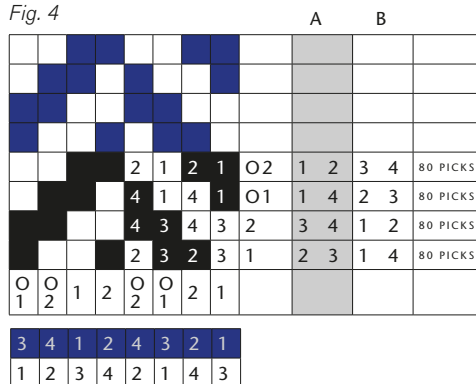


Figure 4. The motif diagram also tells us which shafts will need to be lowered for one of the picks per block. The other pick per block will be the opposite. The horizontal lines shows the blocks for the weft. Each block needs 2 pedals, one for light picks and one for dark picks.

A and B =

The two sinking shaft numbers/block. The left hand column is the dark picks. The right hand column is the opposite light picks. We start with a light pick, sinking shaft 1 and 4. See full draw down below, Figure 5. 80 picks in balanced plain weave = Shadow Weave. In Repp and Shrepp the pick numbers changes.

NB! Once on the loom you can decide whether the first pick is going to be light or dark. It will depend on which blocks you wish to be vertical and which blocks you wish to be horizontal.

### CONCLUSION

What have we learned?

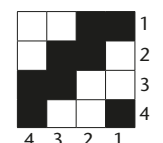
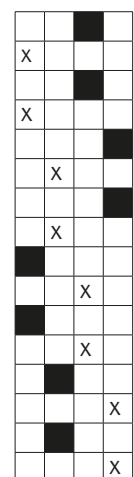
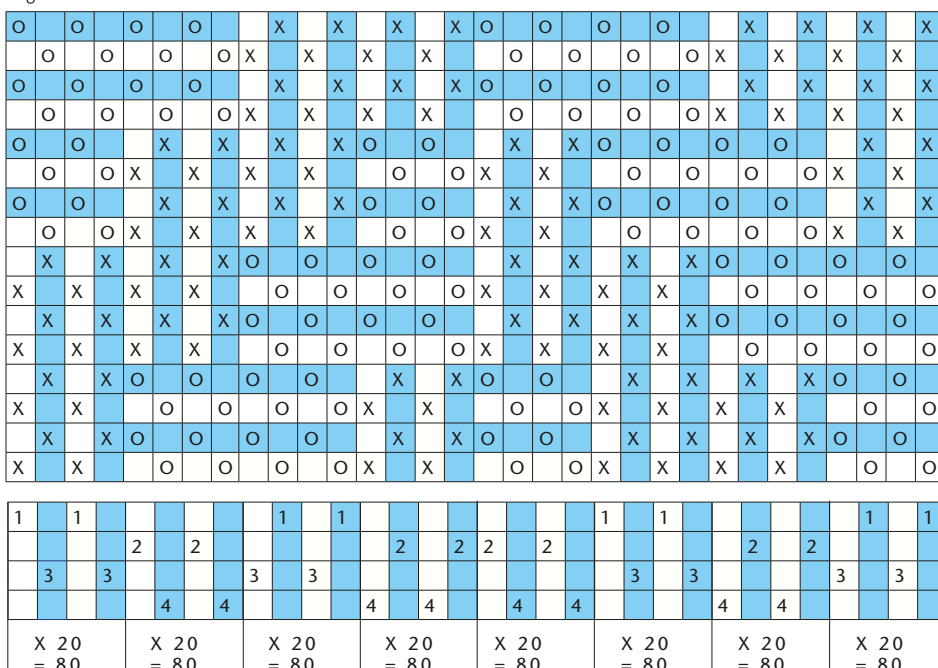
We can design a block design motif and from this information determine a threading and sinking plan to weave a Shadow Weave construction. It is now a question of experimenting with different yarns, yarn weights, different setts, colours, and in particular placing colours imaginatively within a block, to create innovative cloths.

This article has principally described the weave construction of Shadow Weave, Shrepp and Repp cloths. Innovative fabric in these structures need further experimenting with:

1. The scale of the structure. Remember a block could be just one end/pick wide.
2. The colour of the warp ends. Placing differently colour ends strategically within any block adds immediate interest.
3. Yarn quality. For Shadow Weave and Shrepp any fibre combination, twist quality is possible. For Repp cloths though warp yarns should be smooth and unhairy otherwise it is difficult to obtain a clear shed for the weft to pass through.
4. The thickness of the warp and weft yarns.

Enjoy the exploration!

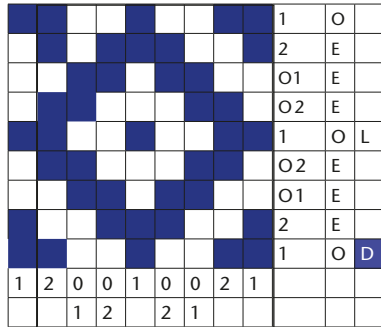
Fig. 5





Here is a design where we use both EVEN and ODD numbers of threads in the blocks. We use a parallel threading. Make your own design by reading the tips on page 48 and pages 50–51.

Fig. 1

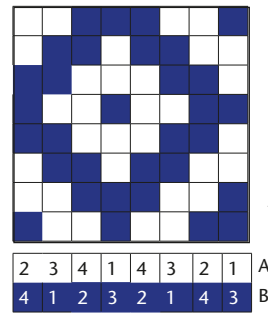


1	2	3	4	1	4	3	2	1	A
3	4	1	2	3	2	1	4	3	B
O	E	E	E	O	E	E	E	O	C
57	56	56	56	57	56	56	56	57	D

D = one extra dark pick.  
L = one extra light pick.

This design is called *Diamond*. I know it can be woven on 4 shafts because the initial plotting of the vertical blocks discovered 2 blocks and there opposites. Some blocks have EVEN (E) numbers of ends and picks/block and some have ODD (O) numbers of ends and picks/block – Row C. Actual number of ends in each block – Row D.

Fig. 2

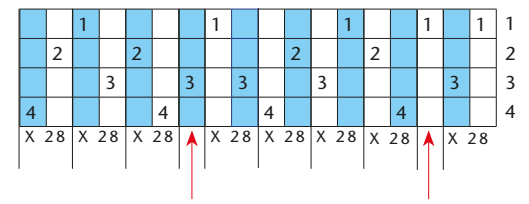


By colouring the bottom line dark I have made the decision to start threading with 1 light/1 dark.

From the information in Figure 1 it is able to actually allocate shaft numbers to each vertical block of the design. Here we start with a light coloured end on shaft 1. The top line of numbers underneath my block design represents the shaft number of the LIGHT coloured ends in my warp (A) and the lower line represents the parallel shaft numbers of the DARK ends in my warp (B).

The warp is threaded 1 light/1 dark starting from the right hand side, across the whole warp. The first light end will be threaded on shaft 1 and the first dark end will be threaded on its parallel shaft 3. The block threading will be repeated for

Fig. 3



The first extra thread is light and threaded on Shaft 1 in the first block, see the red arrow. The extra threads is added when the design turns.

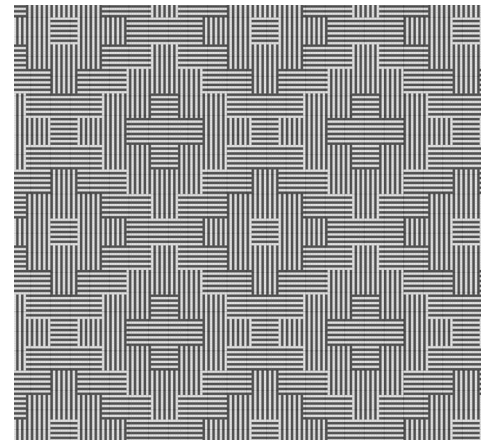
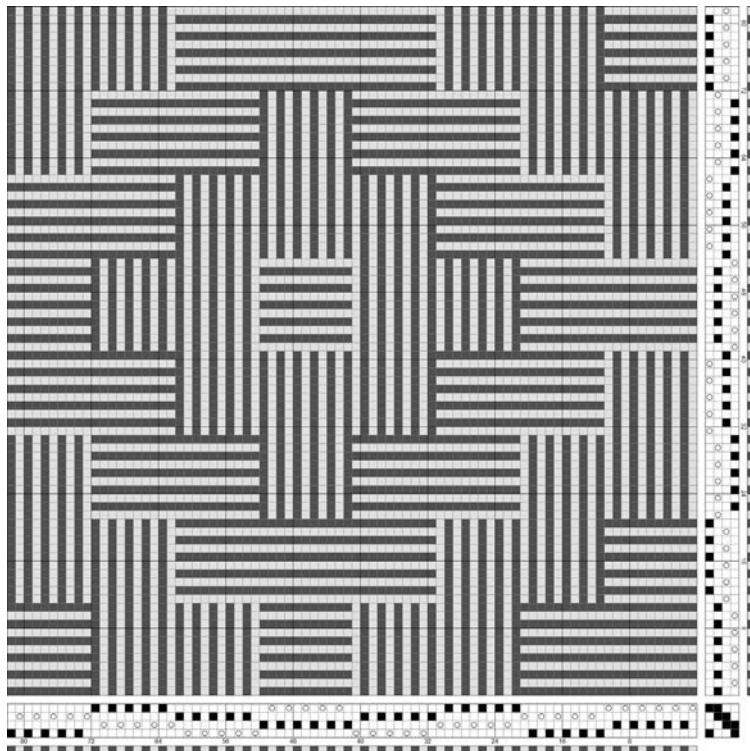
as wide a block as I wish, here 56 ends for the even blocks and 57 ends for the odd blocks. I have already decided that it will have both a odd number and an even number of ends in the different blocks. From this information I have been able to write out a full threading plan allocating the required number of ends to each block. I find it essential to have the light/dark or dark/light warp ends marked onto the threading plan to know which shaft to allocate an end too. This is especially important when I design with *even* and *odd* blocks. Sometimes the dark end will be the first end per block and sometimes it will be the light end which is the first end per block.

SINKING-SHAFT PLAN

Fig. 4

			2	3	2		2		2	3	1	4	56 PICKS
			2	1	2	1	O	1	1	2	3	4	56 PICKS
			4	1	4	1	O	2	1	4	2	3	56 PICKS
			4	3	4		1		3	4	1	2	57 PICKS
			4	1	4	1	O	2	1	4	2	3	56 PICKS
			2	1	2	1	O	1	1	2	3	4	56 PICKS
			2	3	2	3	2		2	3	1	4	56 PICKS
			4	3	4	3	1		3	4	1	2	57 PICKS
2	3	4	1	4	3	2	1						
4	1	2	3	2	1	4	3						

The motif diagram also tells us which shafts will be lowered for one of the picks of each block. I have decided to make these the light picks, left column. The opposite numbers will be for the other picks per block, dark picks, right column. In this instance we start with a dark weft, pedal 3, shafts 1 and 2 sinking, then light weft, pedal 1, shafts 3 and 4 sinking. See full draw down below. 57 or 56 picks in balanced plain weave = Shadow Weave. In Repp and Shrepp the pick numbers changes.



By adding extra threads where the pattern turns I get a symmetrical design.

If that is not done it will look like the structure below. Here all blocks have even numbers of threads.

