

Medieval Textile Study Group

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Weft, Warp, & Compound Ikat Workshop

These are the notes from the above workshop, attended by Julie Hennessy at the May Art School, Southland Community College, Invercargill New Zealand, May 17th – 26th 1986.

The word “Ikat” comes from the Malay word Mengikat, meaning “to tie” or “to bind”. Ikat weaving is therefore the technique in which the weaver protects a set length of yarn with resists during the dyeing process (by binding the yarn). After the dyeing resists are removed and the undyed sections make a pattern against the colored background.

Different Types of Ikat:

1. Weft Ikat: The weft yarns only are wrapped in sections to resist the dye – these resisted sections are then woven to form the predetermined pattern.
2. Warp Ikat: The warp yarns are resisted in sections and arranged on the loom in a pattern and then woven.
3. Compound Ikat – the ikatted warp and weft yarns do not coincide, they form independent, complementary patterns.
4. Double Ikat: The resist patterns on the warp and weft yarns are identical and fall on top of each other in the woven cloth.

Weft Ikat

Those areas of thread bound form patterns in the weft only – careful placing of each shot is necessary for an accurate pattern.

Making the Pattern for Weft Ikat:

Method One: Using several skeins, each tied in a different pattern to complete one design. Produces a fairly well defined pattern.

Method Two: Using only one skein (or more than one tied the same) each about the same length as the width of the warp, and producing the pattern by shifting the weft

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Calendar Sample Information:

Rippenkoeper:

This piece was woven at 48 epi, 36 ppi with 20/1 wet spun line linen, bleached after weaving. The sett reproduces a sixth or seventh century textile from Grave 12 at Giengen an der Brenz, in Baden-Württemberg, Germany, which was an Alamannic graveyard. The original was woven with a slightly smaller singles (0.3mm diameter rather than the 0.45mm I used), so it would have been even more dense than this sample. Woven by Carolyn Priest-Dorman

3	3			0		0	0	
2	2			0		0	0	
1	1	0				0	0	
			1					
				2				
					3			
						4		
							5	
								6

3/3 twill and 2/1 twill:

Two popular weaves of the Medieval period noted in the table of weaves of wool textiles present in London deposits of c. 1150-1450 ([Textiles and Clothing c. 1150-1450](#)). (c) 1992 Museum of London)

These were executed using wool singles. Warp: grey “mystery wool” of unknown origin 0.75mm diameter, spun “z”. Sett: 24 epi. Weft: handspun wool from Bullens Wullens spun less evenly, 0.25 - .75 mm diameter, approx. 22 tpi. woven at 24 ppi. These 2 patterns were chosen as since most modern looms have shafts mounted in sets of 4 they are rarely produced today. Note the thickness difference of the 2 samples, even though they were woven in the same yarns, on the same loom, over a 2 hour interval. 2/1 twill weft spun “s”. Samples spun & woven by Nancy M. McKenna.

3/1 Twill

2/1 twill with color/weave effect from “Textiles & Clothing” page 31, fig. 14B warp/weft: 2/18 worsted. Samples woven by Noeline Barkla

Broken Diamond Twill:

Fragments of this weave were found at Coppergate: no. 1308 and have counts of 15 x 12 per cm. This is believed

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Ikat, cont'd from page 1

during weaving. The pattern is less well defined than that in method one.

Method Three: Using a skein of skeins tied the same. The pattern is produced by a different type of weft shifting which requires the length of the skein to be considerably longer than the width of the warp.

Method Four: Picture Ikat.

Method:

1. Plan the design.
2. Calculating the X measurement: Weaving a sample to calculate the weft thread required per shot.
 - Warp the loom up with the thread required for the finished fabric.
 - Weave approximately 20 picks.
 - Mark the selvedge of each weft with a felt tip pen or a soft lead pencil i.e. 6B lead.
 - Unravel the weaving and take an average measurement of approximately 10 picks – measuring between the two pencil marks. This measurement is your X measurement as is your actual weft width per shot.
 - This amount will vary from weaver to weaver and depends on the actual width of the weaving, the thickness of yarn, the tension and sett of the warp and the rhythm of the weaver.
3. Making the Weft Skeins: Use a weft skeining board with movable uprights, your warping board, or two six-inch nails in a length of wood. NB if upright is thick, then take your measurement from the middle of the stick.
4. Wind the skein as shown and remember not to mark the skeins too thick. Keep the tension even.
5. Transfer your design onto the weft skein – marking the complete pattern before tying. Use a ruler or stick of wood.
6. Tie the resists – keeping the binding slightly inside the marked pencil areas so your white resists aren't marked. If the bundle is too thick or the areas to be tied are too close together, the tied area when dyed tends to leave a curved edge. Your handles should be no larger than a pencil in diameter. Longer Tying: Thicker bundle can be tied. Shorter Tying: Thinner bundle will be required. For larger areas of resist, garbage bags may be used. Secure ends tightly and then bind randomly in between. For thin and close together ties use cotton. Your pattern is as accurate as you mark it.
7. Soak wool in hot water for 15 minutes. Squeeze out. Dye, checking to make sure dye has penetrated the inside the inside of the bundle.
8. Rinse the yarn thoroughly, untie the raffia bindings and dry.
9. Weave – try different settings & different patterns e.g. twill.

Warp Ikat

Basic procedure for warp Ikat:

1. Figure the length of warp required for the project. Allow an extra meter for every three meters of finished fabric required to allow for take up in weaving, the loss from shifting and tying onto the loom. Tie a couple of extra threads in case of breakage. Choose a strong yarn – knitting yarns are not suitable.
2. Remove warp from warping board (preferable to a warping mill as it gives better tension.) Maintain the cross. Tie each end of the warp between two strong secure points. If you don't cut the ends of your warp, stakes can then be driven into the ground to secure the warp at each end for tying. Place a stick in the middle of the warp and run it down the entire length of yarn to remove any twists that will alter the length.
3. Leave areas at beginning and end for waste then mark out all your Ikat sections to be tied. (Tension will become tighter as you tie.)
4. Tie as for weft Ikat.
5. Make a hand out of your warp for ease of handling in the dyepot. Do not bend on tied areas.
6. Immerse the prepared warp in hot water before dyeing to prevent leakage into the tied areas. The raffia will shrink. For wool, leave for 15-20 minutes. Remove from the heat and leave to cool for 10 minutes.
7. Dye – remember size of hands will in part determine how accurate your dye take is. Refer to weft Ikat section. Dye also threads for the weft. (Make sure you have plenty!)
8. Starch if necessary – Instant laundry starch (weak mixture). Add a few drops of baby oil and mix well. Squeeze to remove excess liquid. Leave for ½ hour in a plastic bag, then spin in the washing machine. (If a strong thread is used, this step may be left out. Spray on starch could be used as an alternative.)
9. Untie the binding.
10. Secure threads between two fixed points again and repeat step 2.
11. When dry – warp the loom.

One of the main differences in methods 1, 3, & 4 from the basic method of making a warp Ikat is that the weaver will have two or more separate warps to make up the total width required. I.e. stripes, different Ikat patterns). These are all made separately on the warping board and transferred onto one set of cross sticks before dressing the loom.

In Method Four, warp yarn shifting various tools are really required to make the pattern accurate. See Diagrams for warp shifting box designed by Yoshiko Wada (see figures 1 & 2) and alternative ideas. In method five, the warp will need to be folded lengthwise in half and can

also be folded widthwise – see examples of Sumba Ikat.

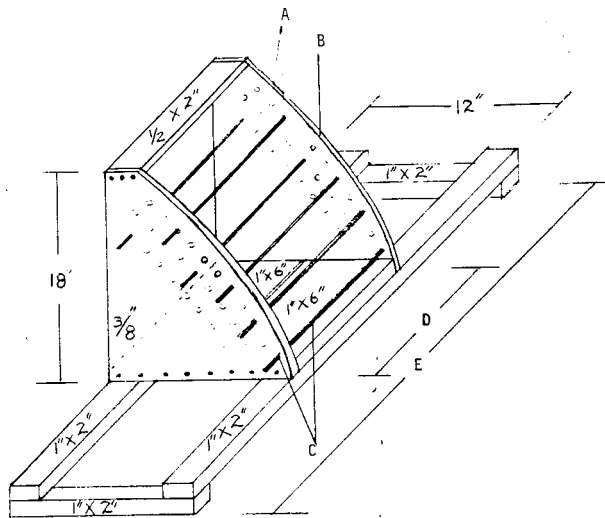


Figure 1: Warp shifting device

- A. 1/4" holes with 1/4" metal rods
- B. 3/8" plywood sides
- C. 1/2" holes with 1/2" metal rod
- D. Width of weaving or wider
- E. Width of loom

The number of metal rods used depends upon the complexity of the pattern. The position of the rods depends on the amount of shifting required to create a specific pattern. The length of the rods is 3"-4" wider than the device.

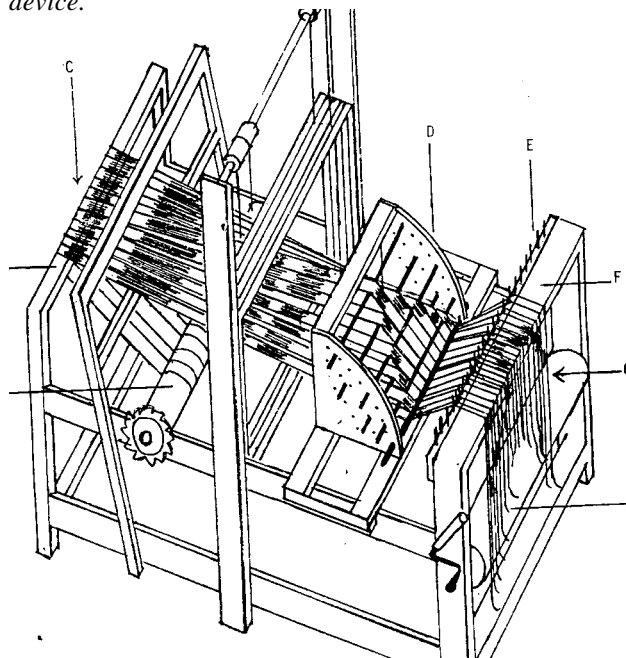


Figure 2: Placement and use of the warp shifting device.

Warp Shifting Tools:

1. Warp shifting Frame, see figures 1 & 2
2. Hard board cut out. Cut a pattern from a sheet of hardboard. Clamp onto the back beam before tying and winding onto the back beam. Suitable only for

simple patterns (figure 3).

3. Basic Okinawan method. Make bundles of warp and stretch them out side by side between two fixed points. Shift the bundles now – before tying. Tie all threads on back beam evenly, this will produce shifted pattern.
4. Dowels tied onto the back warp apron. Suspend alternate apron rods to apron and tie sections of warp to rods of differing distance from beam to achieve the differential between patterns..

Things to try:

Staggered Resists: To create random stripes, stagger the resists. Bind two or more groups of threads together on occasion to vary the thickness. Use a variety of threads together on one piece.

Sleying the warp: When sleying the warp for warp Ikat, try sleying the ikatted threads at two ends per dent for wool (3 per dent for cotton) When woven it creates a denser stripe of the Ikat. Sley at varying threads per dent in a repeated pattern to create a crepe effect.

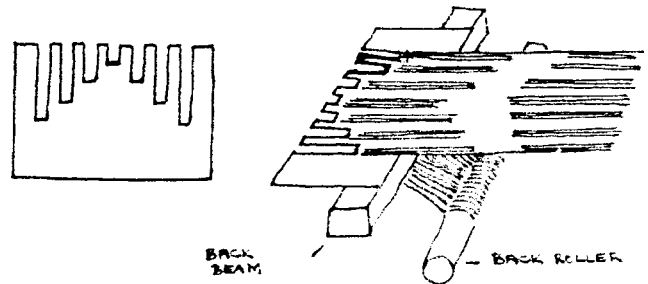


Figure 3: Simple Warp Shifting Device

Dyeing:

1. Wrap some sections loosely so dye will seep under the tie. This can give a blurred effect to the edges or a lighter color if it seeps right through. Practice or "disasters" will teach you lots.
2. Wrap a white warp/weft hand in 5 different places and dye it yellow. Remove the binding from two places and wrap a section of the yellow just dyed. Allow to dry and then dye the hank blue. Dry and remove all the bindings – you now have a hank that shows white, yellow, blue & green.
3. Try lanasol dyes (wool only) thickened with namutex – over dye areas between the resists using a paintbrush. Tie a skein for weft Ikat using X measurement in two places (leaving the middle edges free) Using an old detergent bottle or similar, or a paint brush, apply the dye to the middle section of your skein. This will give a spot of color on your plain background when woven.
4. Using natural dyes, tie areas of resist. Pre mordant the yarn in 3 different sections using 3 different mordants:
 - e.g. onions: alum = yellow to gold
 - Ferrous sulfate (iron) = green
 - Bichromate of potash = chestnut brown.

