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ANALYSIS OF FABRICS

The importance of fabric analysis is very often not quite appreciated by a handweaver, since it is quite seldom that he is called upon to reproduce a piece of weaving. What he is supposed to do is rather to create than to repeat other people's work.

But the usefulness of analysis does not end with copying. Just the contrary, it is needed most when creating new patterns, or new weaves. Conscious creating (as opposed to more or less accidental discoveries) means visualising a new fabric, then drawing it down on graph paper, and finally analysing it exactly in the same manner, as one analyses a sample.

Since analysis of samples is a little easier than analysis of ideas, we shall start with the former.

As far as the analysis is concerned the fabrics are either "two-dimensional" or "three-dimensional". In the first case the whole structure of the weave can be represented in two dimensions i.e. on a flat surface, in the second it cannot, at least not without distortion. Most of the single layer fabrics belong to the first category, when those with two or more layers as well as pile fabrics, belong to the second.

Single-layer fabrics can be analysed in a very simple way, once a complete and accurate draw-down of a sample is made. This is the only operation which may present certain difficulties and which requires a lot of attention.

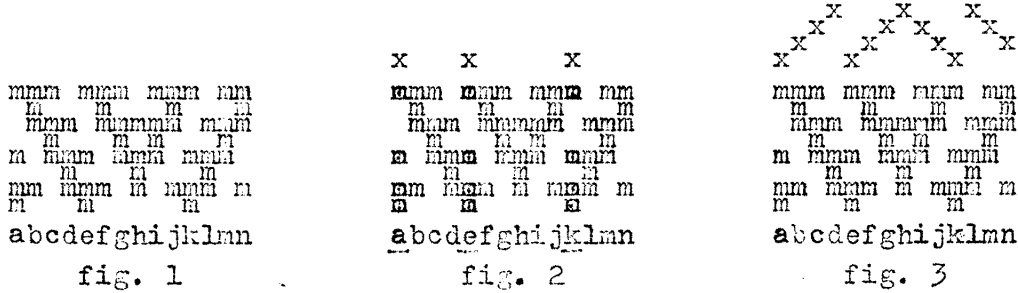
First of all we try to find on the sample just one repeat both in warp and weft i.e. in threading and treadling. When in doubt it is better to take more than one repeat, although this means more work later on. The repeat should be marked off with pins on all four sides. Good, strong light (better not diffused) is necessary, and a magnifying glass may help.

Then we copy this repeat on a piece of graph paper, marking the visible weft - black, and the visible warp - white. Just the opposite is often done in industrial weaving, but the difference is immaterial. One space between lines on the paper corresponds always to one thread, regardless of the actual grist of this thread, and no thread can be omitted, even if we know in advance that it is "only" a binder.

If the individual ends of warp and picks of weft can be hardly distinguished, as for instance in fabrics which have been "processed" (fulling, felting, napping), the only way to make the draw-down is to unravel the sample thread by thread, marking each

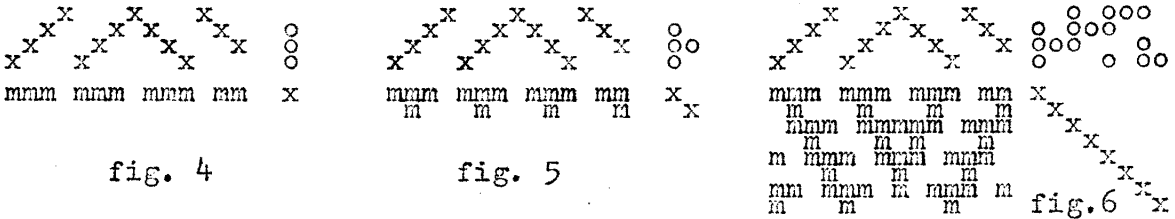
pick of weft after it is separated from the next one, but before removing it from between the warp ends.

Let's suppose that the draw-down we have obtained in this way looks like the one on fig. 1. Its vertical columns correspond to the warp ends, and since we shall start our analysis with the threading draft, we shall turn our attention to them first.



To find the threading draft we have to examine carefully these vertical columns one by one. Identical columns can be woven (and threaded) on the same heddle-frame. For instance columns: a, e, and k are exactly the same, because the warp end in all three goes under one, over three, under one, over one, and under two. Consequently in the threading draft the heddles corresponding to these warp ends can be placed on the same heddle-frame. It does not matter in the least on which, but since we do not know as yet how many frames we are going to use, we shall place them all on frame 1 (fig. 2). In the same way we shall discover that column b is identical with f, j, and n. These four heddles shall be attached to the frame 2. Column c is the same as g, i, and m, and column d - the same as h, and l. The final result shown in fig. 3 is the full threading draft: a, e, k - frame 1; b, f, j, n - frame 2; c, g, i, m - frame 3; d, h, l - frame 4.

The second part of a draft is the tie-up, but since it is interdependent with the treading draft, we shall get these two at the same time. Let's make a treading mark in line with the first



pick of weft. To get this pick we must sink frames: 1, 2, and 3. Thus assuming that we work with sinking shed, we mark the three ties corresponding to these frames on our tie-up draft and directly above the treading mark (fig. 4). We come next to the second pick (fig. 5) which is made by sinking frame 2. We make a mark on the treading draft in line with the second pick and to the right of the first cross, and directly above the corresponding tie. In the same way we analyse the remaining 6 picks of weft. Thus we have a full draft: threading, tie-up, and treading. If our loom has only 6 treadles we shall have to use a different tie-up. For instance:

Here we shall have to use two treadles at the same time.
treading: 2+5, 3, 3+6, 2, 4+6, 1, 1+5, 4.

