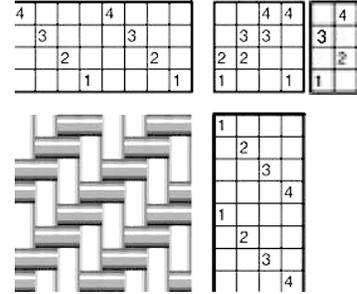


MIXED WARP PROJECTS

A mixed warp is a great way to use up leftover yarn from previous projects. You can mix together different fibers (natural and synthetic) of various thickness including novelty and knitting yarns. While we're often cautioned not to mix yarns when weaving, it works here because each yarn is spread out at regular intervals. Plan on a lap blanket, shawl or scarf.

The recommended weave structure is 2/2 twill on four shafts plus two more treadles for tabby. Threading will be one end per heddle — 1,2,3,4. Treadling will also be 1,2,3,4. The sett will be determined by your particular yarns (more on this below).



PART 1 — BASIC CONCEPTS

Wraps per inch

You will measure wraps per inch (wpi) many times during this project. To do so, snugly wrap a strand of yarn around a wpi tool or two-inch section of a ruler. Don't pull hard, but don't leave any space between the wraps. Count the wraps in 2 inches and divide by 2 for wraps per inch.

The wpi number, plus a little math, will help us determine picks per inch and also ends per inch.

wpi x .66 (that's 2/3's) = twill ends per inch for the warp and
also equals twill picks per inch for the weft.

Some examples:

2/3's of 15 is 10
2/3's of 17 is 11
2/3's of 20 is 13
2/3's of 21 is 14
2/3's of 25 is 16

Planning the finished size of the project

Decide the dimensions of your finished project. Let's use a shawl as an example. Measure from the fingertips of one hand, behind your neck, to the fingertips of the other hand. For the width measure from neck to waist or a little lower. Let's say the measurements come to 70" x 24".

Making notes

In addition to the typical project sheet you use, you'll need to make a few more notes during this project. Use the worksheet on page 5. Your notes will look something like this example:

WARP YARNS	Wraps per inch	Sett for twill	How many ends of each do I have?	Sleying order	Sleying distance (Project= 24" in the reed)
Green mohair	30	20	50	sley 8th	½ inch
Brown wool	15	10	22	2nd	1 inch
Gold wool	21	14	34	4th	¾ inch
Red metallic	15	10	6	1st	4 inches
Tan synthetic	30	20	50	7th	½ inch
Rust silk	30	20	45	6th	½ inch
Cream wool	25	16	33	3rd	¾ inch

PART 2 — THE WEFT

If you choose just one type of yarn for the *weft*, the width of your project will be more consistent rather than traveling in and out. If you choose a thick or very fluffy yarn, it might make the project weft-faced. This isn't necessarily a bad thing but just be aware of it.

Fiber type can affect final size. In addition to take-up, which is about 10% for twill, a weft of synthetic yarn may contract 3-5%. Wool yarn can contract an additional 10%.

To check if you have sufficient yarn for the *weft*, do the wrap test and convert wpi to *picks* per inch (2/3's, see page 1). Then follow this equation:

Width (inches) x ppi x length of project. Divide by 36 for yards. Add 10-20% for take-up and contraction.

Example: My weft yarn is commercial knitting wool. The project is 70" long x 24" wide.

Weft wraps are 12 wpi.

Picks per inch (12 wpi x .66) will be 8 ppi.

The 24" width x 8 ppi = 192, and that multiplied by the 70" length = 13,440 inches

13,440 divided by 36" = 373 yards

I'm adding 15% for take-up / contraction: 373 yds x 0.15 = an additional 56 yards

56 + 373 = 429

For my project 24" and 70" long, I need 429 yards of *weft*.

PART 3 — THE WARP

When planning the warp, write down the project length and add enough additional length for hems (about 6-8" total) or fringe (about 20" total). Also add 15-30% for take-up & contraction. Weaving under high tension is not recommended for these projects, but if you prefer a certain amount of tension, use the higher end of the scale. Add your loom waste of 36"-48" :

Project length (inches) + hems or fringe + take-up (15-30%) + waste ÷ by 36 = warp length

Example: My shawl is 70" plus 6" for hems = 76". Because the warp is mostly wool yarns, I expect 25% for take up/contraction. So multiplying 76" x .25 = 19".

Adding that 19" to 76" equals 95". My loom waste is about 36".

All together it's 131" or 3.6 yards warp length.

To roughly determine if you have enough warp *ends* for the project we can consider the following: Width of the project x dents per inch. But more on this in a minute.

Choosing and winding the yarn

Play with the colors! Pile the yarns on a table to see what looks good to you. Once you've made your choices, determine the wraps per inch for each warp yarn and write it on the worksheet.

Starting with the smallest batch of yarn, wind a chain. Each chain will consist of just one type of yarn. Be sure to tie a choke tie directly **at the starting peg and also at the end peg**. This is important! It's not necessary to make a cross in each of these chains, otherwise you'd need a tiny set of lease sticks for each one. You may wind all your chains in one go, or you may wind a chain, sley, then wind another. In this way you won't wind more than you need for this project.

Choosing the reed

Your thickest yarn determines the reed choice. Let's say your thickest yarn wraps at 15 wpi which converts to a twill epi of 10. This means a 10-dent reed for the project. You don't want the yarn to be dragging through a reed that's so fine it shreds it. And you don't want too-wide a reed because the small yarns will slide around creating open, sleazy areas. That's your word for the day. Sleazy is a weaving term!

For each warp yarn, find the epi (make the 2/3's conversion) and write it on the worksheet (page 5). This will tell us how the yarns *relate to each other*. That's the key to our next step.

Sleying — how dense?

In a mixed-warp project the reed is typically sleyed in an irregular way. For example, just because we've selected a 10-dent reed doesn't mean the warp will be sleyed 10 ends per inch.

The thickest yarn will be sleyed one per dent. Yarns with epi numbers pretty close to your thickest yarn (check your worksheet) will also be sleyed one per dent. But thin yarns that are half as thick will be sleyed two per dent. Ideally when two yarns share a dent, they should be two different yarns. They'll be less likely to tangle with each other.

For yarns with epi numbers that fall somewhere in between (not a one-per-dent, nor 2-per-dent) you have your choice. For a more-drapey fabric, sley these in-between yarns at one per dent. For a more-dense fabric, sley them along with a strand of finer yarn both in the same dent. If you don't sley all the threads from a particular chain, do NOT go back to that chain later on.

To get a *rough* idea if you have enough warp ends, multiply the project width (my shawl example is 24") by the dents (10) = 240 dents needing to be filled. Plan on somewhat more than that, however, since thin yarns need to be doubled in a dent.

Sleying — how far apart?

Each yarn needs to be distributed across the reed at regular intervals. On the worksheet write down the width of your project as well as how many ends you have in each chain. Dividing the project width by the number-of-ends in the chain tells you roughly how far apart to sley them. Sley the chain of fewest ends first and work your way up to the chain with the most ends.

Example: My project is 24" wide and the smallest chain has 6 strands. $24 \text{ divided by } 6 = 4$. I'll sley those *about 4"* apart. The next chain has 22 strands. Dividing 24" by 22 equals *about 1"* apart.

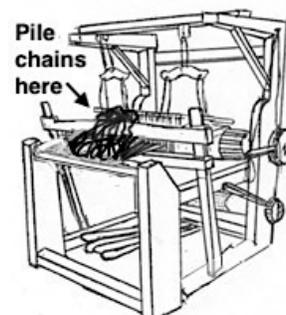
Dressing the loom

Unlike typical warping, where chains are situated side by side, this warp is arranged in layers from top to bottom, like lasagna. This can look like a mess but it's quite manageable when the yarn is handled under tension. Tension is our friend.

Plan on warping from front to back. Place the sleyed reed in the beater with the chains hanging off the front of the loom. At the back of the loom, thread the heddles 1,2,3,4, one thread per heddle regardless of how many are in a dent. Tie on to the back stick.

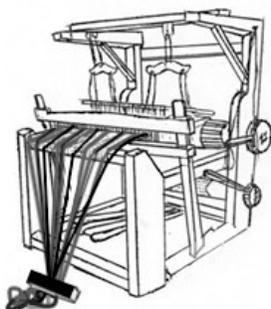
Lean or tie your beater in a fairly upright position. Step on a tabby treadle and insert a lease stick into the shed just behind the beater. Step on the other tabby treadle, insert the other lease stick and tie them together and also to the beater.

Now, lift the chains and gently flip them up on top of the loom so they rest on the beater or lease sticks. Inverting them this way will position the smallest chain — the chain you wound first — at the top of the pile.

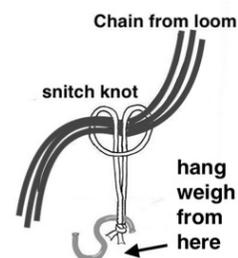


Selecting the smallest chain, untie enough choke ties so you can stand back from the loom while holding the chain. But **DO NOT UNDO** the tie at the very end of the chain.

Hold the chain in one hand and *pull it taut*. With the other hand pluck the threads sideways. The strands will spring apart and untangle. While still maintaining tension on the chain, weight down the straightened portion on the floor with bricks or books. Repeat for each chain.



Ultimately, all the chains will fan from the reed to the floor being held there by a weight or two. With your fingers, divide the warp into smaller groups/bouts, about 5"-8" wide. Using a loop of string, snitch knot the loop around the bout, add an S-hook and hang a weight. Repeat this for each bout.



Roll-on slowly. Watch for tangles as you roll. Threads can tangle in front of the reed, or get caught in the heddles. Run your hand across the warp frequently to check.

Repeat these steps until the ends of the bouts are up off the floor. Each bout will be connected to the neighboring bout and must now be cut. Find the choke tie at the end of the chain and snip the yarn there. Continue rolling on. Tie-on to the front stick, then remove the lease sticks.

Finishing Tip

Synthetics will not tighten up like natural fibers. You can smooth these out after wet-finishing. Lay the piece on a table and with a blunt needle tease the loose strands toward the end of the piece.

