

A TARTAN FOR GENESEE COMMUNITY COLLEGE COMES TO LIFE

By Kathy Cairns Hendershott, handweaver

DESIGN AND COMMUNICATION - Lots of planning before we ever touch a piece of string!

September 2015 – Donna Erhardt contacts the Weaver’s Guild of Rochester to inquire about having someone handweave the tartan recently designed by a GCC student for official registration. The message is forwarded to me, Kathy Cairns Hendershott, a custom handweaver in Warsaw. After several messages and phone conversations, I take the mockup made by the student, and come up with a rough weaving draft that would follow the exacting standards used by traditional tartan weavers – each color has to be an even number of threads in a traditional 2/2 twill.



I also explain that as a custom handweaver, I set a minimum of 15 yards for a custom fabric order. This is because it takes about 20 hours (or more) to “dress the loom”, whether it’s for one yard or a hundred yards. We toss around ideas about how to best use 15+ yards – totes, garments, etc.



October 2015 – Donna visits us at the Letchworth Arts & Crafts Show to get a better feel for my style and quality of handweaving and the look and feel of various handwoven fabrics. She’s considering using the handwoven fabric in her Textiles class for garments and will apply for a grant to cover the cost of the handwoven fabric. Now we wait to see if the grant goes through.

December 2015 – The grant has been approved! The tartan colors are chosen, and we spend a few emails trying to decide about fabric weight and weave. The weave has to be in 2/2 twill (not plain weave) to be registered, the colors need to come close to official GCC colors and still remain pleasing when combined in a tartan, and we decide to use 5/2 perle cotton for luster, strength, and density for making vests. I submit an invoice to GCC requiring a deposit to cover the cost of ordering the yarn.

January 2016 – After spending a couple hours checking and rechecking my calculations, it’s time to order the yarn! We need about 22 pounds of 5/2 cotton

and three different colors set at 20 ends per inch. We're aiming for 17 yards of finished fabric about 36" wide, which will take about 22 yards of warp about 42" wide. I had an "Oh, no!" moment when the company informed me that the blue I chose is no longer available, so I had to choose another. Yarn costs are 30% of the total receipts – a little higher than most of my custom fabrics because the yarn is heavier per yard than the ones I use most often.



Jan. 9 - It's here – 22.6 pounds of yarn! I let Donna know it's here, and have her double-check the specs set by GCC. Since a sample of this fabric will be sent to the Tartan Registry, it has to match the thread count in the colors that are submitted. I've spent at least 13 hours so far in the planning process and we haven't touched a thread yet!

DRESSING THE LOOM – Preparing the yarn to be put on the loom, also known as “warping the loom”. A loom is actually just a “string stretcher” – it holds the lengthwise threads (warp) evenly and under tension and moves threads out of the way so that sideways threads (weft) can form a pattern.

1. Winding the warp - I need 826 total ends of yarn 22 yards long for this order – *18,172 total yards* of thread for the warp. They are wound in order – Blue 28, White 6, Blue 4, Gold 20, Blue 4, White 6 – a full pattern repeat of 68 threads done 12 times, plus adjusting the edges to center the pattern in the fabric. I can only wind 4-5" at a time on my warping reel, so I need 10 “chains” or bundles of thread. *Total time – 9 hours.*



2. Spreading the warp – After arranging the bundles of warp in order across the front of the loom and through the “tensioning sticks” I use to help keep even pressure on the threads, it's time to “spread” the threads through the “raddle” on the back beam. Pegs are set 1" apart, and 20 threads are placed between each one before attaching them to the warp beam in the back of the loom. Then they're tied to the “warp beam” (underneath). *Total time – 1 hour.*



3. Beaming the warp – The warp chains are held under

even tension by someone (usually my hubby or daughters) standing several feet in front of the loom, while I slowly wind it onto the loom, separating each layer of threads with flat sticks and heavy paper. When we reach the end, I separate the chains into two layers and place “lease sticks” between them so that every thread stays in order for the threading process. *Total time – 1½ hours.*

4. Threading the warp – We only need 4 “shafts” to thread a 2/2 twill pattern. Each shaft has “heddles”, through which each individual thread is threaded. For this pattern, the first thread goes through a heddle in the front shaft, the second through a heddle in the second shaft, the third through a heddle in the third shaft, the fourth through a heddle in the last shaft . . . then repeat for the entire 836 threads. This is a simple “straight draw” threading, but takes just as much time as the complicated weaves I do the most. I place a slip knot in every bundle of 20 threads to make sure they can’t slip and get out of place. *Total time – 4½ hours.*

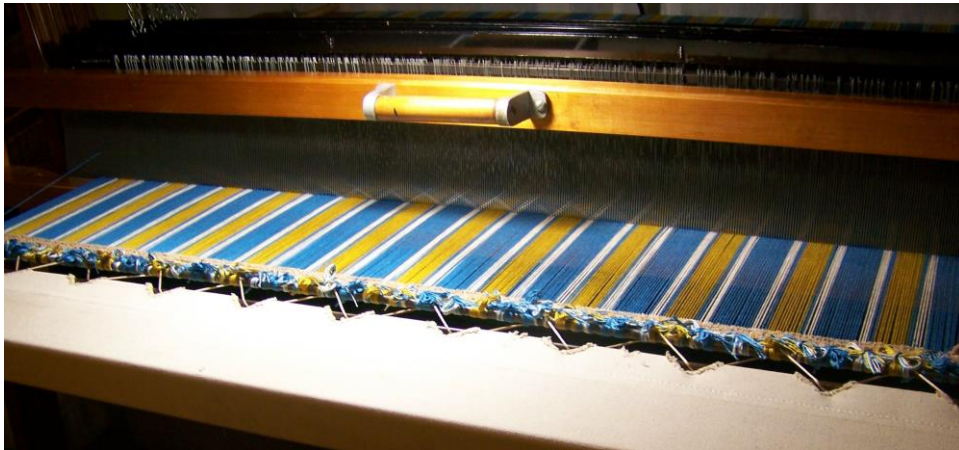


5. Sleying the reed – The “reed” is a length of thin metal slats placed at consistent intervals to keep the threads even while the fabric is being woven. It’s secured in the beater in front of the shafts. Now we pull each thread that’s in the heddles through the reed in order, then again slip knot each bundle to keep them from slipping out. *Total time – 1½ hours.*
6. Tying on the warp – The final step before sample weaving starts! Each bundle of 20 threads is pulled forward and tied with a lark’s head half-knot to the rod that’s attached to the cloth beam. This is a very important step. You must try to get VERY even tension across the entire width. There’s various methods of accomplishing this, but I find that doing a half double knot first, then rechecking and tightening each bundle 2-3 times before tying the knot works best for me. *Total time – ¾ hour.*



7. Sampling for tension and threading errors – It’s very likely that a mistake can occur when threading and sleying over 800 threads. Checking it now for mistakes, correcting them, determining the exact right pressure to each beat to get the same number of threads in the weft per inch as in the warp takes some practice and several inches. We’re ready to go ahead with the custom fabric! *Total time – ½ hour.*

All ready to weave!
TOTAL TIME BEFORE ACTUAL WEAVING STARTS – 30+ hours



WEAVING THE TARTAN – The fabric is constructed.

Tartans are SLOW. I use a different “shuttle” for each color, which has to be put aside and changed every time the colors change, sometimes every 4 rows (pics), sometimes every 28 rows. This makes my weaving speed a LOT slower than a one-shuttle weave – usually about 24” an hour, now I can only go 15” an hour.

I also have to keep measuring the pattern to make sure I’m weaving “to square” – the same number of weft “pics” as warp ends. It’s an exacting test of a weaver’s consistency and patience, which is why very few of us do commissioned tartans. However, I like to do a stretch of tartan every year to keep in practice, and am very glad when it’s over! This will be the longest stretch of tartan I’ve ever done.

At least the treadling is easy. With only two shafts to lift at a time, and a “straight” treadling order (1234, 1234), I can just concentrate on the color changes and the beat.

Each weft thread is placed at an angle in the “shed” (the space between raised and lowered threads), so that there’s enough extra length to compensate for the take-up caused by the thread going “over and under” all the warp threads. You then release the treadle, which closes the shed, and then pull the beater back with a smack to force the weft to nest snugly next to the previous weft thread. It appears to be all one continuous motion to observers - depress the treadle, throw the shuttle, catch the shuttle at the other end, release treadle, beat the weft. Repeat for next thread.



To account for take-up and shrinkage after the fabric is washed, I have to weave almost 20 yards to get 17 yards of finished fabric. I'm looking at 50+ hours more of weaving! I can only do about 4 hours a day on fabric this wide, so I'm looking at two and a half weeks of weaving before it's ready to be cut off the loom!

“FINISHING” THE FABRIC - Being washed in plenty of water allows the threads to shift and take their final place. It also removes the spinning oil used at the thread manufacturer, any dirt or oil on the weaver's hands, and allows the thread to “bloom” – soften and enlarge to its final form. Washing also shrinks the fabric (almost 15% in this case), which is why I make it considerably larger than the desired size.

1. Washing - Once the fabric has been unrolled off the loom, it has to be washed. Many handwoven fabrics have to be “wet-finished” by hand. This is 100% cotton, so it's machine washable (YAY!). Long lengths of fabric can be damaged by washers, so we fold the fabric in sections so that it can't get tangled, and set the washer to Delicate with a cold water wash and two rinse cycles.
2. Drying - Some weavers don't believe in tumble drying handwovens of any kind. While it's true that high heat is damaging to fiber, I feel that fabrics are loved and appreciated best if they're used a lot and easily cleaned. I do put most of my cotton handwovens in the dryer on Low heat.
3. Pressing - After drying the fabric, it's time for a really good steam pressing on both sides. This isn't just for looks. It “sets” the threads permanently in place. 17 yards of fabric will take 6-7 hours, partly because I have to trim all the edge threads close to the selvedge.



We're done after almost 90 hours on this project! Now it's up to the students at GCC to make some beautiful garments with it.