Jacquard Beginnings

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My TC-2 (two modules wide, four modules total) arrived last June and has been up, running, and debugged for about a year. I wish I could say I had done a lot more weaving, but I can say that I have learned a lot. Some of the issues I had are rather embarrassing to admit, but I offer them up in the hopes that others may find use - or humor - in them.

Setting Up the Loom

Delivery

I didn't enjoy arranging customs and the port to house delivery. The first person I dealt with promised to attend to various tasks, never kept me informed, and was always going to do it "On next Monday" but didn't follow through. She apparently quit and then did not pass along my information. The person who took over her job was great, but it was a scramble to get it organized at 1-2 weeks due in port at that point. The first company they contacted to bring it from port to my house went under and we didn't find that out until days before it needed to be moved.

The loom zoomed through customs, went to a town 20 miles from me, then sat and sat for three weeks before it was delivered. They sent the right truck, with the lift gate that you must specify, and were going to leave it at the road despite agreement to roll it into the garage. That confusion taken care of, we hired a couple of strong young men who were bonded (insured) to carry the big parts from the garage up to the second floor. Money very well spent! One side piece was particularly heavy; they were sweating profusely and felt they earned their money. It would have take more of us older, inexperienced people to move it up the narrow stairway, a possible recipe for disaster.

Assembly

The loom went together remarkably easily. There were a few moments of "Wait, what? This doesn't match the video!" but those were resolved with emails and phone calls. Everything was basically together in a day with just the two of us working on it. One slow down was that we thought the loom would come with more hose than it did. Turned out we should have specified that; it was available but not standard. The hose goes from a basement closet, across the basement, through a bedroom closet and into a second floor closet. Unable to find matching hose here, we made do with hard pvc pipe and a bunch of connectors. This entailed cutting a number of new holes and concomitant spousal cursing since it had been cut once for the flexible hose. It's not pretty, but it works.

Electricity

We had an electrician add a dedicated circuit for the loom and the pump, plus some extra lighting. Our main fuse box was nearly full so this meant adding a whole new box, an unexpected extra expense. I found deciphering the electrical needs hair raising, but it all worked out with some emails and phone calls to make sure everything was right.

Computer and Loom Communications

I had a lot of trouble establishing and keeping contact between the loom and the computer. We repeatedly tried re-initiating the modules, several different computers, and different ways of connecting. In the end, a new, low-end dedicated computer and a cable were the solutions to a reliable connection.

Starting Weaving

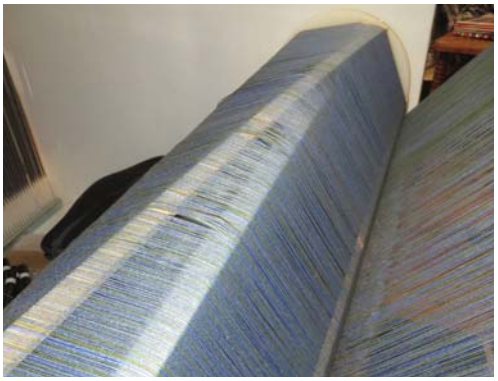
Getting the warp on the loom was something of a case of, "All your weaving experience applies - but everything is subtly different."

Warp Winding

I wound a 14 yard warp of 886 threads on my reel to use the full width at 30 epi with some doubled edge threads. The warp was 20/2 mercerized cotton. I wanted a medium value that I could play against with light and dark values of weft. I also wanted to be able to troubleshoot on plain weave sheds but still have the ends blend enough to be seen as one color against the weft. I alternated a medium blue and green of exactly the same value because those were the only colors I had which were the same value. It was wound two ends at a time with a 2x2 cross. I've done many warps like this on my other looms without any issues.

Beaming

Oh dear. This did not go well. It took four times to get it right. I read the instructions, which said the loom could be beamed without paper. I've always used paper, but figured I'd go with it. The warp went over a trapeze, though a 1" raddle and onto the beam. It got progressively more tangled as the sections built up unevenly. It was a complete mess by the time I got to the end, with up to 12" difference within the bundles. Knowing that this was not good, I threaded, pulled it all forward, and tried re-beaming, detangling everything again. No. Just NO.



Sticks, NO.

No dividers, bad set up. NO.

Next, I tried using sticks. I've never used sticks, but a couple of friends who use sticks advised. We cut a lot of sticks to fit exactly, sanded them all, beamed the whole blasted thing on again, once more detangling all the way. It looked great. However, on the first advance under tension the whole stack collapsed. At least it was threaded at this point. I pulled it all forward again, bought some good weights, and beamed it on with paper which had to be cut to very exact size with precise 90° edges, and put on with precision. My husband manned the paper, I ran the switch and detangling, and it went on perfectly.

Paper, YES!

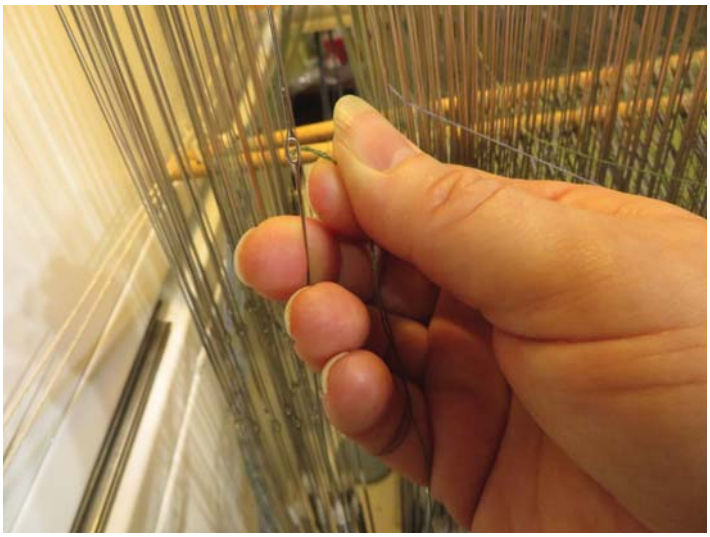
Moral of the story - either stay with what you know or figure out a better way to deal with what you don't. I think the initial problem was the raddle was too coarse and was placed incorrectly relative to the beam and the trapeze. A 6 dpi reed might be better than the raddle and I would position it differently so that the warp is forced to spread more evenly. I wonder if another contributing factor is my plain weave sett of 30 epi, as opposed to a more dense satin or doubleweave sett. Tieing on another warp in front of the heddles would probably help if the module set up will be the same.

Threading

Well. Here was another example where thirty years of experience in getting efficient hand movements did not apply. Threading did not require as much of a reach as it did on my 10-shaft loom, let alone my 32-shaft loom. I treadled the threading in groups of 90 threads, which was fine. Each heddle was pulled to the front to thread (love those springs), with the cross suspended on lease sticks right behind the back module. Inaccuracy in the path chosen to pull the heddle toward the front to thread led to taking out about 200 of the first threads when I realized I had inadvertently crossed a lot of heddles. It was not a big problem once I got used to looking carefully at the base while threading. I also had to pay more attention to not putting a half twist into the heddle while pulling it forward.

The biggest issue was that the heddles did not slide out of the way as they do on shafts. After much experimenting and some creative language borrowed from the beaming process, I ended up tieing the heddles to the right and left of the group I was threading to pull them out of the way. As I threaded each heddle, I slid the thread under a padded, clamped piece of wood so that it would stay out of the way. Then the groups were slip knotted and tied to the side to hold them out of the way.

The heddle eyes were quite a bit smaller than others I have used. I use my fingers to thread rather than a hook. Normally I make a simple loop and stuff it through, very quick and easy. I had to learn (and remember) to roll the loop a little so it was fine enough to go through the smaller eye smoothly.



Another issue was my 2x2 cross and those blue and green threads of the same value. They all looked uniformly grey, even with a lot of lighting. I was able to thread it correctly due to slight differences in reflectivity and texture, but it increased the time needed. Next time I'll use either a 1x1 cross, more contrast, or a non-alternating warp. On the plus side, it did make it easier to troubleshoot on plain weave sheds and be sure everything was lifting correctly. The two colors blended as desired. I've alternated two close values with a 2x2 cross many times before without issues so was surprised to have troubles here. I like the effect, particularly in laces, so will continue to work on this aspect.

Sleying

I lifted a 2x2 "tabby" pattern, moved the lease sticks in front of the heddles, and was able to sley 2 ends per dent in my 15 dent reed easily. I would really love to have a half lift option, but the process went smoothly. The reed supplied with the loom was short a few dents so I ended up cramming one end slightly. Next time I will spread that amount over both ends. It was not a problem in weaving.

Checking and Tieing On

I made my usual check of each bundle on plain weave, tensioned, tied an overhand knot, and lashed on. It all went well.

Setting Tension and Advance

It took a bit of trial and error to find what I liked for settings for this warp and to get it to advance as needed. I'm currently using a tension setting of about 115, which varies a bit. It's a little lower than I am used to using, but is working well.

I was initially setting the advance incorrectly, not understanding where the sensors were. It took some fiddling and discussion with Cathryn, but it is lovely now. I like the auto-advance and the auto-tension mechanisms very much. I've never had anything like them before.

Replacement Part

Over a spell of six to eight weeks I spent a lot of time trying to figure out why I could weave for only short, very loud spells before the whole thing would get erratic and then stop. Being so new to the loom, I thought it was something in how I was weaving, initiating the equipment, or maybe the settings, but definitely my fault. In the end, I threw up my hands and asked for help. It turned out to be a broken vacuum valve. A redesigned replacement was sent and completely solved the problem. Moral: Ask if you need help, and don't wait.

Heddle Troubleshooting

There was a point where I wove a lot of plain weave to make sure all of the heddles were working. I marked the problem heddles with red thread, twiddled to dislodge dust, vacuumed, and in two cases replaced pistons. In the end, all but one is working. The faulty heddle is the very last one on the left side, which I cast out without issue. It felt a little less than Zen-like to be weaving lots of faulty plain weave on very expensive equipment, but it was well worth the time and effort to tune up the heddles.

Weaving

My biggest problem is making time to get to the loom. Outside of the difficulties mentioned above, I am enjoying the weaving and it is now working well mechanically. I broke a few threads early on, but seem to have gotten past the issue that caused them (slack threads from improperly lifting heddles and abraded threads from beaming too many times).

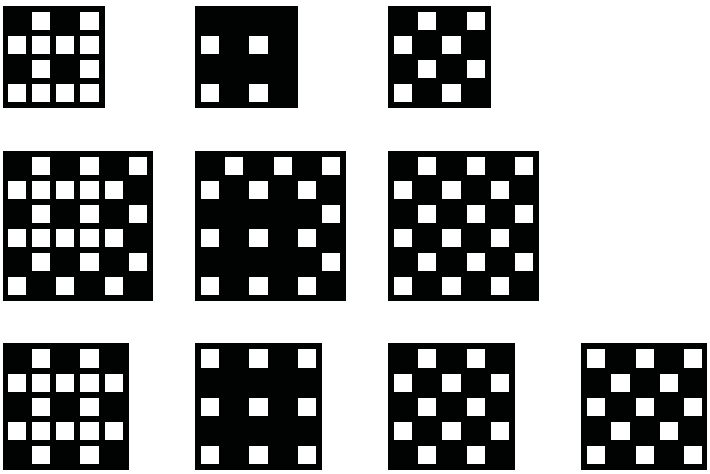
After experimenting with rayon, cotton, and linen wefts, I find I like the linen best while I get acquainted with the loom. It draws in less and is always one of my favorite fibers to weave. After a few yards, my selvages are good and I am doing almost no unweaving to fix errors in selvages or skips.

Eventually, I would like to add some sort of apron or cords to the back to cut waste.

Explorations in Lace Structures

My favorite structures are the lace weaves, including huck, Swedish lace, spot Bronson, and Lace Bronson (a.k.a. Atwater-Bronson lace). I love the pattern options involved in these balanced weaves which have separately controlled warp floats, weft floats, plain (or plain-ish) weave background, often with one or two types of holes. One shuttle in their simplest form, elegant to casual, and adaptable to a wide range of setts, effects, and uses, they make my heart sing. I know that most people are working with twills, satins, tied weaves, taqueté, lampas, doubleweave, etc - that is, thicker, sturdier fabrics with options for greater contrast and multiple colored wefts, resulting in fabrics with greater appeal to the majority of viewers. Beautiful and appreciated, but not my cup of tea.

I started by considering what makes a lace weave a lace weave in shaft-loom convention. The lace weaves are a group of structures based on plain weave with introduced defects (warp and/or weft floats). Conventionally, some warp threads always weave plain weave (1/1), others, the pattern threads, may weave plain weave or floats. Also conventionally, tabby picks are interspersed with pattern picks based on the opposite tabby. If you see a drawdown with a structure that looks like + signs or # signs, you are probably looking at a lace weave. Typically the smallest blocks you can make have 3- or 4-thread floats, and range higher. Pattern picks are doubled in the canvas forms, or a consist of a single thick thread in the diversified plain weave forms.



Single Lace Blocks, all with 5-thread floats (#)

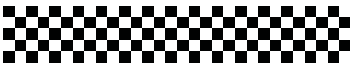
Top Row, 4-thread spot Bronson blocks (not units, non-repeatable) as weft floats, warp floats and plain weave

Middle Row, 6-thread lace Bronson units (repeatable) as weft floats, warp floats and plain weave

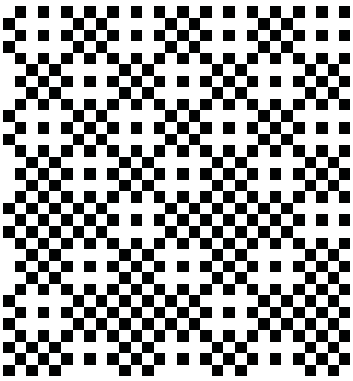
Bottom Row, 5-thread huck blocks (not units, non-repeatable) as weft floats, warp floats and plain weave (2)

Laces as they could be woven in simple patterns on four shafts. All have 5-thread floats (# form) despite the different number of threads in a block.

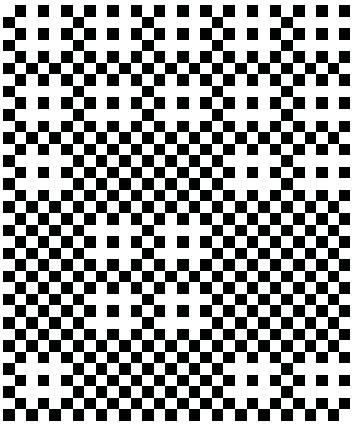
Top to Bottom
Plain weave base



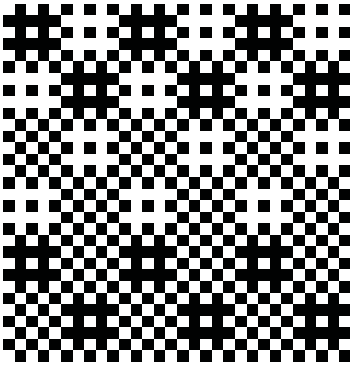
Spot Bronson, all weft floats, on 4-thread blocks. Floats overlap tie-downs on the adjacent blocks.



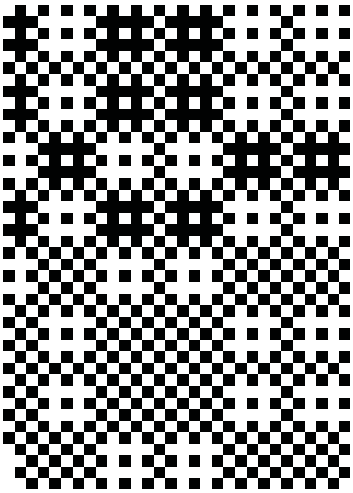
Lace Bronson, all weft floats, on 6-thread blocks. Floats stop one short of the block edges.



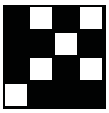
Huck, warp and weft floats, on 5-thread blocks. Floats cover the block exactly and are stopped by the tie-down thread on the next block.



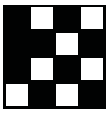
Swedish Lace, which can be considered a mixture of huck and lace Bronson, on 5- (6-) thread blocks. There is an incidental thread which occurs when blocks are repeated in warp or weft.



Clearly there are issues to be solved to be able to flood in the structures correctly. The simplest place to start is on 4x4 grid and see what you can make. Below are the laces I determined five years ago after taking a workshop at NEWS (New England Weavers' Seminars) with Bhakti Ziek. They can be arranged to form units by pairing non-unit blocks in spot Bronson, and putting them in order of their "value" by number of threads on the surface. They are all on a consistent plain weave base and subtract ties sequentially so they all work well together. All floats are three threads (the + form).



10/16 up



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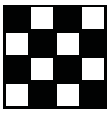

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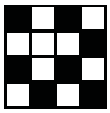

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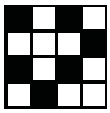

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Left to Right

Two blocks (one unit) of 2-thread spot Bronson, with warp floats
One unit of 4-thread lace Bronson, with warp floats, forms square holes with windows
Plain weave
One unit of 4-thread lace Bronson, with weft floats, forms square holes with windows
Two blocks (one unit) of 2-thread spot Bronson, with weft floats

Mandolin, 4x4 laces

My husband made one request after giving me the loom, that my first piece be a mandolin for him. I took a bunch of photos and decided to use the one below, reduced to five colors.

Mandolin draft for first piece

After the design was made, a lot of cleaning up was done, pixel by pixel. As the detail on page 9 shows, it needs more work. I like subtle, but this is too subtle with 3-thread floats at 30 epi.

To be a little larger on the page the draft is rotated 90° from the way it was woven.