



## Woven Shibori for Texture The Dimensional Texture Study Group

also inside:

- Extended Parallel Weaves: D2T Gives Back
- V-Shaped Shawls Revisited
- Reflections on the COE
- and more

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**Deadline for Article Submission** Articles for the June 2024 issue should be submitted by April 15, 2023. Please send articles or questions to *CWJournalEditorRM@gmail.com*.



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#### In This Issue

- 2 Complex Weavers Seminars 2024
- 3 Complexity 2024
- 4 New Structures for Extended Parallel Weaves: Double Two-Tie Gives Back Linda Schultz
- 10 Enjoy the Process: Pursuing the COE Mickey Stam
- 13 V-Shaped Shawls in Plain Weave and Deflected Double Weave Janney Simpson
- 17 The Dimensional Texture Study Group Stacey Harvey-Brown and Wendy Morris, Coordinators
  - **18 Woven Shibori with Gentle Pleating** Mary Doherty
  - 20 Woven Shibori Eileen Hallman
  - 24 Felted Shibori Using Supplementary Weft Ties Lynn Smetko
  - 28 Woven Shibori with Traveling Curves Amy Parker
  - 31 Shibori for Texture Suzanne Townshend
  - 36 Double Shibori Jennifer Verrall
  - 38 Shibori Wave Forms Stacey Harvey-Brown
  - 40 Woven Shibori for Texture Using Only Natural Fibres Wendy Morris
- 45 Our Advertisers

#### Where to Find the WIFs

A growing number of authors supply drafts with their articles, often in the form of WIFs. Not all drafts that appear in our printed *Journal* have a corresponding WIF online, but many do. To find them, go online to *www.complex-weavers.org* and click on the Galleries page. One section of Galleries is devoted to images and WIFs from the *CW Journal*.

This is another in a series of late editions, but we'll be back on schedule soon. Thank you for your patience.

#### **Back Issues Available**

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#### On the Cover



Wendy Morris opted to use natural fibers to create texture in her woven shibori explorations. The Dimensional Texture Study Group articles start on page 17.

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## **Complex Weavers Seminars**

July 6-9, 2024 The Hyatt Regency Hotel Wichita, Kansas, USA

#### Mark your calendars: it's time to plan for CW Seminars!

The 2024 edition of our gathering that is more than a conference will be held in the days preceding Convergence, in Wichita, Kansas.

Meet friends old and new, and stretch your weaving horizons with seminars from this stellar array of leaders:

- Laura Carlson Steger
- Vila Cox
- Lynn Fitzpatrick
- Brenda Gibson
- Carol James
- Denise Kovnat
- Molly McLaughlin
- Rosalie Neilson
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- Lynn Smetko
- Marian Stubenitsky
- Laura Thode

Make your list, dream your dreams, pack your bags and start planning now – you'll want to be there!

## **COMPLEXITY 2024:** Innovations in Weaving

*Complexity* is our juried international members' exhibition, spotlighting works that employ complex or innovative techniques or weave structures.

Three jurors view, select and comment on entries that are anonymous at the time of judging. The equally weighted judging criteria include:

- Originality of design
- Effective use of complexity through design, technique or weave structure
- Technical excellence
- Visual impact
- Effective use of color palette





Complex weaving is defined by the cloth produced and the mind that created it, not by the equipment used.

The result is a world-class exhibition, which CW proudly presents both in-person and virtually.

Why should a weaver create something and submit it to *Complexity* for possible inclusion? The reasons are as numerous as we are:

- To dive deeply into a structure or technique
- To push the limits of our own design abilities
- To create something that moves us profoundly, then share it
- To challenge ourselves as weavers
- To get feedback from the excellent jurors on our work, with an eye to the future

These challenges (and more) lead to excellence. *Complexity 2024* will display that. Won't you join us? For a full prospectus, visit the CW website.

3

## New Structures for Extended Parallel Weaves (Double Two-Tie Gives Back)

Linda Schultz

#### Introduction

I began my explorations in double two-tie (D2T) by borrowing from the drafting conveniences of divided parallel treadlings for drafting block designs in the tie-up.\* From that I recognized an underlying order and structure to the tie-ups that led to the discovery of hundreds of novel interlacements for D2T structures.\*\* Now it's time for D2T to give back to parallel weaves.

#### **Parallel Weaves**

Parallel threadings in their simplest form consist of an original threading, often a twill threading or a networked design line, interleaved with a copy of itself shifted upward by a set interval. One thread from the original threading alternates with one thread from the copy. Often, a different warp colour is used for the copy, so the warp colours also alternate.

A *divided parallel* devotes a new set of shafts to the parallel copy, doubling the required shafts.

An extended parallel uses the same set of shafts for the original and the parallel copy, so the total number of shafts remains the same. In that case, the copy is often shifted upward by an interval equal to half the number of shafts. For example, if using eight shafts and the original threading begins on shaft one, the parallel copy begins on shaft five (shaft one plus half of eight).

Parallel threadings have been woven as echo, shadow weave and rep, warp-faced compound tabby (*a.k.a.* jin, turned taqueté), and double weave. Some of these structures, such as shadow weave/rep and double-weave, also use parallel treadlings, and for convenience I refer to them as parallel weaves (parallel in both threading and treadling).

There are variations on these structures where the interval between the original threading and its copy is no longer even (*i.e.*, no longer equal to half the number of shafts) (see Resources for note on *Corris II*), or where the block designs no longer strictly match in each half of the tie-up (the designs may be shifted out of sync or changes in the design have been made in only one of the parallel halves) (see Resources for note on *Echo* 

- 1 Schultz, Linda. "Parallel Drafting in Double Two-Tie Weaves," *Complex Weavers Journal*, number 128, February 2022, pp.33-39.
- 2 Schultz, Linda. "Double Two-Tie Structure Pair Sets," *Complex Weavers Journal*, number 130, October 2022, pp.5-14.

and Iris). This results in different structures appearing in the drawdown, which can add interest to the cloth. It turns out that the explanation for why this happens is related to D2T.

#### **Double Two-Tie Structures**

A D2T unit is threaded with two tie-down shafts (T) alternating with two pattern shafts (P) in a T1, P1, T2, P2 arrangement. The tie-down shafts are the same in each unit, while the pattern shafts change from unit to unit. The treadling consists of four picks (W). The original description of D2T places those picks in a straight draw arrangement (W1, W2, W3, W4), but I shuffled the picks to take a divided parallel arrangement instead (W1, W3, W2, W4). Not only does this make it easier to draft block designs, but looking carefully at the divided parallel tie-ups led me to recognize an underlying foundation to the tie-up consisting of different arrangements of 2x2 squares within four quadrants (Q).

Double two-tie with a divided parallel treadling can be thought of as two warps (a pattern warp and a tiedown warp) with two wefts (the first and second half of the treadles in a divided parallel treadling). The tie-up then consists of four quadrants, representing each combination of the two warps (either P1, P2 or T1, T2) with the two wefts (W1, W2 or W3, W4) (*Figure 1*).

Within each quadrant, 2x2 squares control the tie-up for the relevant two shafts and two treadles. Each



Figure 1. Sample draft identifying structure quadrants, showing the 2x2 squares (in red), the warp pairs (in green) and the wefts (in orange)

structure in D2T is determined by the unique combination of the four  $2 \times 2$  squares (one for each quadrant) used in the tie-up (*Figure 1*).

To organize and document these structures, each arrangement of filled/unfilled squares within the  $2 \times 2$  square, along with its prime or opposite, is given an identifying number (*Figure 2*). The two  $2 \times 2$  squares which are used horizontally in the tie-up are formed into a 'pair' (e.g., 5,1' for Q1, Q2 or Q3, Q4). And the two pairs which are stacked vertically to determine the structure form a 'set' (e.g., 5,1' (for Q3, Q4) and 1',2 (for Q1, Q2)), giving a *structure pair set*.

Once D2T structures are arranged in this manner, it becomes obvious that even though there are sixteen possible 2x2 squares that could be used in each quadrant, the actual number commonly in use is much smaller — mostly just the first two with their primes (1, 1', 2, 2') plus some use of the next two (3, 3', 4, 4'). By using all sixteen possible 2x2 squares in all possible combinations instead, hundreds of novel structures became apparent.



#### **Putting Them Together**

Parallel weaves can also be thought of as a system of two warps and two wefts, which also results in a tie-up consisting of four quadrants. This is most obvious if you are using divided parallel threadings and treadlings for a block design, like a block double weave draft (*Figure 3a*). Extended parallel threadings with a divided parallel treadling, like four-colour double weave, also have quadrants, but on a diagonal (*Figure 3b*).



Figure 3a. Quadrants for block double weave on a divided threading and treadling



Figure 3b. Diagonal quadrants for four-colour double weave on an extended threading

If each of the two warps and two wefts in a parallel weave also follow an odd-even arrangement on successive ends, such as parallel warps based on a twill threading or on a network divisible by two, then the tieup in each quadrant can also be based on a 2x2 square in the same manner as D2T. And if we look at parallel weaves in this manner, we find that like D2T, only two of the sixteen possible 2x2 squares, with their primes, are commonly used (1, 1', 2, 2'). Each of the parallel weaves — shadow/rep weave, warp-faced compound tabby, and double weave — are formed from some combination of those four. Even the variations I mentioned earlier, which result in different structures appearing in the cloth, are just some additional combinations from among those four.

So ... what if I took the tie-ups for the novel D2T interlacements and used them for parallel weaves? The answer, it turns out, is that you get hundreds of new structures to weave on your parallel threadings. And because parallel threadings can be extended, while D2T threadings cannot, you also get additional colour interactions (as you do with four-colour double weave) when you choose to weave a particular structure on an

5

Quadrants			Quadrants
1	3'	7'	2
	2	7	
3	1	4'	4
	1'	4	

Figure 4. Structure pair sets in green vs. orange

extended parallel threading instead of a D2T threading.

Different structures can be combined, just as they can be in D2T. The big difference is that there are no longer shared 'tie-down' shafts to contend with, so any structures can be combined. The number of potential combinations of two structures is in the thousands, and the number of potential combinations of three structures is in the millions. With numbers like that, I've only scratched the surface. But to demonstrate the results, I've picked out four that I like. Two of these contrast the front and back of the same structure, and two combine two different structures.

#### **Drafting Extended Parallel D2T Structures**

Any suitable parallel threading can be used for these structures, although sometimes long floats form at transition areas.

Like D2T, the design comes from a contrast – either the contrast between the front and back face of a structure where both faces can be woven on the same side at the same time in different blocks, or the contrast between two different structures in different blocks.

However, with extended parallel threadings there is a

third kind of contrast which is due solely to colour. If you weave the same structure in every block, but use two contrasting colours in the warp, the design will show as one colour when it is weaving in the bottom half of the threading, and a different colour when it is weaving in the top half. So an extended parallel threading using alternating colours in the warp creates additional pattern in the cloth, along with the pattern from a contrast in structure or contrast in the front and back face.



Figure 5c. Copy/Paste into tie-up, first half

6

10.00

These designs are drafted using a parallel diagonal tie-up, so the quadrants have the diagonal form from Figure 3b. It helps to make a chart of your structure pair sets, showing which 2x2 square goes into each quadrant, including the 2x2 squares from the contrasting structure within each quadrant (*Figure 4*).

Start by drafting the relevant 2x2 squares on the first two treadles on the diagonal, using the top half as Q1 or Q2, and the bottom half as Q3 or Q4. Within each quadrant/half, part of the quadrant will be used to draft one structure or one face, and the remaining part will draft the contrasting structure(s) or face(s). I have used a 50/50 proportion for my samples, but other proportions can be chosen.

Once the first two treadles are drafted, then they can be repeated in pairs, advancing by two steps on a diagonal, with each repeat. If using weaving software to fill the tie-up, I open a separate draft with a tie-up of the same size, so I can fill in the first two treadles and use Diagonal repeat or Twill repeat to fill the remaining treadles. Then I copy/paste the relevant tie-up into each half of the draft. The steps for one of the samples are illustrated in these pages (*Figures 5a through 5f*).

Woven examples of the results of these processes are shown in Figures 6 through 9.



Figure 5f. Copy/Paste into second half to complete tie-up

7



**Figure 6. Fabric: 1',4 and 2,7 vs. 1,4' and 3',7', front and back** *A WIF is available on the Complex Weavers website* 



**Figure 7. Fabric: 1',4 and 2,7 vs. opposite face, front and back** *A WIF is available on the Complex Weavers website* 



**Figure 8. Fabric: 1',5 and 5,7 vs. opposite face, front and back** *A WIF is available on the Complex Weavers website* 



**Figure 9. Fabric: 2,3 and 4,1' vs. double weave, front and back** *A WIF is available on the Complex Weavers website* 



Figure 10. Effect of changing order of alternating dark and light weft A WIF is available on the CW website



Figure 11. Drawdown: Four-shaft extended parallel version of 'Blooming Leaf' using 8,6 and 8',6' A WIF is available on the Complex Weavers website

#### **Final Notes**

Sampling is necessary whenever these new structures and combinations are attempted. The appearance of the structure on the drawdown is often not the same as the appearance in the finished cloth. The back face of the cloth may look quite different from the front when the contrast comes from two different structures, or if one structure is woven with two colours alternating in the weft. Changing the starting colour when using two alternating colours in the weft may dramatically change the appearance (*Figure 10*). And always check for floats on the back or front, as the warp and weft may not interlace in some of the transition areas.

While I wove my samples on a 24-shaft loom, these structures work to show pattern with as few as four shafts (*Figure 11*).

#### Resources

- Barrett, Clotilde, and Smith, Eunice. *Double Two-Tie Unit Weaves*. Boulder, Colorado: Weaver's Journal Publications, 1983. *The definitive reference on double two-tie unit weaves, and it's still in print.*
- Coe, Marg. Background on Corris II: www.complexweavers.org/seminar-leader/marg-coe/?seminar=9785 Also, see Marg's website: coeweaves.com
- Kovnat, Denise. An excellent background on parallel weaves: www.denisekovnat.com/2017/01/the-warpthat-keeps-on-giving-echo.html
- Schultz, Linda. 'Parallel Drafting in Double Two-Tie Weaves.' *Complex Weavers Journal*, issue 128, February 2022.
- Schultz, Linda. 'Double Two-Tie Structure Pair Sets.' Complex Weavers Journal, issue 130, October 2022.
- Stubenitsky, Marian. Weaving with Echo and Iris. Uden, Netherlands: Drukwerk der Kinderen, 2014. Special note on adding changes to the tie-up, pp. 111–115.

## Enjoy the Process: Pursuing the COE

#### Mickey Stam

Other weavers often ask me how I found the time to complete two levels of the Handweavers Guild of America's Certificate of Excellence (COE). Well, that is easy to answer. Being retired and living alone, it is easier to set my own priorities and schedule. But I'm convinced that anyone with other obligations can do the same thing; it just might take a little longer. Why I decided to take on and then complete the nearly four-year process can be explained simply by saying that I enjoyed it. This article is intended to elaborate.

I started weaving when I was in a master's program in the History of Decorative Arts in America in the late 1990s. I was working full-time, and the classes were a nice diversion from my managerial and IT development responsibilities. I felt the degree would also give me some credibility to teach and write about the history of quilts. However, my head was turned by the challenges I found in weaving, and I soon left quilting behind.

I had been weaving about 12 years when I took a class with Randall Darwall at Penland School of Craft. He asked each of us how many warps we had put on the loom. When I had to answer 12 (or one a year), I realized I had not developed the skills that I could have acquired in that time. I knew that HGA awarded certificates of proficiency for weaving, spinning, dyeing, and basketmaking. That's when I decided the rigors of the first level of the COE would allow me to experience a wide range of types of weaving, and I figured that by the end, I would know what kind of weaving I really enjoyed most, plus I would have the satisfaction of a 'good girl' certificate on my wall.



Figure 1. One-hundred-bobbin rack built for a velvet sample that wasn't included in the COE Level I submission, due to a bad design and failure to adequately secure the cut pile in the web

#### COE Level I

The first level of the COE requires forty samples of different types of weaving, from plain weave to leno to tapestry. My first task was to create a schedule that would spread the required samples and support information over a year before the HGA deadline in the fall of 2014. I also allowed a couple of months for editing and organizing my submission. This schedule was the key to meeting the deadline, but also to my enjoyment of the process. I needed only to focus on one section at a time and not worry about what was coming up. If I finished a section early, I'd take a breather, rather than jump directly into the next one on the schedule.

Fortunately I went to Convergence the summer before the fall deadline and asked Robyn Spady to give me feedback on a few of my samples. I had spent an inordinate amount of time designing and experimenting with velvet (*Figure 1*). My sample had cute little tufts of pile, but I knew they weren't secured enough in the web. Naturally Robyn commented on that, but also pointed out that the velvet should have covered more of the sample, rather than just those few spots. As soon as I got home, I pulled the velvet and redid my sample as white terry cloth, which wasn't as interesting but more acceptable to the judges. Thank you, Robyn.

I developed a broad library of weaving books as I tried to understand the various assignments. However, I'd get a new book on an unfamiliar structure and my first reaction was usually "WTF?, I'll never figure this out!" — and then I would. Often I'd just put a threading and tie-up from the book on my Baby Wolf, and gradually begin to fathom what was going on as I treadled. And from that point onward I could experiment. After a few error-filled attempts, finally an acceptable sample would be done. Another structure under my belt.

Weeks before the deadline, I found great pleasure in sending off a couple of boxes to HGA filled with samples of my efforts. Today, I still enjoy looking at the framed Level I certificate on the wall.

Unfortunately, the Level I COE didn't help me narrow down the types of weaving I wanted to focus on. I continue to be a 'Jack of All Trades, Master of None.' I might not be able to correctly name a structure put down in front of me, but I'm confident that, with the help of one of my books and the Internet, I can weave most of them. No question, the COE Level I built my confidence and was worth the effort.

#### COE Level II

Another eight years and a book passed by before I seriously considered working on the second level of the COE, which is more like a master's degree where there is a statement that needs to be proven.

The idea of exploring mohair began to germinate when I heard Dawn Brown, owner of Independence Wool and an angora goat farmer, talk about the history of mohair production in Texas, the ending of government subsidies, and PETA's recent mohair boycott.

I started exploring mohair on the internet. Unfortunately, to many, mohair means only fuzzy blankets and outdated sweaters. However, shiny mohair suits were popular with young Teddy boys in the 1950s and 60s, and continues to be valued by the elite for wrinkle- and stain resistant bespoke suits. That dichotomy intrigued me. Were there ways to weave mohair so that the fiber's luster, durability, and sometimes softness are preserved?

For every new thing I learned, another question needed answering. Given mohair's fall from popularity there was little current literature available to handweavers. Thus I wanted to share what I was learning, but it was too much information to convey in a magazine article or two. The second level of the COE seemed to be the best vehicle.

While I titled my effort 'Weaving with Mohair' to help me focus, I felt that I needed to update information on the fiber itself, with chapters on the characteristics of the angora goat, animal farming, production history and

commercial and hand production of the yarn before I got to the actual weaving. I picked a deadline about two and a half years away and got to work.

My schedule wasn't quite as structured as it had been for Level I, but I developed a Table of Contents early to help me organize my research. I admit to flitting from one organizational method, such as 3x5 cards, to another early on, as I struggled with the most effective way to store and retrieve the wealth of information I was discovering, like scientific research and textile industry data. Handweavers may have forsaken mohair in the past 40 years, but universities and commercial researchers continued to see the potential for money to be made in more efficient machinery and smooth, strong mohair yarns.

I can honestly say that the research brought me much joy. I yelled with delight the day I found a webpage that gave detail specifications and names for very fine smooth 'compact' mohair yarns. Finally I had a name for the yarn used to weave high-end, wrinkle-resistant, custom-made mohair suits. From there I could find the technology advances used to make the yarns and the wholesale companies that sold them. Unfortunately, none sell individual cones to handweavers. I'm counting on spinning mills and retailers eventually recognizing that handweavers are a viable market for very fine, smooth mohair yarn.

The COE motivated me to visit small angora goat farms and talk to breeders in Maryland and Texas. I learned so much from each one and gained even more respect for their efforts. And, oh my goodness, what a joy to touch the fiber. I loved acquiring locks, roving, and top in so many natural colors: black, red, brown, gray, and white. And I found satisfaction in comparing the different grades of the animal, from super kid, kid, yearling, to adult, along with understanding the controversies around those age-related categories. I learned a lot by collecting commercial fabric swatches and yarn samples. My own spinning and weaving resulted in failures as well as happy successes.

My research and experimentation filled four binders (*Figure 2*) that included samples of mohair fiber, yarn, and cloth, both commercial and hand-spun. While the resulting COE Level II certificate on the wall is nice, the process of getting it couldn't have been more fun or satisfying.

On the other hand, I have been impressed with Americans that I have met who are working toward the five-year Master Weavers Certificate at Olds College



Figure 2. COE Level II submission binders, with sample yarn catalog to the right of Binder 3. Far right is a top woven with handspun kid mohair weft and commercial cotton warp

of Agriculture and Technology in Canada. They are required to take workshops at the school and occasionally classes are offered in the States.

Ultimately, I am happy that I chose the COE route. Certainly the \$300 fee for each of the two levels was less expensive than the program at Olds College, especially when you add in travel expenses. However, I am privileged to belong to a skilled and vibrant guild, with experts to confer with when I got stuck. Along the way I was able to take guild and conference workshops when needed. All and all, the HGA's program was the right one for me.

I'm hoping that this article encourages you to consider pursuing such an effort. My method of scheduling and organization might not be your way of attacking a project. A looser, more open approach might work very well for you, especially when you are not working toward a certificate or specific deadline. But unless you are a masochist, I recommend that you attempt the Certificate of Excellence, Olds College's program, or another long-term learning opportunity only if you expect you will find excitement and

pleasure in the process. That way, if you decide before completion that it wasn't for you, so what? You will have gained skills and self-knowledge along the way.

#### Biography

Mickey Stam earned her HGA Certificate of Excellence Level I in 2014 and Level II with 'Weaving with Mohair' in 2022. She is the author of *Innovative Weaving, A Guide for Study Groups*. Her masters degree is in the History of Decorative Arts in America from Parsons School of Design and the Smithsonian Institution. She is an active member of the Weavers and Spinners Society of Austin.



Figure 3. Detail of woven top submitted for COE Level II. Fine handspun mohair weft and 20/2 cotton warp, woven by Mickey Stam

#### Resources

- HGA Certificate of Excellence: weavespindye.org/certificate-of-excellence
- Olds College Master Weaver Certificate program: www.oldscollege.ca/programs/continuing-education/ fibre-arts/master-weaver-certificate.html
- *Editor's Endnote:* Olds College closed down its Master Weaver Program this year and no longer accepts new applicants. That loss to the weaving world is offset by the emergence of a new program for study and certification: the Master Weaving program at the Yadkin Valley Fiber Center in North Carolina: *www. yadkinvalleyfibercenter.org/yvfc-master-weaving*

#### Complex Weavers Friendship Fund

This is a small notice about an important fund.

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## V-Shaped Shawls in Plain Weave and Deflected Double Weave

#### Janney Simpson

Last spring my friend, Susan Morrison, taught a workshop in Connecticut on V-shaped shawls. This is one of her favorite techniques, which she says she learned from Tom Knisely. I had never woven one of these magical creations, had recently moved, and despite my active interest, was not able to take her workshop.

Coincidentally, though, I was weaving deflected double weave using a four-block advancing twill as a profile draft. Since plain weave can also be woven on this threading (thanks to the odd-even sequence), I decided to weave my first V-shaped shawl on that warp.

#### The Approach

Basically, to weave a V-shaped shawl, the first panel is woven in plain weave, removed from the loom, and set aside. The second panel is also woven in plain weave; and following that, the first panel is woven back into the second panel, most often in plain weave as well.

Because I already had my loom threaded for deflected double weave, I wove the first panel back into the second panel in deflected double weave rather than plain weave.



Figure 1. V-shaped shawl, woven in 18/2 Wool-silk and 10/2 hand-painted Tencel

The results were compelling, and well worth sharing (*Figures 1 through 6*).



Figure 2. V-shaped shawl in 18/2 Wool-silk and an array of five colors of 8/2 Tencel



Figure 3. Detail view of the shawl in Figure 2



Figure 4. Focus on the 'V' of the shawl in Figure 2



Figure 5. Other materials: V-shaped shawl woven in 18/2 Wool-silk and Bambu 12 Woven by Mary Fechner

## The Process of Weaving a V-Shawl with a DDW Joining Panel

The following paragraphs describe the steps involved in weaving a V-shaped shawl, along with some tips.

- After tying on, allow 8" (20 cm) for fringe, then weave two picks of plain weave with 5/2 perle cotton to serve as a binder, preferably in a contrasting color. Weave the first 30" (76 cm) panel in plain weave.
- 2 At the end of the first panel, before cutting it off, weave another two picks of plain weave with 5/2 perle cotton as a binder to keep things in order. Each of these warp ends will be woven in exact thread-by-thread order later, when the first panel is woven into the second panel.
- 3 Before cutting off the first panel, carefully wind the warp forward. It is necessary to leave enough warp length at the end of the first panel equal to the width of your warp, plus uptake and fringe. In the case of the shawls shown here, I advanced the warp 24" (61 cm) before cutting the first panel off the loom.
- 4 Cut in front of the reed, and tie slip knots across the remaining warp to keep your warp ends in secure bundles. Re-tie the warp onto the front apron rod. Leave 8" (20 cm) for fringe, weave two picks of binder, and weave a second panel in plain weave for 30" (76 cm).



**Figure 6. Detail of DDW section of shawl in Figure 5** *Woven by Mary Fechner* 

- **5** Weave the first panel into the warp on the loom as follows:
  - Place a small table close to the loom on the left side.
  - Lay the first panel flat on the table.
  - Make a sling with a shoestring to support the 'ponytail' of 24" long warp ends from the castle of the loom. (A stand or light pole will suffice if your loom has no castle.)
  - Position the 'ponytail' of warp ends so you can see the 5/2 perle cotton binder thread (*Figure 7*).



Figure 7. Suspended 'ponytail' of warp ends to re-weave into deflected double weave section. Note that binder thread is clearly visible

- 6 Working from left to right, carefully pick the cross, thread by thread, to weave all the blocks in the deflected double weave treadling sequence order (*Figure 8*). Line them up as you weave so they integrate well. The stripe in the plain weave cloth should line up with the block of deflected double weave you are weaving. Adjust your beat to line them up. After each eight-pick block, bundle the eight weft picks together with a gentle twist and small binder clip positioned close to the right selvedge to keep them together (*Figure 9*).
- 7 Pay attention to the left selvedge as you enter each weft pick so that the weft always weaves plain weave or floats under the first warp block on the left for continuity.



Figure 8. Re-weaving the first panel into the second panel as wefts in deflected double weave



Figure 9. Small metal clips holding the rewoven warp ends (from panel 1) at the side for fringe

#### **Finishing and Final Notes**

The result is a shawl made of two lengths of plain weave connected at the 'V' in deflected double weave. Once off the loom, twist the fringe on all four sides. Wash gently, lay flat to dry. Press with a cloth to prevent irreversible shine.

Figure 10 shows the draft used for the three V-shaped shawls shown in this article. Each warp uses the same threading and was sett at 30 epi, but varies in the material used. In these shawls, the warp combined 18/2 Zephyr Wool-silk with one of the following: 8/2 Tencel, 10/2 Tencel, or Bambu 12.

Figure 10. Draft for V-shaped shawl in deflected double weave, asymmetrical pattern A WIF is available on the Complex Weavers website



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## The Dimensional Texture Study Group

Stacey Harvey-Brown and Wendy Morris, Coordinators

After the Collapse Pleat Bump Study Group folded, some of us (we who love the excitement of seeing what happens when the flat web of warp and weft leaves the loom and – hopefully! – does something funky) were missing the opportunity to share our explorations. And so four years ago the Dimensional Texture Study Group came into existence, with the aim of filling that gap, but differently. Rather than covering the whole gamut of collapse, pleat, and bump techniques every year, all members of the group would focus each year on the same technique, sharing our explorations and coming to understand it in more depth and breadth than we would if we worked alone.

We have an annual sample exchange because it's simply not realistic to assess dimensional texture by photo alone, even if everyone were an expert photographer (I wish!). But samples are not required to be beautiful. The best samples are those that explore a new approach or material, whether successful or not; in fact, samples that failed to do what was hoped for can teach us more than successes. They are trials, rehearsals, attempts to find out what a tool in the toolbox can do, so that we can plan the full performance, design the complete production when the time and our knowledge are right.

Our first topic for study was stitched double cloth, bringing lots of opportunity to explore how different materials behave in creating differential shrinkage and how scale and patterning affect dimensionality. The second year we focused on waffles, and those of us who were concerned there wouldn't be enough to get our teeth into were quickly disabused! Indeed some members of the group still had angles to pursue, so for the third year we chose, not a particular weave structure or technique, but the topic 'Floats as Agents of Change'. This of course is not something you can look up in an index. It requires thought and understanding of how interlacement and materials work to create dimensionality in cloth. In 2022–23 we looked at woven shibori for texture, a very specific way of using floats to create texture and again giving ample opportunities for exploring the use and effectiveness of different materials as well as different techniques, scale, and patterns. Leading on from that, in the current year we are looking at pleats, so anyone who wishes can take their shibori studies further, although there are many other possibilities to investigate. There is a twist though: our studies are being informed by a design source – mushrooms! Magic mushrooms, maybe?

The works presented in this group of articles reflect our first foray into woven shibori.

By working together as a group we have been able to explore many more materials and techniques than any of us alone could have done in the same amount of time. The range of thermoplastic yarns (and other yarns with memory) that we've worked with includes:

- acrylic
- polyester
- merino wool
- lambswool
- high twist yarns
- paper yarns
- silk/stainless steel and other wire/fibre combinations

We worked with warp shibori, weft shibori and double shibori in a variety of weave structures including double weave. We learnt there is more than one way of using felting to create a shibori texture. We had beautiful experimental work such as discontinuous shibori in warp and weft. We've been inspired by sashiko ori and dressmakers' pleats and pintucks. And we were able to establish that it is the overall proportion of the memory element in the cloth that matters, not the direction of the gathering threads, as has been popularly believed. We've had a good year's study!



## Woven Shibori with Gentle Pleating

#### Mary Doherty

Dimensional Texture Study Group



Figure 1. Liftplan showing ground cloth and shibori gathering picks

A WIF is available on the CW website

My introduction to shibori was at a weaving conference in 2005 as a relatively new weaver. In the workshop we were given a piece of cotton fabric. With sewing thread, we stitched a pattern for the design. The sewing thread was pulled in tightly, in my case very tightly, and firmly tied off. The cloth samples were then immersed in an indigo dye vat. I never did manage to get all those sewing threads out, but this was my initial insight into shibori, and it was inspirational.

For my woven shibori project I wanted to create a fabric with texture that also offered drape. To achieve drape, I used a twill: 2/2 twill for the ground cloth with 4/4 twill for the shibori pull threads. My warp choice was 8/2 Tencel. For weft planning I sampled active, shrinking, and stable yarns with varying results. I decided to use polyester for my weft yarn which would ensure permanent pleating. I was able to evaluate the



Draft for pattern picks (pull-threads) woven in 4/4 twill; ground weave (not shown) is woven in 2/2 twill with 8 picks per pattern pick.

Figure 2. Two repeats of the liftplan for the shibori pull threads only



Figure 3. The cloth on the loom

permanence of the pleating with a sample that flattened in storage. The cloth recovered its pleats after spritzing with water.

In sampling I used a 5/2 bamboo for my pull thread. I could have used a less sturdy thread, but I found the larger yarn contributed to the lacy effect and hand of the finished cloth.

*Finishing:* After pulling and securing the pattern threads, the samples were hand steamed using a garment steamer periodically for over 45 minutes. Small, steamed samples were placed on a rack in the dryer at cool setting for 15 to 20 minutes to dry. The large sample was laid flat to dry.

- Warp: 8/2 Tencel, Mineral Green; from Caledonia Dye Works; 3360 ypp
- Sett: 20 epi
- Weft: 8/2 polyester, Aqua; from Maurice Brassard; 3360 ypp

Weft density: 24 ppi

- Pull threads: 5/2 bamboo; from Caledonia Dye Works
- Shrinkage and take-up: 6% in length, 26% in width





Figure 4. The finished fabric length as a scarf

It is a thrill to see the transformation of shibori-woven cloth from its flattened loom state to a pleasing textured cloth with movement.

#### Resources

- Ellis, Catharine. *Woven Shibori, Revised and Updated*. Interweave Press, 2016.
- Totten, Dianne. "Woven Shibori, Making Crimp Cloth" (Video). Long Thread Media.

Figure 5. Detail of the finished cloth

## Woven Shibori

#### Eileen Hallman

#### Dimensional Texture Study Group

I have woven quite a bit of weft shibori, but never tried taiten (warp) shibori. Once upon a time when I was taking a class with Catharine Ellis, I wove with polyester and really liked the effect; but as a natural dyer, I prefer natural fibers. I had made a scarf that year and it contracted so much that I never offered it for sale. I left ungathered sections at each end and also really liked the ruffle effect (*Figure 1*). So, I thought, what if I tried to turn it so the gathers were vertical and there were ruffles on the sides?

I wondered if I could create a scarf using warp shibori with tight pleats that did not relax with gravity. That was the goal, and the bottom line is that I did not succeed



Figure 1. Polyester weft used in weft shibori. Plain weave ground; no shibori in ruffled ends

with zero relaxation. With relaxation, the texture is still very evident, and I do like the final result.

But to get there, I first tried some cotton-wrapped polyester sewing thread from my sewing cabinet. They were of mixed weights, but all very fine.

I used different weight wefts to see what gravity would do with weight change. I was able to see fairly tight pleats with a 50/2 (cotton count) rayon weft, but did not want the weaving to take forever, so rejected that as weft.

I sampled some heavier weight cotton-wrapped polyester sewing thread as weft, thinking it would give stronger pleats. It did, so I decided to use it as my weft.

I started with a fairly fine diamond pattern in the gathering threads, and in a small sample it appeared that it would hold up to gravity (*Figure 2*).





Figure 3. Final result of the diamond experiments in a scarf. I used cotton-covered polyester so I could dye it

However, not one to leave well enough alone, I decided that the pattern was not bold enough. So I changed two things: the density of the gathering threads and the size of the diamonds (*Figure 3*). I lost some of the ability to overcome gravity in the process.

When I finished my samples, I decided to introduce woven shibori to woven sashiko. In the first samples I used silk in both warp and weft, with the idea that I would gather in both directions. I used five simple *hitomezashi* patterns, weaving approximately four to five inches of each pattern (*Figure 4*). After gathering in both directions, I steamed the fabric and then dyed it in the fresh indigo ice water 'Blue Bath'.

I then decided to introduce shibori for dyeing into the mix with a bit of global fusion – Peruvian cotton, in a Japanese structure, inspired by African mud cloth.



Figure 4. Shibori-sashiko sampler. Patterns were woven in order, but not exactly to scale

I used a natural brown 10/2 cotton for both warp and weft in a draft of a *hitomezashi* pattern (*Figure* 5).

I made the squares  $8\times8$  thinking that scale might give me a little dyed block, and it did. The sashiko-ori Beth Ross Johnson is doing is all plain weave ground on a  $4\times4$  square. I used a 2/2 twill instead, since I have



Figure 5. Ten-shaft draft with two four-shaft twill blocks and two shafts for the shibori threads



Figure 6. The *hitomezashi* cloth ready for gathering

Figure 7. With the weft threads gathered

Figure 8. Fully gathered

many more than eight shafts to work with and a twill is much more supple than plain weave.

After the cloth was gathered, it was scoured, dipped in black walnut dye, then ferrous acetate (*Figures 6 through 9*). Once the cloth was dry and the gathers removed, some texture remained (*Figure 10*); but because the ground is 100% cotton it will not hold the pleats permanently.



Figure 9. After dyeing, still gathered



Figure 10. The *hitomezashi* cloth, dried, with gathering threads removed

## Felted Shibori Using Supplementary Weft Ties

#### Lynn Smetko

Dimensional Texture Study Group

#### Study objective and design notes

In 2007 I took a woven shibori workshop with Catharine Ellis. She showed us a myriad of ways to design fabric using supplementary weft for woven shibori ties. I was intrigued with using shibori to define areas of fabric to be felted.

There are two methods to do that, and the areas that become felted are actually opposite each other. The supplementary weft shibori threads are pulled tightly after weaving and off the loom in both methods.

With the first method, felting resist paste is applied to the gathered pleat edges. When dry, the shibori threads are removed and the opened fabric is felted. This results in no felting where the resist paste had been applied at the pleat edges, and felting where the protected fabric within the pleats had not received the resist paste.

The second method felts the fabric while gathered. When the felting process is finished, the shibori threads are removed. The edges of the gathered pleats have felted, and the fabric protected inside the gathered pleats has not felted.

I liked the results from the second method much more than the first. When felted, the gathered edges become wonderful raised ridges resembling cabled knitted fabric. For this year's project I decided to work with the second method of supplementary weft shiboricontrolled felted fabric.

#### **Profile draft**

A 16-shaft profile draft was designed which defined how the shibori weft ties would gather the fabric. I combined a 1-3-4-3-1 twill tie-up on 12 shafts with an additional four-shaft area defining vertical lines as borders (*Figure 1*). The length and placement of the shibori floats allow the fabric to be drawn up fairly evenly on the front and back, and when felted, both sides have a similar ratio of felted to not-felted areas.



**Figure 1. Profile draft** A WIF is available on the Complex Weavers website

The profile draft uses a simple reverse in treadling, but it would be fun to work with a longer pattern with more variation. As it was, this full repeat was too long for the samples, which stopped at the half-way mark (shown in red in Figure 1).

#### **Threading draft**

The ground cloth is plain weave. Tabby was added to the profile draft in a ratio of 1:4, pattern to tabby (easy to do with weaving software). After testing my design on the loom I realized that the shibori weft was not being caught at the edges of the fabric – a selvedge was



Figure 2a. Draft, front

A WIF is available on the Complex Weavers website



Figure 2b. Drawdown, back. This draft shows similar shibori float lengths on each side

going to be required. Because I was using a fly shuttle, a floating selvedge was not possible.

I added two more shafts to the design for plain weave selvedges: two ends only on each side in the same merino as the rest of the warp. The draft (*Figures 2a and 2b*) shows the actual portion woven for the samples (as compared to the profile draft).

Based upon experience at the Ellis workshop, I expected shrinkage rates of about 40% in width and 30% in length. The draft is for samples measuring  $12" \times 8"$  (30.5 x 20.3 cm) on the loom, allowing for adequate sample sizing after shrinkage.

#### Yarns

Warp and tabby weft: 2/18 merino wool, white, Jagger Spun

Shibori pattern weft: 5/2 mercerized cotton, UKI
Sett and ppi: I used an open sett, 12 epi sleyed
1 per dent in a 12-dent reed, to leave enough room for the merino yarn to rub together and felt (typical plain weave sett for this yarn is 16–20 epi). I tried to maintain a similar spacing in the weft, resulting in a very open fabric.

#### Weaving notes

Due to the open sett and matching weft density, it was difficult to keep the weft ends an equal distance apart (*Figure 3*). Beating on a closed shed helped to control placement of the weft yarns.

Figures 4 and 5 show the fabric after its removal from the loom.



Figure 3. Open spacing on the loom



Figure 4. Fabric off the loom



Figure 5. Shibori patterning in the fabric, before pulling ties

#### **Felting process**

After the shibori ties were pulled (*Figure 6*), the samples (all in one piece) were soaked in  $125^{\circ}F$  ( $51.7^{\circ}C$ ) water with Orvus paste, both for cleaning and to provide a surfactant to facilitate felting.

At the Ellis workshop, felting was done for both methods in a top-loading washing machine with central agitator. Since I do not own such a machine, I did my best impression of a top-loading washer and agitated the fabric by hand for 10 minutes. I also employed the faucet spray head to 'bother' the samples. I opened up a little bit of the first sample, saw felting progress, but decided that more was needed. Into the front loading washer on high temperature they went, along with a lot of white rag towels to provide friction and prayers that they wouldn't become over-felted (it isn't easy to stop this machine mid-cycle). And ... they did over-felt.

#### **Finishing notes**

I waited until the samples dried (*Figure 7*), and then pulled them apart, a struggle that required the use of a needle nose pliers to grab fabric. (Pulling apart is easier with dry fabric.) It was worth the effort, though -I love the contrast of those raised, felted ridges and open woven areas!



Figure 7. Samples felted and cut apart, but still tied



Figure 6. Shibori ties pulled, ready for felting

The final samples (*Figures 8a and 8b*) ended up measuring  $6" \times 5.5"$  (15.2 x 14 cm), with a shrinkage of 50% in width and 32% in length. The higher-than-expected shrinkage in the width-wise direction makes sense because of the over-felting.

If I were to actually make a garment with this shibori felted fabric, I would explore increasing the sett to 13 or 14 epi for a bit more stability, and reduce the felting time (or find a friend who has an old top-loading washing machine with central agitator that allows starting and stopping to test the felting progress).

#### Resource

Ellis, Catharine. Woven Shibori. Interweave Press, 2005.



Figure 8a. Finished sample, front



Figure 8b. Finished sample, back

## Woven Shibori with Traveling Curves

#### Amy Parker

#### Dimensional Texture Study Group

I was not familiar with woven shibori when I joined this study group, but I love three-dimensional textures and structures in cloth. I hoped to explore as many aspects of woven shibori as possible in a short time:

- Sampling both weft and warp shibori
- Using different fiber types for ground cloth warps and wefts, including the crimping threads
- Trying both plain weave and twill as ground cloth
- Learning the gathering, steaming and cutting processes

From a design perspective, I wanted to incorporate dimensional shibori accents within fine or sheer fabrics, including curves and discontinuous blocks of shibori textures. I was curious if iridescence would appear in smooth cloth adjacent to shibori pleats. I dreamed of gently flowing silk scarves accented with traveling curves — or even wisps — of shibori texture. Finally, I wanted to work with fine threads.

I began sampling weft shibori because it was more intuitive to me than warp shibori. I wound a warp of 160

ends of 20/2 mercerized cotton next to 160 ends of 40/2 linen, which were all sett at 30 epi. The threading was a basic eight-shaft block weave for shibori wefts that permitted plain weave in the ground cloth. Shibori weft was 10/2 mercerized cotton. Ground cloth wefts were polyester or cotton-covered polyester thread (doubled), Etelo Metallic, linen and cotton crepes, 20/2 cotton, and 60/2 silk (effectively doubled).

All samples in my study were steamed for 40 minutes on a silicone steamer basket from Walmart, in a large stock pot. I clipped knots as soon as the samples were out of the pot.

#### Sampling

I started with all-over shibori pieces crimped with polyester thread, Etelo Metallic, and cotton and linen crepes. These crimped fine but weren't very distinctive.

I then tried a band of shibori weft that curved in the center of the warp but didn't reach the edges. The ground weft was doubled cotton-covered polyester sewing thread. The shibori-crimped bundle was



Figure 1. Crimped shibori bundle of second sample, ready for steaming



Figure 2. Second sample, after steaming, clipping, and pressing the non-crimped areas



Figure 3. The third sample, showing soft crimping on the portion with silk weft

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Figure 4. The third sample, after pressing the silk portion

a narrow thick snake (*Figure 1*) that made a more distinctive textile after steaming, clipping, and pressing the non-crimped areas (*Figure 2*).

My third experiment was with clasped weft for the ground cloth. Here, the shibori wefts went edge-toedge, while the ground cloth wefts met in the center area. My favorite sample used polyester thread for crimping, clasped with 60/2 silk. (The silk was effectively doubled because after clasping, it returned to the edge in the same shed.) The entire piece was tied in the shibori bundle and appeared to be crimped when the threads were cut after steaming (*Figure 3*). However, I read in several sources that silk would not hold crimp, so I felt justified in pressing the silk side (*Figure 4*). I was very happy with this result!

Finally, I moved on to warp shibori for the group sample exchange. I wanted the draft to be entirely loom-controlled, and I wanted to use all 24 shafts of my Weavebird loom. (I had never previously used shafts 19–24.) I would have loved to use network drafting to create a curved shibori draft, but alas, my drafting skills aren't there, so I created by hand a 24-shaft 'snake' that curved from a bottom corner to the opposite top corner (*Figures 5 and 6*). The draft allowed for both plain weave and twill in the ground cloth. The warp was doubled 40-weight polyester sewing thread, with 20/2 silk shibori threads. Wefts included 20/2 and 16/2

mercerized cotton, doubled 60/2 silk, and 1/14 and 2/28 lambswool.

The first few samples were woven with a plain weave ground cloth using 20/2 mercerized cotton. All the rest were 2x2 twill at a slightly higher sett, using mercerized cotton, doubled 60/2 silk, and 1/14 or 2/28 lambswool.

The twill samples were more interesting, especially after steaming and pressing the uncrimped areas. There was a hint of iridescence in a few samples (*Figure 7*), and all the wool samples had interesting diagonal lines in the crimped area (*Figure 8*).

#### Conclusion

In the end, I felt that weft shibori offered better choices than warp shibori for the kind of decorative accents I was seeking. With warp shibori, my 'snake' that traveled across the fabric required that all warp threads be thermoplastic. With weft shibori, on the other hand, the clasped-weft method gave dramatic results using only a fraction of thermoplastic weft yarn.

This ratio could be improved further using a double clasp ('three color') technique, which is what I absolutely want to try when I return to woven shibori.

#### Acknowledgements

I'm grateful for the mentoring and affirmation from Wendy Morris and Stacey Harvey-Brown, and the



Figure 5. Warp shibori 'snake' before pulling the gathering threads, face

enthusiastic response from the entire group as I shared my efforts. I'm very grateful to Dianne Totten for the initial inspiration that crimp cloth was absolutely something I wanted to try. Dianne provided helpful advice as I began my woven shibori journey.



Figure 6. Warp shibori 'snake' pattern before pulling the gathering threads, back

#### Resources

Harvey-Brown, Stacey. *Woven Shibori for Textural Effects* (monograph).

Ellis, Catharine. *Woven Shibori*. Interweave Press, 2005. Totten, Dianne. "Woven Shibori: Making Crimp Cloth"

(Video). Longthread Media.



Figure 7. Warp shibori on twill ground, showing iridescence



Figure 8. Warp shibori on twill ground, showing interesting lines in crimped area

## Shibori for Texture

#### Suzanne Townshend

#### Dimensional Texture Study Group

Prior to starting this challenge, I had little experience of shibori, having created only two very small samples at different workshops, neither of which was on the topic of shibori. Weaving texture into a piece of cloth in this way has been a new experience with a steep learning curve, and despite considerable sampling with different yarns and liftplans, it feels that I have barely scratched the surface of this subject.

I admire the work produced by Reiko Sudo, and referred to her book *Nuno: Visionary Japanese Textiles* (see Resources) for inspiration. I researched the topic in a variety of books and magazines (see Resources). I also referred to CW archives and web articles by Dianne Totten, Erica de Ruiter and Catharine Ellis. Information provided by Wendy Morris from the British weaver Mary Lowry was especially helpful as my experiments started. As I progressed with my sampling, discussions within the group and a Zoom call with some members led to further sampling.

I tried woven shibori for texture on three different warps based on availability from my stash: 28/2 nm biodynamic wool; 60/2 nm silk; 17/2 nm wool (from Uppingham Yarns).

#### What I wanted to test

This was a new technique to me, so initially I relied heavily on Stacey Harvey-Brown's notes provided to the study group, along with Catharine Ellis' book, *Woven Shibori* (first edition, see Resources) which I found particularly useful as a starting point.

I started with a 28/2 wool warp, threaded with reference to Ellis's suggested gamp/sample (see Figure 2 on page 44 of her book), adapting this for my own purpose. The result was a sample with structures at different scales.

I decided to test whether a plain weave background or a twill background gave a more pleasing result. After more sampling, I concluded that a plain weave background appears to give sharper folds than a twill, although much depends on the yarns used.

In sampling, I used a variety of weft yarns including wool-wrapped steel, wire, high-twist wool, acrylic, polyester, a hemp/paper yarn and 28/2 wool. The images included in this article show some of the results. In some samples I varied the proportion of heat-reactive yarn vs. non-heat-reactive yarn. For the acrylic yarn, the handle of the final cloth was more pleasing with a smaller proportion of acrylic, although the structure was less distinct.



Figure 1. The steaming process

All samples were heat-set by steaming in a domestic vegetable steamer (*Figure 1*) in the upper tray for 30 to 40 minutes, then left to cool before removing the gathering threads.

Initial samples were not washed after steaming, for fear of losing the effect. Later samples were washed after steaming. My experience suggested that for the majority of my samples, 30 to 40 minutes in the steamer was sufficient to set a reasonably permanent form, which held when hand-washed.

#### Weaving process

First samples were woven in eight-shaft structures, but as sampling progressed I moved on to use all 32 shafts of my computer dobby loom.

All samples woven were weft shibori, but based on my experience of pulling many weft gathering threads, warp shibori feels to be more efficient.

My initial samples were informative and led to some preliminary conclusions:

- Placement of the gathering threads helps create the shape of the final piece.
- The number of background picks and hence the distance between gathering threads had the greatest effect.
- A plain weave background vs a twill background can give interesting effects.

- The scale of gathering thread pattern is important.
- Balanced vs. unbalanced pattern placement gives different faces to the fabric.

Figures 2 through 9 show some of the experimental samples I worked through before making a decision about the final sample to present to the group.



Figure 2. Preliminary sample: 28/2 nm wool warp, Z high-twist wool weft, 2/2 twill background





Figure 4. Preliminary sample: 28/2 nm wool warp, polyester weft, plain weave background



Figure 5. Preliminary sample: 28/2 nm wool warp and weft, 2/2 twill background

Figure 3. Preliminary sample: 28/2 nm wool warp, hemp/paper weft, plain weave background, gamp showing different scales of pattern



Figure 6. Preliminary sample: 28/2 nm wool warp, weft of 28/2 wool and wire, 2/2 twill background



Figure 8. Preliminary sample: 60/2 nm silk warp, polyester weft, plain weave background



Figure 7. Preliminary sample: 17/2 nm wool warp, acrylic weft, plain weave background



Figure 9. Preliminary sample: silk bundles before steaming





#### Sample submitted to group

#### **Details of project**

- Warp and weft: 28/2 nm biodynamic wool
- Shibori threads: 1/16 ne mercerised cotton
- Sett: Wool warp sett at 30 epi (12 epcm)
- **Sley:** 3 ends per dent in a 10 dpi reed; two dents on each selvedge contained doubled threads
- PPI: Weft density approximately 11 ends per cm
- **Threading and treadling:** Woven on a straight threading on 32 shafts. 2/2 twill background, point twill gather threads. Four picks between each gather thread.
- **Take up:** Off the loom the final piece was 37 cm wide, and gathered to be 6 cm wide. Steamed for 40 minutes in a domestic vegetable steamer (used only for crafting activities) and left to fully cool down. Gathers removed.

Figures 10 through 12 show the creation of samples submitted to the study group.



Figure 11. Final sample, gathered



Figure 10. Final sample on loom



Figure 10. Detail



Figure 12. Finished final sample

#### Ideas for further development

As a result of taking part in this project, I have a better understanding of how various materials will behave when used in woven shibori. When I reflect on my experience, I conclude that there are several ideas worth investigating:

- The impact of the placement of shibori threads on scale of pattern/texture. For example: how much will the pattern change by altering the distance between gather threads?
- The effect of placing blocks of different scale in a grid or playing one against another.
- The effect of using warp and weft shibori together on a grid. This would take more time as I would need to fully understand how this might be set up, and how to make it work effectively.
- The erratic placement of shibori threads to create flatter areas and 'frilly' areas.
- Placing alternate stripes of warp yarns with different qualities to create neat, crisp folds alongside more relaxed folds.
- Hot wash and agitate the surface of still-gathered samples to full the surface of the folds, which when released from the gathers might then contrast with the less fulled part of the cloth.

#### Resources

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## **COMPLEXITY 2024:** Innovations in Weaving

#### Complexity 2024 Timeline

Deadline for entry	February 16, 2024	
Jury review	February 19–April 1	i)
Jury notifications	April 15	LE LE
Exhibition opens, Mar	k Arts July 6	
CW reception, 6 to 8 p	o.m. July 6	61
Exhibition closes	August 17	
Online exhibition	July 6–September 1	Ħ



## Double Shibori

#### Jennifer Verrall

#### Dimensional Texture Study Group

For my exchange samples in our 2023 Dimensional Texture Study Group, I put on a warp for warp shibori, using 8/2 Orlec from Maurice Brassard for the ground cloth and a heavier mercerized cotton from my stash for the pull threads in the warp.

This is the draft for the warp shibori (*Figure 1*), showing the pull threads in blue. The sample itself appears right afterwards (*Figure 2*).



**Figure 1. Draft for original sample, warp shibori** *A WIF is available on the Complex Weavers website* 



Figure 2. Warp shibori exchange sample

#### Moving on to double shibori

After the samples for the exchange were woven, there was some warp left; so I decided to try weaving double shibori on the rest. Since I had not planned ahead for this eventuality, I had to insert the weft pull threads with pickup, so the actual weaving was quite slow and I have no drawdown for these samples.

In the first double shibori sample, I tried to place the weft pull threads on top at the same place as the warp ones, i.e., to co-ordinate the two sets of pullers. I did not create a special double shibori draft, but you can clearly see the structure in the first off-the-loom sample (*Figure 3*).



Figure 3. First sample of double shibori, off the loom, before pulling the gathering threads

In the second sample, I treadled the background cloth so the repeat was longer. I also increased the spacing between the weft pullers and didn't try to be sure they were on the same side of the cloth; I picked up sections in a regular twill-ish pattern instead.

Again, I did not create a draft for the second sample of double shibori, but the structure is clear from looking at the cloth (*Figure 4*).



Figure 4. The second sample of double shibori, on the loom

#### **Finishing and Conclusions**

I steamed these samples for about an hour, then tried to dye them, but the dye available locally for synthetics was not good, which is why they are sort of blotchy (*Figures 5 and 6*). As a result of this, I decided not to dye my warp shibori samples for the study group.

Of these two pieces of double shibori, I like the second sample better (*Figure 6*), so I would like to try again with wider spacing between the warp shibori pull threads as well.

I do like both samples; they could make wonderful fabrics for scarves and blouses. They are very springy and fun to play with, so they actually make good toys, as has been proven by many visiting friends, both weavers and non-weavers.



Figure 6. Second sample, double shibori

0



Figure 5. First sample, double shibori

## Shibori Wave Forms

#### Stacey Harvey-Brown

#### Dimensional Texture Study Group

Exploring dimensional texture is always a lot of fun and involves quite a few flights of fancy on my part. I always seem to start off with way too many ideas and too much complexity. It takes a few samples to focus on the elements that lead to successful results and then I can rein in my big vision and hone in on specifics.

I knew I wanted to involve both warp and weft shibori. I have long been fascinated by waves and wanted to capture the changing aspect of waves by varying my warp and weft shibori to raise the fabric into believable ripples and wave patterns.

My loom has 24 shafts, and I used 16 of them to thread a plain weave ground, using a straight threading with 24/2 Nm merino from Little Wool Co., New Zealand, sett at 18 epi. The warp shibori was spread over the remaining eight shafts, again using a straight threading, with a ratio of three ground ends to one shibori end. I used 8/2 ne Tencel (Spice) from Webs Valley Yarns for the shibori ends.

For the weft ground, I used 22/2 Nm superfine merino, Jaggerspun. The weft shibori was a 33/3 hightwist mercerized cotton of unknown provenance, in a ratio of four ground picks to one shibori pick. The weft density was 32 ppi for the wool and 9 ppi for the shibori.

Whilst the threading was straightforward enough, the fun came when designing the liftplan. I wanted to include at least one of Oelsner's wave designs (see pages 76–77 of *A Handbook of Weaves*, G.H. Oelsner). It took quite a bit of trial and error to find the one that gave the best result for my purposes. The WIF file on the CW website shows the complete design, and the detail draft image below (*Figure 1*) gives you the idea.

I used only one beam for both ground and shibori warps so I was expecting quite a bit of tension trouble;



**Figure 1. Draft showing shibori threads, detail** *A WIF is available on the Complex Weavers website* 

but I was able to weave my samples off without too much difficulty.

#### Pulling the shibori

In previous shibori experiments, I have learned that the order that you pull up the shibori and the tightness of the pulling has a direct impact on the second set to be pulled. For these samples, I pulled up the shibori warps first of all and tried to distribute the puckers fairly evenly down the length of the fabric. I then pulled up the weft shibori picks as tightly as I could to ensure even tightness across the width.

The tightness across the weft was restricted by the previously pulled warp shibori, but not so much that I couldn't pull to the amount of gathering that I wanted (*Figures 2 and 3*). I then eased them out a little to ensure that the samples would all be of the correct size (4" wide x 6" tall after finishing). As they were to go into the tumble dryer for 25-30 minutes, and the ground weave



Figure 2. Shibori, front of cloth before finishing



Figure 3. Shibori, back of cloth before finishing

was wool, I eased them a little more as I wasn't sure how much additional shrinkage would happen during tumble-drying.

#### Finishing

Normally I would steam my shibori samples, but in earlier testing, the colour ran from the Tencel and stained the fabric; so I decided to machine-wash on a wool programme (40°C, no spin), along with a spoonful of Vanish<sup>™</sup> stain remover and two Colour-catchers<sup>™</sup> in the water. I also included a towel in the machine-washing and the tumble-drying processes to assist with the gentle fulling I wanted.

I tumble-dried the samples until they were almost dry, just to the point where I was happy with the result. After removing from the dryer, I laid the samples on a dry towel to finish their drying naturally. The shibori threads are not easy to remove until the fabric is completely dry all the way through.

#### Results

The result was interesting (*Figure 4*). Some areas had more of a wave look than others and I'm not so sure that the weft shibori 'swell' is as effective as I had hoped; but the idea was to experiment with complementary shibori warp and weft designs that were more organic in nature and see what transpired.

#### In closing

I was really inspired by the varied responses to this challenge from members of the study group. We truly do learn together and share our wins and, perhaps more importantly, what goes awry. Dimensional texture has a way of surprising you, no matter how long you've been doing it.

#### Resource

Oelsner, G. H. *A Handbook of Weaves*. New York, New York: Dover Publications, 1952. Originally published by The Macmillan Company in 1915.



Figure 4. Finished sample

## Woven Shibori for Texture Using Only Natural Fibres

#### Wendy Morris

#### Dimensional Texture Study Group

Like many weavers, I'm becoming increasingly keen to avoid using yarns derived from petrochemicals, so exploring how various natural yarns could be used in woven shibori for texture was an important aim for me.

I knew that high-twist yarns could be used to hold a



Figure 1. Point treadling draft



Figure 2. Point shibori sample on loom



shibori-induced pleat under certain circumstances, so a warp of fairly fine high-twist botany wool was my starting point. I decided to use warp shibori — many fewer ends to pull than weft shibori, kinder on the fingertips!

The wefts I sampled with on that first warp were

high-twist wool (as in the warp), high-twist rayon in both S and Z twists, in case the twist direction made a significant difference, and Nm 60/2 silk.

In designing the liftplans I wanted a variety of balanced vs. unbalanced and a variety of scale. This was a fact-finding mission, not an attempt to produce beautiful samples.

I finished each sample by pulling up the gathering threads, steaming the fabric for 30 minutes followed by a hot tumble, then when it had cooled, removing the gathering threads. But I wanted to check how permanent the patterning was — would the hightwist yarn have been completely stabilized, or would it still have enough life to impose its will on my patterns? The answer was yes; a final wash and tumble



Figure 3. Point shibori sample after steaming, shibori threads removed

Figure 4. Point shibori sample after the final wash and tumble





Figure 7. Block shibori sample after steaming, shibori threads removed



Figure 8. Block shibori sample after the final wash and tumble

#### Next experiment

So using high-twist yarns as the heat-setting element works, but within limited patterning. Time to move on.

I decided to stick with warp shibori, but this time with a non-active warp, Nm 40/2 silk, which I crossed with a variety of wefts which I thought might hold the patterning: silk/stainless steel, silk/copper, manila hemp, and a Japanese paper yarn made from manila hemp. All were successful to some extent, but none felt pleasant to the touch. What I was really wanting was something soft and drapey, something like silk-on-silk... but how could the pattern be set?

My mind went back to my teenage years when money was tight in the family and my mother would ask



Figure 9. Pintuck squares design inspiration



Figure 10. Pintuck diamonds design inspiration

me to give her a home perm to save on salon costs. Hair is a natural protein fibre, like silk ... I wonder ...?

I also wanted to experiment with the idea of using dressmaking techniques of manipulating fabric as a design source. For years I have had an inspiring book, *The Art of Manipulating Fabric* by Colette Woolf (see Resources), and a few of the pleat-and-tuck patterns looked as though they could be modified to form the basis for combined warp and weft shibori patterning. Two birds with one stone – perfect!

Using two examples of pintuck from Woolf's book as inspiration (*Figures 9 and 10*), I created two corresponding weaving drafts, using both warp and weft shibori (*Figures 11 and 12*).



**Figure 11. Pintuck squares shibori draft** A WIF is available on the Complex Weavers website



**Figure 12. Pintuck diamonds shibori draft** *A WIF is available on the Complex Weavers website* 

I had no idea how much perm lotion to use so I made an *ad hoc* decision that two shibori samples equated to two thirds of a head of hair; donned my rubber gloves, held my nose, and did the deed.

After removing the gathering threads, the results were promising; but until I'd washed the samples I couldn't be sure the texture wouldn't disappear. Luckily it didn't, as you can see from the post-wash photos of these two samples (*Figures 13 through 16*).

If I wanted to scale this up to weave yardage, a lot



Figure 13. Pintuck shibori squares, side 1, after finishing

more experimentation to determine quantities of perm lotion and timings would be necessary. But I think the most important thing would be a very heavy-duty mask to avoid being overcome by the fumes. A second career as a hairdresser definitely does not await me!

#### Resource

Wolff, Colette. *The Art of Manipulating Fabric*. Penguin Publishing Group, 1996. Also visit her inspiring website: *colettewolff.com* 



Figure 15. Pintuck shibori diamonds, side 1, after finishing



Figure 14. Pintuck shibori squares, side 2, after finishing



Figure 16. Pintuck shibori diamonds, side 2, after finishing

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