Geometry Man Tapestry
by Karen Donde
What's the next best thing to learning tapestry from the masters? Learning from students of the masters! For a shaft-loom weaver, the first three required samples for the Handweavers Guild of America's Certificate of Excellence, Level I, are daunting: weave three 7" × 10" tapestries, each demonstrating progressively more complicated techniques. Fortunately, I had an ace in the hole. Two fellow guild members, who study with tapestry artists Archie Brennan and Susan Martin Maffei, were willing to teach me. Weavers’ guilds are rich resources, brimming with generous, sharing individuals!

The first COE sample calls for geometric shapes. I used a computer drawing program to create a variety of shapes and moved them around on-screen. Geometry Man appeared!

The basic tapestry techniques described here represent only a fraction of the many methods used by tapestry weavers. Practice with these for your own Geometry Man or try them with other geometric designs.

**Tapestry 101**

First, make a simple cartoon the size of your tapestry and warp a tapestry or shaft loom for plain weave. The following directions are for working from the right side of the tapestry.

Wind a tapestry bobbin or a butterfly with a single or multistrand weft whose grist is slightly narrower than the space between warp threads. Paternayan Persian rug yarn comes as three 2-ply strands. Two 2-ply strands are separated from the three to use as weft in Geometry Man.

**Straight lines** Anchor the weft on the first warp thread by bringing the bobbin (head first) up from underneath the cloth between the first and second warp threads, leaving a 2" tail. Carry the bobbin over and back under the first warp thread, over the second warp thread, under the third, and continue weaving plain weave across the row, allowing enough weft to avoid draw-in and picking the plain-weave sheds with your fingers or using the loom’s shedding device. Beat firmly, using the point of the tapestry bobbin, your fingertips, or a tapestry beater. Weaving across the warp in one direction and returning to the starting point in the opposite shed (2 picks) is called a pass. One pass creates a wavy line. Multiple passes in a single color create thicker lines with smoother-looking edges. End a weft with a half hitch: carry the weft under the last warp thread, wrap it around that thread, and slip the bobbin through the weft loop before tightening. Tuck the tail to the back.

**Rectangles and squares** Multiple wefts in different colors can weave in the same row, appearing only where they are needed for the design. In this traditional style of European tapestry, adjacent wefts travel toward each other “head to head” or away from each other “tail to tail.” To build two rectangles side by side, start the first weft from the left selvedge as described above and weave left to right to the desired width, then turn and weave back to the left selvedge. Start the second weft from the right selvedge and weave right to

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**PROJECT at-a-glance**

**Weave structure**  Tapestry (weft-faced plain weave with discontinuous wefts).

**Equipment**  Tapestry or 2-shaft loom, 8" weaving width; 6–8 tapestry bobbins (or you can use weft butterflies); tapestry beater or fork.

**Yarns**  
- **Warp:** 12/9 cotton seine twine (925 yd/lb, Vävstuga Swedish Weaving and Folk Arts), 75–100 yd.
- **Weft:** Paternayan rug wool (672 yd/lb), about 110 yd total in several colors: white #261, 30 yd; black #220, 2 yd; light tan #745, light green #653, dark green #650, gold #732, brown #416 (15 yd each); the three 2-ply strands are divided and two 2-ply strands are used together as weft.

**Warp length**  
60 ends 1¼ yd long (allows 33" loom waste and sampling) or 60 ends 60" long when wrapped in a continuous warp around a 14" × 30" Schacht tapestry loom.

**Stetts**  
- **Warp:** 8 epi.
- **Weft:** 40 ppi.

**Finished Dimensions**  
- **Width:** 7½".  Woven length (measured under tension on the loom): 11¼". Finished size: 7" × 11¼".
left until it meets the other weft. Turn the second weft around the last exposed warp thread and weave back to the right selvedge. This technique is called “meet and separate.” Because shapes continue to flatten when the weaving above them is beaten down, weave them taller than desired height. Two side-by-side shapes needn’t be woven row by row at the same time. One can be woven before building the adjoining one.

For three rectangles side by side, build two shapes next to each other, leaving a section of warp for the third. Because the weft for the middle rectangle is entered right to left, the weft for the third enters left to right (tail to tail), traveling away from its neighbor. Start the weft for the third rectangle on the warp thread adjacent to the second rectangle and travel out to the selvedge. Complete the pass by weaving back toward the middle shape in the opposite shed.

Managing Weft Joins

Many techniques exist for dealing with the vertical slits that result when two wefts are woven using “meet and separate.” Short slits can be left as is. Unless slits are part of the tapestry design, any opening greater than ¼” is avoided using one of several methods.

Sewing One of the least visible joins is to sew the slits closed with a fine, strong thread. This is easiest to manage when you are weaving one shape at a time. Using a tapestry needle, anchor the thread with a half hitch on a warp end at the bottom of the woven shape and wrap around the warp threads on either side of the slit after every two passes with the working weft. End with a double half hitch and push the tail to the back.

Single-weft interlock While sewing a slit allows building one shape and then attaching the next as it is built, several interlocking methods require weaving both shapes at the same time and connecting the wefts as they meet. For single-weft interlock, two wefts are woven toward each other until they meet. Before they turn to enter the next shed, one is wrapped around the other so they are interlocked in the space between adjacent warp threads. This produces a zigzag vertical line.

Dovetails Instead of interlocking the wefts, each weft can be turned around the same warp thread, one from each design, before completing the pass in the opposite shed. This also creates a zigzag vertical line at the join, but around the same warp thread. For double or triple dovetails, turn two or three passes with one weft around the shared warp thread before doing the same with the other weft. Triple dovetails were made at the outside edges of Geometry Man’s triangle arms to exaggerate the zigzag.

Diagonals and triangles Principles used to weave diagonal lines at various angles can be applied to all shapes and sizes of triangles, diamonds, parallelograms, trapezoids, and irregular straight-sided figures whose sides join at other than 90-degree angles.

Start by weaving a weft from the left selvedge to a point where the diagonal line will start, turn around that warp thread and weave back to the selvedge to complete the pass. On the next pass with the same weft, turn around the second warp thread to the left of the one used for the first pass and weave back. Continue, stepping two warp threads at a time to the desired length of the diagonal. Fill in by weaving the second weft, right to left, turning on the warp thread to the right of the one where the other weft turned, advancing by two warp threads with each pass.

To make a steeper diagonal line, turn on every warp thread. To make it even steeper, weave more passes, always the same number, before shifting to the next warp thread. For a more gradual slope, increase the number of warp threads in each step. Fill in each diagonal with the adjoining weft in the same pattern of passes and warp steps used to create the diagonal. Note that only the steepest diagonals result in slits long enough to require joins.
**Most important tapestry skill I learned?** Taking out! Tapestry weaving involves much trial and error. Extensive sampling of wefts and shapes can improve your skill for a final piece, but taking out and redoing something that isn’t quite right is simply part of the tapestry process. I practiced weaving shapes (and taking them out) with the sampler at the left before weaving my Geometry Man, and I still rewove sections as needed for him.
Set Your Body (and Your Loom) Free
by Karen Piegorsch

Frame looms are popular among both experienced and novice tapestry weavers due to portability, low cost, and ease of warping.

Commonly, the frame loom is used in the lap, balanced against the edge of a table. Although convenient, this way of weaving has disadvantages. Using the lower body to balance the loom leads to constrained postures and tension in the muscles of the back and legs, which in turn can lead to strain of the neck and elbows. It's also often necessary to steady the loom awkwardly with one hand, and the angle of the loom is dependent on the relationship between the height of the table and the seat.

Rebecca Fabos of Tucson, Arizona, has solved these problems by adapting a box easel that is designed to hold canvases for painters. “Portability is important to me, but I got tired of the loom wiggling in my lap and I like to have both hands free,” explains Rebecca. “Then one day in my art supply store, I saw a box easel and thought, I can put my tapestry loom on this!”

Traditional ways of getting a frame loom off the lap include tabletop stands and floor easels. As with the innovative box easel, there are relative pros and cons to these alternatives. For example, a simple tabletop stand is relatively inexpensive but sets the loom at a fixed height and can be too lightweight to keep the loom stable for opening sheds or beating in the weft with a tapestry comb. Floor easels can enable height and angle adjustments, but their bulk and complexity of setup can limit portability. Individual preferences and priorities help each weaver determine which alternative is best.

However you do it, getting the loom off the lap frees the body! It’s good ergonomics and potentially increases comfort, circulation, enjoyment, and the quality of your artwork.

From Handwoven, May/June 2009; pp. 10.
Weave a Tapestry Bag on a Box

by Sarah Swett

From Handwoven, January/February 2008; pp. 32-35.
Perfect boxes for making bags can come in many sizes. This box would be just right for a briefcase, that for a tote bag, and, why, that one will slip right into the overhead bin on an airplane! Once you’ve enjoyed the pleasure of plucking a sturdy loom from the trash, you’ll never look at the UPS truck in quite the same way. To heck with the contents—it is the box that counts!

Weaving on a box is straightforward, exciting, and a great way to use up bits and pieces of yarn. It is not, however, either fine or fast. Practical cardboard-box setts are 4 or 5 ends per inch, and tapestry has never been a zippy technique. For just these reasons, however, weaving on a box is immensely satisfying. You can take your time and play with blocks of color without tying up a floor loom. While I usually recommend a small box for your first bag, you’ll only have fun if you’re excited about the size, shape, and future life of the bag. Since my first article on this technique (see Resources), bags have been woven on boxes of every shape and size from coast to coast and around the world, so what do I know!

Resources


PROJECT at-a-glance

**Weave structure**
Plain weave (tapestry).

**Equipment**
Sturdy corrugated-cardboard box with flaps (a box 9" × 7" × 7½" is used for this bag); pencil or pen; ruler; X-Acto craft/utility knife; masking tape; two 4–6” curved sacking needles.

**Yarns**
Warp: 4-ply worsted wool (700 yd/lb), Lincoln Longwool, 56 yds for this bag.
Weft: 2-ply wool (900 yd/lb, Harrisville Highland), Cobalt, Midnight Blue, Teak, Gold, Chianti, and Tundra, 1 skein each.

**Yarn sources**
Sacking needles and worsted-wool warp are from Weaving Southwest, 4-ply Lincoln Longwool from Aunt Julia’s Fiber Emporium, Harrisville Highland from Harrisville Designs.

**Warp spacing**
4 epi.

**Finished Dimensions**
Woven dimensions: 9” × 7” × 7” (tall) with two handles 1½” × 21½”.

Dancing Carpet Bag, wool warp and weft, natural dyes, 22" × 12" × 10"
**Steps for Weaving a Tapestry Bag on a Box Loom**

**Prepare the box.** Tuck flaps to inside (a) to strengthen edges (cut edges are not strong enough to maintain warp tension). Mark \( \frac{1}{4} \)" lines along edges at \( \frac{3}{4} \)" intervals. Poke a small hole at the bottom of each line and cut on each line to the hole with the X-Acto knife (b).

**Warp the sides of the box.** With a wide side of the box facing you (or any side of a square box), tape the end of the warp yarn to the inside at one of the corners, leaving a tail of about \( \frac{3}{4} \)". Bring the yarn through the first notch, down the side, across the bottom, and up the other side to the corresponding notch. Slide the yarn in the notch, pull snug (not so tight that it crushes the box) and bring it back out of the adjacent notch. Use a seesaw motion to work the yarn into the notch. Again bring the yarn down the side, across the bottom, and up to the notch next to the one where you started. Continue in this way (c–d) until the two opposite wide sides and the bottom are warped. Do not cut the warp.

**Warp the other sides; weave the bottom.** Measure a length of the uncut warp yarn about 8 yd and cut at this point (this will be about half of what you’ll need to finish warping a box this size and is about as long as a strand as you can work with comfortably) and thread it into a needle, folding it back and forth two or three times to decrease overall length (e). Thread the other needle with about 1 yd of weft yarn in the color of your choice. With the bottom of the box facing up (on the same side of the box as the long strand of warp yarn), weave across the bottom in plain weave with the weft doubled in the shed. Bubble the weft generously. Tuck in the starting weft tail as you go, and weave back and forth across the bottom for \( \frac{1}{4} \)" (4-5 rows). Compress the rows of weft with your fingers or the needle so that the weft completely covers the warp. Bring the warp out through the first notch on the unwarped side of the box, take it down that side, and then weave across the bottom as if it were weft, in the same shed as the last strand of weft. Do not bubble, but pull tight the way you did when warping the sides. Bring it up the unwarped side and hook it securely in the first notch and back out the second to hold the tension.

Return to weaving with your weft yarn and fill another \( \frac{1}{4} \)" with tightly packed plain weave, bubbling generously, then again bring the warp down the side, across the bottom as if it were weft, and up the other side, hitching it securely. Continue in this manner (f) to weave the bottom of the box while at the same time warping the remaining sides, until both are covered. Turn the box after the first \( \frac{1}{4} \)" and weave for \( \frac{1}{4} \)" on the opposite edge of the bottom to keep the far edge warp thread from flopping off and then return to the first edge (g). When you have woven up to that last \( \frac{1}{4} \), it will be easier to weave in the last few picks densely in this area, away from the edge.

When you run out of warp, cut a new strand and tape the old and new ends to the inside of the box at the top (they can be woven in later) and continue. To change wefts, overlap the new and old threads for 1" or so. When you complete the bottom, add 1 warp thread at the final corner to make an odd number of total ends—necessary for weaving around and around the box in over/under order.

Take heart! The bottom is the hardest part of the weaving and it is too bad that it has to come first. Stripes make it go faster, but don’t be in a hurry! Like most tapestry, this one is about being in the moment.

**Weave the sides.** Now go wild! Make shapes or stripes; play with color or use all one color. Test out tapestry techniques from the books in Resources (page 7). This is some of the freest weaving you will ever do. If you weave squares and rectangles, you’ll have to sew the slits together invisibly between straight vertical edges later so that things won’t fall out of your bag. If you weave at an angle to the warp (h)—this is called an eccentric weft—you will need lots of extra weft to cover the distance or your finished weaving will develop distinct bulges. You can draw a cartoon right on the box or slide a piece of paper under the warp as a guide for specific shapes. Be sure to pack the weft as tightly as possible with your fingers.

At some point, turn the box upside down and weave down from the top of the box (i). It will be easier to weave in the last weft threads if you can do it away from the edge.

**Finish the bag.** When you finish weaving, insert the tip of the curved sacking needle under each warp loop on the inside of the box and lift it over the cardboard tab. Try not to damage the tabs if you plan to weave handles on the same box. You can leave the loops—the weft will puff out to fill the spaces during fulling. Or, you can thread a cord through each loop as you take it off the tabs (good for very small boxes where there is not a lot of weft to full into the space). I made a decorative twisted cord out of 4 strands Gold Highland (j and l) for this bag. Release the taped warp ends and weave them into the fabric. Full the bag well in hot soapy water.

**Make the handles.** Tape the end of the warp yarn to the inside of the box and warp two 2" (8 ends) sections, taping the final end to the inside. Weave with any pattern (k)—stripes, blocks, one solid color—starting at both ends and meeting in the middle. For these handles, I deliberately drew in the edges, switching to single strands when the warp became very close. When the handles are done, lift off the loops, sew in warp ends, full, and stitch the handles to the finished bag.

**Line the bag, if desired.** This bag is like a basket so I did not line it. I covered a piece of non-corrugated cardboard with fabric to fit the fulled bottom (8" x 7"). For other bags, make linings (with pockets, if desired) and attach to the inside of the bag with Velcro to remove easily for cleaning.
Wedge Weave in Miniature
by Margaret Windeknecht

The Navajo are credited with developing wedge weave. The technique was used during the relatively brief “eye-dazzler” period in the late 1880s. Navajo wedge weave usually shows a lightning type of design and is known for its characteristic scalloped edges.

This article is an introduction to a very unique adaptation of this old weave. I call the technique drawn-thread tapestry because it is similar to drawn-thread embroidery and can be used with any tapestry technique. It is done with cotton or linen fabric on an embroidery hoop using cotton, silk, or wool floss wefts threaded in a tapestry needle. These miniature wedge-weave tapestries can be presented as framed artwork, dollhouse-scale handwovens, or small bits of jewelry.

The process
The technique was developed as my solution to a wish to weave with fine thread without having to bend over the loom. It can be done sitting in an easy chair with feet up. The hoop, propped against a pillow, is like a very small upright tapestry loom. The embroidery fabric presents a fine-thread warp under uniform tension—without the hassle of warping a loom! The hoop helps maintain even tension as it is adjusted throughout the weaving process.

Preparation
Cut a piece of embroidery fabric large enough to leave an adequate edge for gripping by the hoop. Machine zigzag the outside edges of the fabric. Decide which is the warp direction (an arbitrary choice). Also decide on the width of your finished weaving. Run a bead of FrayCheck just outside the edge of the planned weaving area.

The advantage of FrayCheck, as opposed to a machine zigzag stitch, is that if you change your mind about the width, it is not permanent. However, a zigzag stitch is stronger than FrayCheck, so if you know you want to produce a deep wedge, for extra protection on both sides, use the zigzag stitch outside the planned width.

Cut only the weft. Cut each weft thread at the edges of the weaving area and use a needle to pull out the thread. Remove about 1/2” of weft (exposing the warp) before you start to weave. Drawing out threads a half inch at a time helps prevent the weft from pulling in at the edges. As you progress, continue to cut vertically (just inside the FrayCheck line) about one inch at a time and draw out horizontally about one-half inch at a time, see Photo a (the bead of FrayCheck does not show).

PROJECT at-a-glance

Weave structure
Plain weave tapestry.

Equipment
An 8”–10” wooden embroidery hoop, two long blunt needles (#24), pointed scissors, magnifying glass that hangs around the neck, beading needle (optional).

Yarns
Warp: 12/9 cotton seine twine (925 yd/lb, Vävstuga). Yarns: silk floss (Auvera Soie), matte cotton such as Danish flower thread or a domestic flower thread, or DMC floss.

Yarn Sources
Materials are available from shops carrying needlework supplies. Silk and embroidery fabric is from The Fancyworks, 15 Mile Rd., Sterling Heights, MI 48310. #28 cotton embroidery fabric is available from Jo-Ann Fabrics.

Notions and other materials
28 count cotton/polyester embroidery fabric (Jobelan), 1 sq ft; glass seed beads (optional); white glue and FrayCheck.

a. The warp is prepared by cutting through the weft threads and removing $\frac{1}{2}$" of weft.

b. Weft threads are shown without compression; picks increase by one warp thread in each pick.

c. As the weaving progresses, the wedge is beaten in place with the fingers.

d. Many colors can be added to the wedge. The wefts are not cut, but remain in place to be used again.

e. A wooden embroidery hoop holds the threads under tension.

f. A row of beading is added.

g. The first half of the wedge is completed.

h. The second half starts at the left.

i. A second row of beading is added.

j. One full wedge is almost completed.

k. On the right side, no weft tails show.
Beginning the first wedge

Begin weaving plain weave, using the needle to create the shed. You will be working on the back side. The hoop and the extra fabric around its edges protect the right side of the tapestry. (A stand is not practical because you would have to turn the hoop constantly.)

Thread a needle with a strand of floss about 18” to 24” long. The wedge develops gradually, starting with two outside threads and increasing one thread at a time until the wedge reaches the desired height. Photo b shows the process without the compression that actually takes place so that you can see the one-by-one increase in the warp threads. In practice, the weft is beaten into place after each pick. Photo c shows these picks (and more) compressed, as they would be in the weaving.

In normal weaving, fibers cross at right angles. In wedge weave, they are forced to intersect at angles other than 90 degrees. As they try for a comfortable path, the selvedges bend to create the characteristic zigzag edges of wedge weave.

Beat in the weft with your thumbnail on the front of the weaving, against the side of your index finger held behind the weaving. (If you use fingernail against fingernail, you will increase the risk of breaking the warp threads.)

Photo d shows the introduction of a second color. Though there are exceptions to this rule, with wedge weave there are usually an odd number of picks of each color. Begin wefts at the bottom and end them at the top of the wedge. This allows you to pick up a color where it was left at the top of the last wedge, weave it for a given odd number of picks, and then leave it available for using again when the wedge next changes directions. Wefts ending at the selvedge, as in Photo d, are carried up the outside, and the active weft is wrapped around them to hide them. These practices minimize the number of cut ends there would otherwise be on the back of the piece.

As you weave, continue to increase the number of ends in the wedge until the weaving reaches the desired height for the wedge in that direction. Then count the number of warp threads the weft crosses to make this height. Use this number as a guide to maintain a consistent height for subsequent wefts. Otherwise you may have a wedge that builds or shrinks—acceptable only when intended!

Adding beads

Photo f shows the addition of beads woven into the wedge. The technique is like beadloom weaving using two needles. The thread in the first needle holds the beads, which are pressed up through the warp from behind. The thread in the second needle goes over each warp thread and through each bead in succession.

Decreasing at the other side

The first half of the first wedge is shown completed in Photo g. The weaving started on the right. The height has been kept consistent by counting. When the weft reaches
the selvedge on the left, decrease one warp thread with each pick just as you increased in the beginning. This is easy to do if you are weaving with only one color, but you must pay careful attention to the decrease when changing colors.

**Changing directions**

The wedge now moves in the opposite direction (see Photo h). Leftover weft threads are angled to the right. Insert a long needle into the fabric on the hoop and lash the weft threads to the needle to store until needed.

Weave as for the first half, working from the left. Use an odd number of picks in each color as before to leave yarn tails at the top. Use stored wefts when available. Photo i shows a second row of beading.

Photo j shows the working (back) side with the second half of the wedge almost complete; the wedge decreases by one warp thread at a time at the right edge. Photo k shows the full wedge on the face of the fabric. Note that the point of the wedge (on the right) extends over the edge of the embroidery fabric. The tension of the warp held by the hoop prevents the wedge from moving into its full zigzag shape. When the weaving is cut from the fabric and the warp relaxed, the full wedge will form.

**Other considerations**

As the warp is freed from the embroidery fabric, it can become too loose. When this happens, lace the sides of the already woven section to the edge of the embroidery fabric. To lace, secure a thread 1” in from the edge of the embroidery fabric beside each wedge point. Run the thread from the cloth to the point of the wedge; weave over and under, then back over and under two warp threads in the point, then back to the cloth, and secure.

To replace a broken warp thread, use a thread from a cut side of the original embroidery cloth. Anchor one end on top of the weaving with a T-pin in the spot where you need the repair and the other on the embroidery cloth above the weaving. Leave the broken warp thread in place where it is in the tapestry web; draw out the broken end from the embroidery cloth. Begin weaving with the new thread—the repair will not show from the front side.

As you come close to the end of your piece you may find that you did not plan enough fabric. If you have too little fabric to use with a bigger hoop you can increase the weaving area by an inch or two by stitching wide bias binding (opened) around the edges. Secure this edge to a bigger-sized hoop.

**Finishing**

Weave a few rows of plain weave selvedge to selvedge and, before cutting the piece from the hoop, lightly touch these rows with white glue; immediately blot glue with a paper towel. The glue will not show if it is dried immediately. (Avoid applying glue to the floss.) Trim ends on the back to ¼”. If they are near enough to the edge to show, control them with a bit of white glue. Remove remaining weft threads above and below the tapestry.

Any rug finish can be used with the “fringe,” but given the scale, twining is a good choice (see Virginia West, *Finishing Touches for the Handweaver*, Interweave Press, 1988, pages 35–36). I like to begin my tapestry pieces in the middle and finish both ends with twining. Apply glue to the finish, not to the floss.