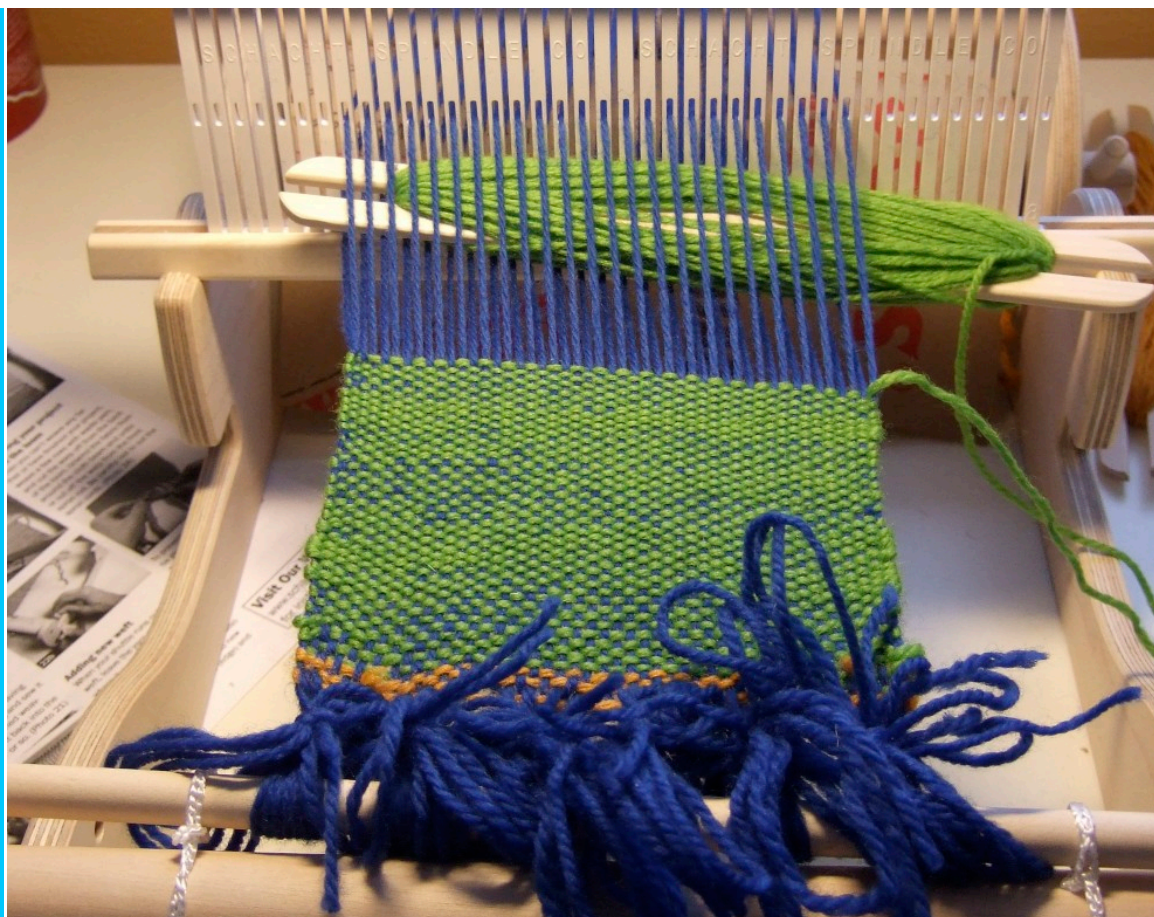




LESSON NOTES | GRAIN

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Lesson notes are almost as good as hearing me explain it in person, or they're a good refresher for students without notes! Enjoy. -Kristin

Fabric has a grain to it, just like wood...

If you fight that grain, it will fight you back. One of the most important things you can learn as a stitcher is how to finesse the fabric and convince it to do what you want it to do. Gently.

Terms to know:

- **Grain:** the grid-like structure inherent to woven fabric
- **Warp:** the first set of threads put onto the loom for weaving; these threads run the length of the loom and around the apron rods
- **Weft:** the set of threads woven onto the loom after the

warp threads are set up; these threads go over and under the warp threads across the width of the loom, forming the selvages at the side edges of the fabric

- **Selvage:** the finished-off side edge of the fabric formed by the u-turns made by the weft threads
- **Straight Grain:** the component of the fabric “grid” constituted by the warp threads; should end up vertical in properly made garments; runs parallel to the selvage edges
- **Crosswise Grain:** the component of the fabric “grid” constituted by the weft threads;

should end up horizontal in properly made garments; runs perpendicular to the selvage edges

- **Bias:** runs at a 45-degree angle to the straight and crosswise grains, or diagonally across the fabric
- **Grainline:** the line given on pattern pieces which indicates how the piece should be laid out on the fabric; the grainline should be on the straight grain of the fabric, i.e. parallel to the selvage edge

See the next page for visuals!

Fabric is woven on a loom.

You probably had a simple one as a kid--most likely the kind you make potholders on with those panty hose-like loops. Of course, the fabric we buy in the store has been woven on something like the 1,000th-generation version of that, but that little plastic loom really taught you all you need to know to understand grain.

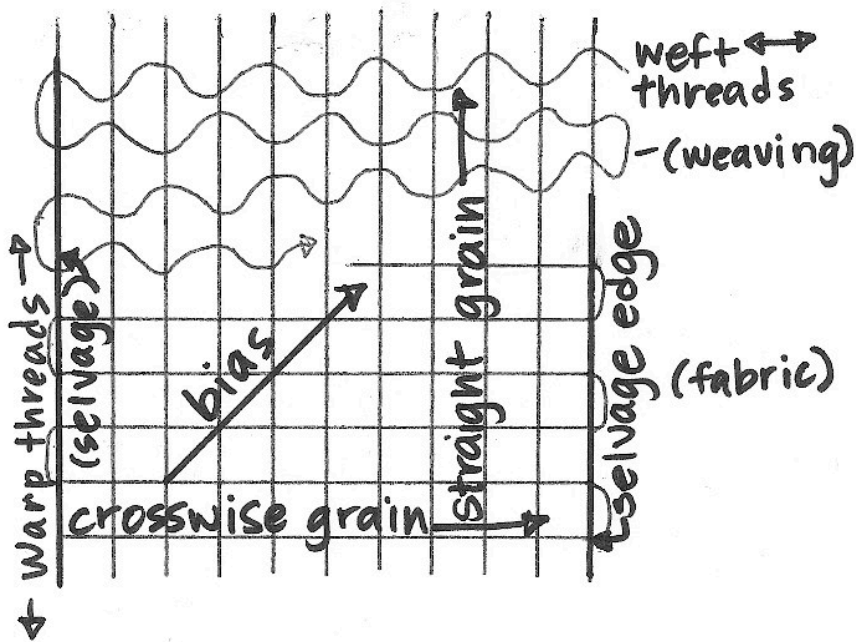
First, the **warp** threads are set up on the loom. You can set up as many as the loom will hold in its slots. So, different size looms produce the different widths of fabric we find in the store--45, 54, 58, 60 inches wide and so on. When you set up your warp threads, you determine the fixed width of the fabric by how many you set up.

Next, the **weft** threads are woven over one warp thread, under one warp thread, over one, under one, across the loom side to side. When the weft thread gets all the way across all the warp threads, it makes a u-turn and heads back across in the same manner. Then it makes another u-turn and comes back over and under again. And again. By now you're probably getting that weaving is pretty repetitive. You can keep weaving until you have no more warp thread left. The length of the fabric is only limited by that, whereas the width is fixed. Standard yardage on a bolt of fabric at the store is 15 yards.

The u-turns the weft thread makes form finished side edges, which are called the **selvages** (or selvedge edges) of the fabric. Often, the first and last few warp threads are thinner than the main fabric warp threads, so the selvedge has a tighter weave than the main body of the fabric. For this reason, you don't want to use any part of the selvedge in your project (unless you're doing it intentionally). The fabric companies usually use the selvedge area to indicate brand, designer, and color information about the fabric.

Now that we're done weaving, we'll give the warp and the weft new names for sewing purposes. 'Cause that makes sense, right? Hmmm.

Now we have a big ol' piece of fabric in front of us. The warp threads make



up the **straight grain** of the fabric and the weft threads make up the **crosswise (or cross) grain**. The straight grain is pretty sturdy if you pull on it, but it has just a little bit of give. The crosswise grain is sturdy too, with less give. You'd think because the weft threads go over and under the warp that they would have more give. But actually, during the weaving process you pack the weft threads tightly after each row and that forces the warp threads to bend and conform to the weft threads. So the warp threads end up being slightly more bent and flexible.

When sewing, we use the different properties of the straight and crosswise grains to our advantage. Sometimes we cut pieces that need to be extra sturdy, like a tote bag strap for example, on the crosswise grain. Usually though, and especially when sewing garments, we cut pieces on the straight grain. To cut a piece on the straight grain means that when you are wearing the finished garment, the straight grain will be vertical on each piece of the garment. The reason we like to cut on the straight grain is because it works well with gravity. It has flexibility but it maintains its shape without becoming distorted with wear.

Pattern-makers base their patterns around a **grainline** that is meant to be exactly aligned with the straight grain of

the fabric when the piece is cut out. They actually draw the grainline first and base the whole rest of the pattern piece around it--that's how important it is! See page 3 for an explanation of how to ensure that the grainline is precisely on the straight grain.

What if my pattern piece is cut pretty much on the straight grain, but I'm in a hurry and I just eyeball it? Well, the short answer is: that's bad. Hold a piece of fabric up to your body as if it's a skirt and you're wearing it. Now look in a mirror. If you have the straight grain vertical, it will float away from your body as it flows to the ground in a very flattering silhouette, just like an A-line skirt. Now, shift the fabric a little bit diagonally. Just a little bit. See how awkward wrinkles start to form? When gravity pulls on the **bias**, the grain and gravity are no longer working together and it starts to look messy. (That is, unless you use the true bias intentionally, as in a bias-cut skirt or dress--see page 3). Also think about how it would look if the fabric were striped or had a geometric print--a little bit off and unprofessional, right?



The bias.

The **bias** of the fabric runs at a 45-degree angle to the straight and crosswise grains. It's stretchy. This means that you don't want to cut anything on the bias (with the bias vertical when you're wearing it) unless you're doing so intentionally. When a pattern intends for you to cut a piece on the bias, the grainline will go diagonally across the piece. You still align it with the straight grain the same way!

When would you *want* to cut something on the bias? When you want it to stretch or conform to curves. A bias-cut garment (usually a skirt or dress) will look slinky, lingerie-inspired, 1930s, etc. Like a slipdress, for example. The bias cut causes the fabric to slink around your curves and cut back in, giving it a slinky feel.

Another intentional use of the bias is bias tape or bias binding, used to finish off the edges of some projects. Because the bias can conform to curves, you can use the tape to finish curved edges without any puckering.

Bias is difficult to work with. I always say it's like a Chinese finger trap, because actually those are cut on the bias (note the "x" pattern to the weave, as opposed to a "+" pattern). When you pull on it horizontally, it gets really short/fat (so you can't get your fingers out). When you push on it horizontally, it gets really tall/skinny (allowing you to remove your fingers!). Think about that when you're working with it. It totally makes sense, I promise.



The grainline.

The **grainline** needs to be perfectly aligned with the straight grain before you cut out each piece. So how do we make that happen? We use the fact that the selvage edges are on the straight grain.

First, lay out the pattern piece so that it *looks* like the grainline is parallel to the selvage, as best you can. Then, pin through the pattern piece and the fabric on one end of the grainline. Measure from the grainline where you pinned it to the selvage edge with a measuring tape. Try to keep it square with the grainline and the selvage--no diagonal measuring. Remember that measurement.

Move over to the other side of the grainline. Put the measurement from before (on the measuring tape) at the selvage edge roughly below the other endpoint of the grainline. Move the pattern piece until that end of the grainline hits the tip of the measuring tape. Essentially, make sure the measurement between the selvage and the grainline is the same at each end of the grainline, and that no part of the pattern piece is hanging off the fabric or overlapping the selvage. Pin down the second end of the grainline. Now you can pin down the rest of the pattern piece and cut!

Measuring your grainline is important! Your finished project will look so much better if it's precisely on grain.

