

Fun With Bias
By The Renaissance Tailor
http://www.vertetsable.com/demos_funwithbias.htm

The Fear of Bias

Roberta Carr in her text *Couture: The Art of Fine Sewing*, speaks about 'bias':

"The fear of working on 'the bias' was ingrained in many of us at an early age. Some sewing teachers spoke of it as 'the enemy', never to be understood and to be kept at a distance. The bias is not a disease - it is a grain of cloth that when respected, can be used to advantage to produce remarkable results."

She is specifically talking about couture sewing in which bias is used to achieve some dramatic effects. Most of you are probably more interested in how I can possibly make working with bias into a good idea for historic tailoring, let alone a 'fun' thing to work with. Bias is one of those things that can be your best friend or worst enemy - no in between. Those of you who have heard the term but don't quite understand to what it is referring have, in all likelihood, already run afoul of the Bias Beast. Let's begin with a quick definition of the term 'bias' and then we'll go on from there.

What is 'Bias'?

At its most basic, fabric is a matrix made up of warp and weft threads. The warp threads are the long threads that are rolled through the sheds of the loom during weaving. The weft thread runs back and forth, in and out of the various warp threads. This whole operation makes a grid, with warp threads running along the 'y' axis and weft threads running along the 'x' axis. The selvedge edge that runs along both edges of the piece of fabric run along the y axis, parallel to the warp or 'with the warp'. The selvedge edge is the best landmark for figuring out the 'grain line' of the fabric. Common grain line runs parallel or 'with' the warp threads.

When we cut our pattern pieces out of the fabric, it is important to place the pattern pieces with the 'straight of grain' or, to be more specific, to make sure that the pattern piece has the bulk of itself along the straight of grain. This does two things. First it makes sure that there is as little bias as possible in the cut piece. Second, this aligns the piece with the long, warp threads in the fabric. This is a modern couture thing but I've seen much evidence for this treatment in the Tailor's pattern books from period. Without fail, the pattern pieces are laid with the straight of grain. If the fabric has a nap, the nap is always facing down. This is contrary to theatre costuming in which the nap always runs up to catch the light.

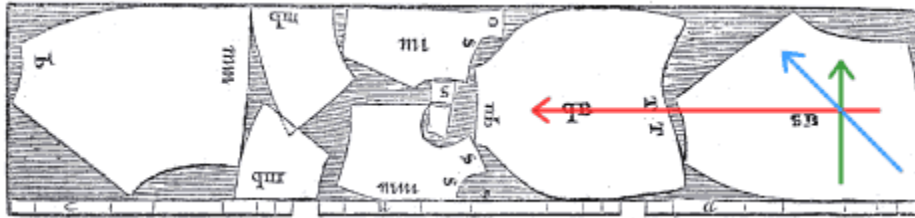
Bias cuts, and more specifically, true bias cuts happen when we cut the fabric at a 45 degree angle across the warp and weft threads. This compromises the matrix of the fabric and allows 'stretch'. This is where we can get into real trouble if we don't pay attention to how our pattern pieces are cut out. Different values of 'stretch' when they are planned for, are a good thing. Stretch where you don't want it creates wrinkles and ill fit with virtually no way to remedy the situation without removing the piece and re-cutting it.

Rectangular construction methods rely on straight of grain for most of the pieces in a pattern but the fit in such is invariably accomplished by use of bias engineering.

Fitted clothing, however, has pattern pieces that regularly violate the bias; from actual true bias to non-true bias. This is essential in getting those fitted pieces to actually fit but, as I've mentioned, if you don't know how the fabric is going to behave, you can get into trouble. The basic rule is that the closer to true bias a cut is, the more it will stretch. We'll talk more about this when we discuss sewing methods.

Historical Fun With Bias -

Take a look at the pattern below:



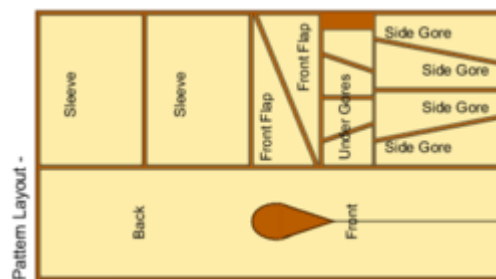
Pattern #147, from A Tailor's Pattern Book by François de la Rocha de Burguen, ©1998 The Victoria and Albert Museum, all rights reserved.

The red arrow represents the warp line or grain line of the fabric. This is known as 'lengthwise grain'. The green arrow represents the weft line of the fabric. This is known as 'cross grain'. The blue arrow represents true bias of the fabric.

This particular pattern is from a Tailor's Pattern Book from 1618. The fabric is folded, selvedge edge to selvedge edge, thereby cutting two of everything. The pattern pieces are, from left to right: pant leg, doublet skirts front and back, doublet back, collar pieces and doublet front, sleeve, and other pant leg.

As you can see, there is a great deal of bias cutting going on here in these complicated shapes. However, very careful attention has been paid to those parts of the clothing where the stretch of bias is unwanted as well. This is controlled for by placing those spots on the straight of grain when cutting. For example, the inseam of the pant leg, which is the only straight cut on the pant leg, is cut almost on the true bias of the fabric. Inseams are a good place for stretch so this is a good thing. However, we would not want the front of the doublet to stretch out and get all wobbly so the majority of that line is on straight of grain. The bottom of that line is place somewhat on the bias which would stretch to accommodate the curve of the stomach. Same goes for the doublet skirts. The fronts are place on the straight of grain, the sides almost on true bias.

Take a look at the rectangular pattern below:



This is a rectangular pattern for a Central Asian coat from about the same time period as the first pattern. Almost every piece is cut or ripped on the straight of grain. The exceptions are the side gores, the under gores and the front flap. All these pieces have one cut on the bias. When the construction phase is reached, as illustrated above, the bias cuts for the side gores and the front flap are mated with straight of grain cuts on the body piece. This accomplishes two things. First, it makes sure that the stretch of the bias cut only stretches so far and doesn't become wobbly. Second, it forces the fabric to lean and stretch around the body, thereby fitting it to the curve of the body. The under gore, however, has the bias cuts sewn together. One of the biggest reasons for this is that the area under the arm requires as much stretch and give as possible to make it comfortable.

The Great Bias Binding Debate -

Historical edge binding? Was it cut on the bias or wasn't it? That's a really good question and is not always easy to answer. As a general rule, it was not cut on the bias. Bias was a known and used term in period but is a very wasteful way of doing things. Most of the time, in period, a real distinction is made between cutting a strip on the bias and embellishing it on the bias. To cut it on the bias means just that. Embellishment on the bias means that the embellishment, most often linear, was done at a 45 degree angle to give the strip a candy stripe look.

Most of the historical pieces I've been able to look at have pieces of edge binding that were either straight of grain or not true bias, made up of scraps left over from the initial cutting of the garment. None of the Tailors books I've seen have any reference to bias cut binding and only two have references to bias cut garments, which take advantage of woven stripes in the material, to form chevrons in the finished garment. Almost all do make reference to using the 'cabbage' or scraps as binding.

Two specific historical examples show edge binding in enough detail to make the determination that it was cut on the straight of grain. The first example is the sleeved pair of stays of pink watered silk in *Fashion in Detail* by Avril Hart and Susan North. This pair of stays is English and has been dated to 1660. The pictures in this text are so good that you can see the grain line of the edge binding. It is clearly on the straight of grain. The second example is from the text *Costume Close-Up: Clothing Construction and Pattern 1750 -1790*, by Linda Baumgarten & John Watson with Florine Carr. To quote:

"Today, we use strips of fabric cut on the bias to bind edges. In the eighteenth century, bindings were cut on the straight of the goods. Certainly the extreme waist of material that results from cutting bias binding would have been unacceptable in the 1700s. In fact, it may not have occurred to eighteenth-century seamstresses and tailors to try it. It is difficult to manipulate straight-grain binding around curves with a machine. When working by hand, one can make adjustments and ease the textiles together."

In other words, bias binding is fairly easy to sew onto a garment with a sewing machine. You can stretch or not to fit around corners as you go. Straight of grain binding almost always has to be sewn on by hand. Corners and curves need to have the strip eased around them as you sew. While only one example is in the scope of this website, both point to what I believe is evidence that bias

How to Make Bias Work for You -

One of the first things I do when I draft out a pattern is to mark the grain lines. I follow three basic rules in order to find a good grain line for each piece. First, I look at the position of the piece and try to put the grain line parallel with the body or on the vertical line. If the piece is a sleeve, I run the grain with the length of the arm. Second, if I am going to be engineering the pattern on purpose to use the bias, I look to see if I can sew the bias cut to a straight cut or a similar bias cut that will work with the various stretches. Bias seams curve very nicely around bodies and when planned for and done correctly, can virtually eliminate wrinkles and improve the fit of a garment. Lastly, if there is no real landmark, I always default to the vertical or with the warp.

When sewing bias cut seams together, it is very important not to stretch them in any way. I don't usually pin these seams together, preferring instead to adjust as I go. You can also use the feed dogs of your sewing machine to slightly gather the bias cut side as you sew it to a less biased or straight cut side. If both sides are bias cut, the convex side should be on the feed dogs and the concave side should be on top so that you can fuss with it as you go.

As far as bias binding goes, I use it every chance I get. My favorite method is to make up the bias first, prior to starting anything else so that I can simply grab it when I am ready. This involves cutting the strips and sewing them together, end to end. Sometimes I'll press one or both sides and sometimes, I'll not worry about it. Often, I'll sew the binding on first and then press it over in preparation for tacking down.

There... that wasn't so bad... Bias is your friend.