Bow Maker
Roger Treat

By David Papazian

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How did you learn this trade?

I took a number of courses, first at the University of New Hampshire with Lynn Hannings and George Rubino, and later at Oberlin in Ohio, with Rodney Mohr and Jerry Pasewicz, all master bow makers. I'm fortunate to know a fine bow maker from New York State, Bill Salchow, whom I've visited several times and he has been very helpful and generous, sharing his considerable experience and passing on various bow making tips.

Is it true there is a German and a French school or method of bow making?

Yes, there is a German or English tradition of bow making, and a French method. How I learned was pretty much the French way.

And how does that distinguish itself?

In the French method, it's all done with planes and files and you put the camber (curve) in the bow by heating it in small sections at a time, to get the camber you want, then continue planing and filing it, graduating it down, constantly checking the curve and the thickness as you go along.

That must be a little awkward, working the bow after it's been cambered?

No, not really. I use a number of planes. For roughing out the bow, I have a basic block plane, readily available, like a Stanley. After that, I use four other planes. Two have flat bottoms and the other two have curved bottoms. The bow starts out as a square, and then you knock the corners off, so it becomes an octagon. As soon as you get it roughed out, then you bend it and if the bow twists, you'll correct the facets so they line up with the head. At this point, the bow is oversized. You put hair on it as soon as possible so you can tighten it up and see how it reacts, and get all the kinks out of it. You can't make a bow straight with the right camber without putting it under tension at some point.

Does the French method have a certain style of cambering as well?

Basically, you want an even curve from the tip to the frog so that when you tighten it, the whole bow comes up evenly. You don't want one part to come up above the curve while the other part is down. Generally, you make the curve so that if the bow has no tension on it and you put it on a flat surface, the middle of the camber will touch the table either in the center or a bit closer to the tip, but it needs to be quite flexible at the tip.

Can you explain that a bit more?

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Pernambuco is the wood of choice?

Yes, all the great old bows are made from pernambuco. Some of the lesser bows are made from brazilwood and some others from snakewood, which tends to be very heavy.

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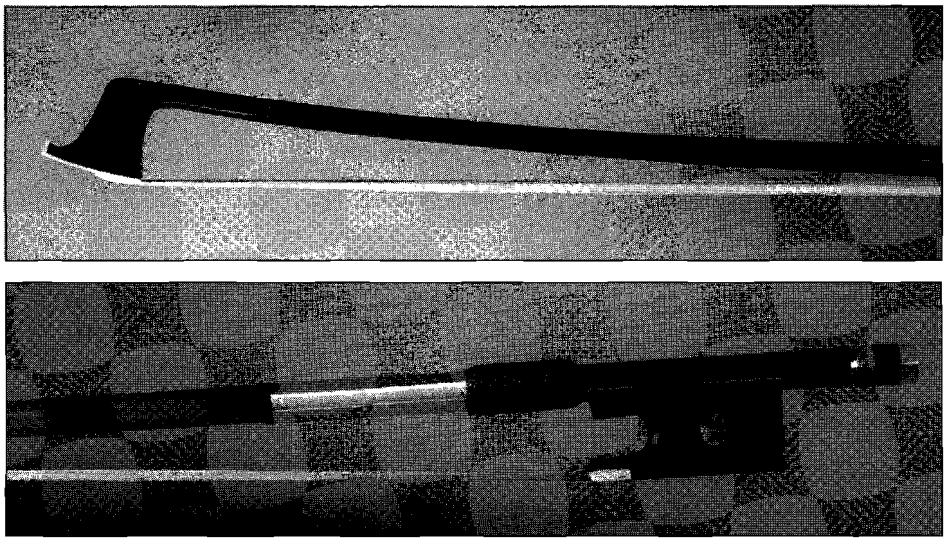
naturally, and it can be red, yellow, almost white or orange. It does darken somewhat with exposure to the sun over time.

What are the qualities of this wood that make it ideal for bow making?

First of all, it's incredibly dense. The better wood will sink if you put it in a tub of water. It seems to have strength and a certain amount of elasticity so that you can take it down to a fairly small dimension and it remains strong and yet is flexible after it's cambered.

Could one consider those characteristics as opposing, paradoxical?



The head (top photo) and frog (bottom photo) of a bow by Roger Treat.

Yes, there are opposites there. Part of the problem is you're trying to make the bow a certain weight without losing the strength, and the more wood you take off, the softer it gets, the more flexible it gets, so it's a constant balance between the strength of the wood and its weight. On the other hand, you don't want to make it too stiff because it's hard to get the nuances of sound if the bow is too stiff. The other important thing is the balance of the bow and there's a range of balance points which are considered acceptable. Makers measure it in different ways, but the way I measure it is, when you have the frog in the most forward position — closest to the grip — with the hair loose, you balance the bow on your finger and measure it from the wood at the button (screw) and that range is 8 1/2" to 10". I try to make it about 9 1/2" to your finger.

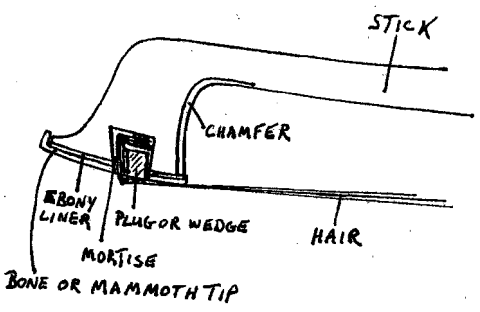
Presumably, if you found a good plank of pernambuco, you would have the luxury of working with several bow blanks of consistent quality?

Unfortunately, that's not always the case. Sometimes you can have two sticks right next to each other that are completely different. Sometimes they are pretty similar, but often you are surprised so you really have to judge each stick individually. The first step is to try and locate some good wood and a good supplier so that you have a number of blanks you can choose from, so that if someone wants a particular type of bow, you have some selection. You can't just take any piece of wood and make a good bow. You have to rough it out to get an idea of how it's working. After a while, you develop a sense or intuition of how to proceed with a particular stick. You can play around with the weight a little bit by adjusting the frog and also the grip — a silver grip or a whale bone grip, which is lighter, or a silk wrap, which is lighter yet.

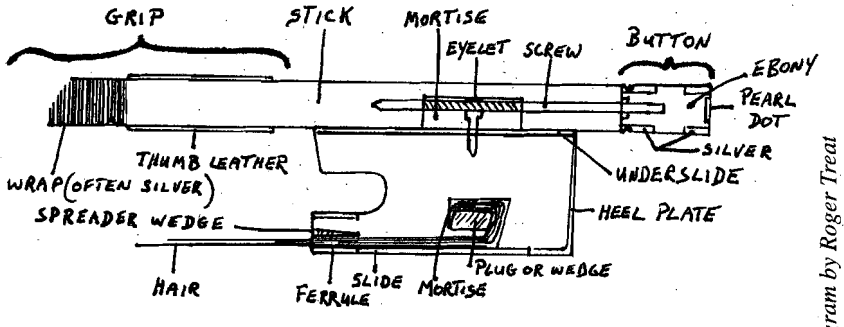
Players refer to light or heavy bows. They mean the overall weight of it, but I wonder if this can be deceptive depending on how well balanced and crafted the bow is?

Well, as with the balance point, there is also a certain accepted weight range which is between 55 and 65 grams. Most bow makers try to make a bow about 60 grams, which includes everything — the frog, the grip, the hair. Again, you have to rely on each particular stick because the wood is so different, and some you have to make heavier because the stick is getting too soft and you can't get the weight down below, say, 62 grams. But I think you were speaking of the feel of it in your hand, and if the balance point is closer to the tip, it will make the bow feel heavier — tip heavy — and if it's back towards your hand more, the bow will feel lighter. So, some people say they like a heavy bow and you weigh their bow and it's actually a very light one; it's misleading sometimes.

Parts of the bow



Head



Frog

Diagram by Roger Treat

"If [the bow] is too heavy, it will be difficult to control, and if it's too light, it won't produce enough sound without too much pressure from your hand."

But you want the tip to fall and sit firmly on the strings, don't you?

That's correct. You want the bow to sit nicely on the strings, and that's why you shoot for the average balance point of 9 1/2" so that it's not too light or too heavy on the tip. If it's too heavy, it will be difficult to control, and if it's too light, it won't produce enough sound without too much pressure from your hand.

And I suppose that depends on the individual's style of playing?

Yes, I guess it's like the violin itself; what will suit one person won't satisfy another. Classical players can't execute complex spiccato bowing with a cheap bow. They need a stick with a lot of vibrations in the wood. Cape Breton musicians need to play a lot of triplets (here they're called "cuts"), and the better bow will make the execution easier and more clear.

Does the cambering process actually impart strength to the bow?

Yes, you can't really tell the strength of the bow until it has the camber in it and if there's too much camber, the bow is weaker because it's under too much tension and makes it spring to one side.

When you're cambering a bow, do you heat it over an alcohol flame?

That's right. You heat a small section over an alcohol flame, and you bend it, either on a bending block or the edge of the bench, and you're constantly straightening it at the same time. You keep moving the stick through the flame, twirling it around and sliding it back and forth, to avoid burning it and to heat the wood evenly throughout to its core. Some sticks hold their camber seemingly forever, and others will lose some of it after a year. But the camber can be put back in, just like a bow can be straightened, so a lot of bows can be improved a lot by straightening and recambering. That's an art in itself.

Is there any truth to the oft-repeated idea that the best bows are octagonal?

No, that's not really accurate. All bows start out octagonal and generally speaking, I and all the makers I'm familiar with always make the bow round. The only time they will leave it octagonal is if they realize that taking the corners off will result in the bow being too flexible, too soft, and not having enough strength. Round or octagonal bows are not necessarily superior, but most makers, I think, like the look of a round bow. It's more sleek and elegant and there's the added benefit of not having the facet lines exactly perfect and straight. You do have to leave the facets on the end to accept and fit the frog, of course.

Does the size and shape of the head vary a little between makers?

Yes, like the scroll of a violin, the shape of the head is one of the places a maker can fashion his or her own individual style. You can vary the length of the head or the height a little to add or subtract weight.

Do you make all the fittings as well?

Yes, I make the button on a lathe and file it octagonal after. Same with the frog — I make it totally by hand. I start out with a block of ebony and use chisels, a gouge for the sides, and small files and knives. I also make all the silver parts, cutting them out with a jeweler's saw and the ferrule, shaping it and soldering it, and I make the pearl slide and inlay the pearl dots. It's a fair amount of work. I use silver for all my fittings.

Fitting the frog on the bow stick itself must be an exacting task.

It is a tricky process, because you want it to work really smoothly and that takes a certain amount of time. The main thing is you don't want the frog to be lifting up from the stick when you tighten it up. Also, you don't want it to wobble at all from side to side. If it does, it will pull the stick unevenly, causing it to warp, so you need a snug fit that works mechanically well.

I've noticed that the sound of a violin will change depending on the bow you're using. Is that the case?

That's true, and I think it's important for someone who is looking for a new bow to bring their own instrument along. Some bows will brighten up a fiddle and other bows will make it sound more mellow, so it's important to try and match the bow with the violin. It's a combination of the sound the bow produces as well as the way the bow handles. A classical player may need a more flexible bow to achieve the nuances, the wide palette of colors of sound in

their music. The flexibility and stiffness is apparent when you put pressure with your index finger on the stick. If it's too flexible, the wood will collapse and hit the string, but if it's too stiff, it doesn't dig into the string the way you want it to, so you're looking for that happy medium that allows enough of both.

Does it help to be a violin player yourself?

It definitely helped me in the beginning. You could tell right away if you were on the right track. You don't have to be a concert violinist to be able to judge a bow, but if I didn't play at all, I'd have a hard time knowing what to look for.

Do you repair bows as well, Roger?

Yes, I work part-time in a violin shop in Amherst, Massachusetts, about an hour from where I live in Vermont. I work for Matt Stammell. I do all the bow rehairs and repairs for his shop. I've repaired broken bows, broken tips, put in tip splines, bows broken in the middle, glued them and put on wraps, replaced slides, heel plates that were missing, pearl dots, reglued buttons... a bit of everything.

How often do you recommend changing the hair on a bow?

A lot of classical violinists will change it twice a year. That's partly due to the weather [in a northern climate] because in the winter, everything contracts, and the hair should be a little longer so that you can relieve the tension off the bow when it's not in use. In the spring, everything loosens up with the humidity and sometimes people will try to tighten the bow and the frog eyelet will bottom out in the back of the mortise. Then, either the button will pop off the screw or the butt of the stick will crack or the eyelet will strip. It's important to be aware of that. The hair does wear out as well. Some people break a lot of hair and it gets thin. Other people break very few, but after awhile the hair just doesn't hold the rosin. It gets old and dust, dirt and grease get into it. It's the rosin that makes the sound. It creates the friction between the hair and the string. With no rosin on the bow, it makes no sound at all. Some people use a lot of rosin. I find that too much will deaden the sound. New hair needs some time for the rosin to work into it, but you don't want to overload it. Supposedly, the less rosin you put on, the bigger sound you will get.

Can you explain how the hair is held in the head?

There's a mortise in there that has an angle that slopes back. When you tie off the hair, you wrap a thread around it to hold it. It's not glued into the head, it's just placed in and there is a wedge that is cut the same shape as the mortise and when the hair is pulling against the wedge, it can't come out. At the other end, there is a mortise in the frog that has an angle of 10° or so and the plug slides in there and with tension on it, the hair can't come out. Those plugs should never be glued in and can be reused if they aren't damaged. There is also a spreader wedge in the ferrule between the hair and the ebony which is glued on one side only, to prevent it from coming loose with the constant tightening and loosening of the hair.

What should you do when you break a hair?

You shouldn't pull it off because eventually it will loosen the knot

in the end and all the hairs will come out, so it should be cut or clipped or bitten off at each end to preserve the integrity of the remaining hair. Also, some people tend to break a lot of hairs, usually from one side of the bow, and after a while, that will tend to warp the stick to one side because it's under unequal tension. So, if too many hairs are broken, it's time to rehair the bow.

Any other maintenance points you would like to share?

The bow should be loosened after playing. Left under tension all the time, it will tend to lose camber eventually. The bone tip should always be in good condition. If it's damaged or cracked, it can tend to blow out the mortise because of all the pressure on the head when it's under tension and that is the main reason for that bit of bone being there. It is glued on and hooked over the end to protect the head. Ivory used to be used for the tips but now, due to the worldwide ban on the ivory trade, it's usually either bone or mammoth (mastadon) that we use.

How do you finish the wood of the bow?

I put a French polish on the bow, which is a shellac cut with denatured alcohol. It is very thin and can be cleaned and reapplied if necessary.

I understand you had a prestigious sale awhile back...Buddy MacMaster bought one of your bows?

Yes, that was a few years back. It was quite an honor for me. Buddy has always been one of my fiddle heroes. I've admired his music for a long time.

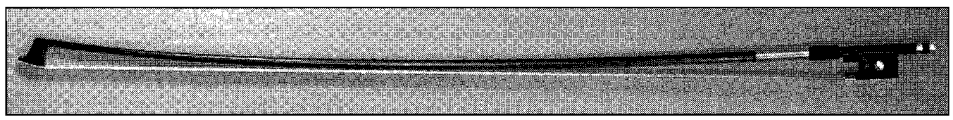
I remember trying out that bow myself one time and liking it a lot. I've known you for several years, and may I say, the bows are getting better all the time. Once I've made my fortune here in Cape Breton, I'll have to treat myself to one.

Well, thank you.

So Roger, you live in Vermont but you have some Cape Breton connection?

Yes, I live in Putney, Vermont, and we have a summer place at Sight Point, Inverness County, Cape Breton, and I come every summer for July and August. My parents were teachers and discovered Cape Breton back in the '50s and fell in love with the place, so I came every summer as a child. In fact, one of my sisters was born in New Brunswick on our way home one year, so we have a Canadian in the family. So that's how I first heard the music here and I've been playing the violin for over twenty years now. There's an older gentleman, Joe Kennedy from Inverside, north of Inverness, and he used to play for some of the camps down the road from us in the summertime. He was the first fiddle player I ever heard and he inspired me to learn. He's still a good friend of mine. Over the years, I've come to know a lot of great fiddle players, like Stan Chapman, Jerry Holland and Cameron Chisholm, and I pick up the odd playing tip from them.

Roger's violin was made by Bob Childs in 1993. He plays with one of his own bows. Buddy MacMaster and Joe Doucette of Cape Breton, and Mary Lea of Brattleboro, Vermont, also play with Roger's bows.



For more information on Roger's bows, contact him at P.O. Box 35, Putney, VT 05346; (802) 387-4782.

[David Papazian makes and repairs violins, mandolins, and octave mandolins and plays the fiddle. He can be contacted at 44435 Cabot Trail, Little River, Cape Breton, N.S., Canada B0C 1H0; (902) 929-2953; papazian@cranfordpub.com.]

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