



MAKER'S BENCH

MNSOTA All-State Teachers Workshop

Evaluating Instruments for Set-Up Issues. Basic Repair “Tips And Tricks.” Diagnosing Common Problems in Sound and Playability. Attainable Set-Up Improvements and Minor Repairs for String Teachers.

by John Waddle

I was invited to lead a discussion at the MNSOTA All-State Workshop on Saturday, August 7th at the College of St. Benedict in St. Joseph, Minnesota., on the issues in the title. We had a good discussion, a lively group, and some good questions.

As a luthier (violin maker), and dealer, I am expected to provide service for the instruments I've made and instruments and bows I've sold. Just as, to become string teachers, it takes years to learn how to play them, and then to learn how to teach others how to play them, it takes years to learn how stringed instruments and bows work, how instruments and bows are made and how to maintain, restore or repair them when something happens to them.

As string teachers, there are some things you can help your students with to maintain their instruments and bows and avoid costly repairs. Part of this is showing them by example. If they see you handling your instrument correctly, taking good care of it, and treating it with respect, they are more likely to do the same. Please train your students to realize how fragile the varnish is, and how easily sweaty hands can ruin the varnish through touch.



This damage is from a violinist with sweaty hands who handled the violin inappropriately over about two years.

My observation has been that you, as their instructors, are the ones students look

to for advice. You are the ones they trust. They watch what you do, and they listen to what you say. They see you on a regular basis, and they spend a lot of time with you, sometimes over many years. Often, the first thing I hear when your students or their parents contact me, is “My teacher said...”.



This damage is from a cellist with sweaty hands whose habit was to rest her hand on the cello. This happened over just a few months of use.

I started the discussion at St. Ben's by emphasizing the importance of carefully listening to the player whose instrument you might be entrusted with. What are their concerns? Often it might be something quite simple. If the problem is something about how the instrument sounds, I'll ask them to demonstrate by playing it for me, so I can hear it, and I can hear it in my shop, before I do any work on it. The instrument may not sound the same to them in my shop, or in your studio than it sounds in their home.

Tip: listen to the student. What is it that they need help with?

It's also important to familiarize oneself with the instrument before doing anything. Once I've gotten a clear idea of what the customer is asking, or in my case, if it is an instrument that I will possibly be interested in selling, I always start by holding the instrument out at arms-length and squaring my eyes to the back, and then letting my eyes travel up to the neck and scroll. This will quickly let me know if the back is basically in good shape and if the neck is in alignment with the body. I look for any cracks in the back or damage to the button area. Many older instruments have had neck damage and repairs may be visible. If there has been damage, and the repair was done well, it may not be a problem. If the neck seems to be off or the button area is weak, the instrument may need some work.

Next, I will look at all of: the ribs, the neck and neck joint, fingerboard, peg box, pegs and scroll. I look for open seams between the ribs and the top and back, cracks in the ribs, and ribs that may be loose from the blocks. I look at the neck and the neck joint to see how the neck was shaped, and how well it was fitted to the body of the instrument. I check the fingerboard for wear, grooves under the strings and general wear from the fingers. I look at the peg box to see if there are cracks that have not been repaired well, to see if the pegs are positioned in the peg box correctly, and how the pegs look. I look to see if the pegs are wearing out, and if they look like they were fitted correctly. I look at the scroll to see how well it was carved and if it has any cracks or how much wear it has.

Next, I turn the instrument, so its front is facing me. Again, I hold it out and square it visually to my eyes. Is the neck in alignment with the body? Is the top in good shape? Does it have cracks? If so, are the cracks secured properly? Is the bridge

straight and where it needs to be? Has the instrument been played a lot? Is it in good shape? If the instrument has a crack that has not been properly glued and reinforced, I will discuss how to take care of it before doing other work.

Lastly, I look inside the violin with a lamp to see if there is a label and what it tells me. I don't want to see the label until I've looked at the whole exterior of the instrument, because in the process of looking the instrument over, I may form an idea of the identity of the maker, or the region in which it was made or whether it is an old instrument, or one that is newer but made to look old artificially, which is a common practice.

Once I've examined the instrument in my shop, I use a work order form to record the owner's name, address and phone, what the instrument is, and twelve key measurements. I measure the exact position of the bridge in relation to the upper edge of the instrument and the f-holes. I measure the position of the sound post in relation to the bridge. I measure the string length between the nut and the bridge and between the bridge and the tailpiece. I measure the height of the strings, and once I know all of that, I take the strings, bridge and tailpiece off and put them in a safe place. I take the pegs out and look at them.

In the process of recording these basic measurements, I often find things that need attention or can be improved. I'll also put each instrument on my digital scale to see what it weighs. I have weighed hundreds of instruments, and I have a sense of how the weight of the instrument will affect playability and sound. Often at this point, I'll go over it again to see if I've missed something the first time.

Once I'm satisfied that I've carefully assessed the instrument, I'll start to write down what observations I've made about possible improvements or corrections that need to be made so that I can go over the estimate with the player.

This preliminary work is important because even if you are doing something simple like tuning an instrument or changing a string, without knowing the instrument, one can really get in trouble quickly. For instance, if someone hands you their instrument and asks you to tune it for them and a peg is not fitted well, which means it requires more than usual pressure to hold, and there is a crack in the peg box that you weren't aware of, in the process of trying to tune the instrument, you could open up a

crack in the peg box. Or you could break the head off the top of the peg box, or you might break the peg. (I've seen both of these things happen).



This damage could have been prevented if the pegs had been working properly.

Or, if someone asks you to change a string for them and you take the tension off one of the strings and the sound post isn't fitted properly and soundpost falls, you've got a problem.

Tip: Know before you touch someone's instrument or bow, what you may be getting into.

Professionally fitted traditional tapered pegs are a joy to use. A poorly fitted or worn-out peg will often slip and not want to stay. A peg that is fitted properly but is sticking might just need some peg compound to make it turn easily.

Tip: Hill Peg Compound will help a sticking peg.

Pegs that don't fit or are worn out should be replaced by a professional.

There was some discussion about Perfection Pegs and Wittner pegs. Both have a mechanical gear reduction mechanism to make them easier to tune with. Both come in various sizes so that they can be installed in an instrument with little or no alteration of the original peg box holes. The Perfection pegs must be glued in, while the Wittner pegs can be just pressed in and will hold without glue. One member at the workshop shared that he had Wittner pegs put in his cello several years ago, and that he likes

them and hasn't had any trouble with them.

More and more players are using tailpieces with four fine tuners built in. I've put countless Wittner Ultra tailpieces on violins, violas and cellos, and they are relatively easy to put on and work well. I've had no problems with them. They do make tuning much easier.

Bows

I use a similar process when taking in bows, either to service or as possible items for sale. I check the weight and balance of each bow on my digital scale. Musicians are extremely sensitive to issues of weight and balance with bows, but each musician has their own ideas about it.

Before re-hairing or doing any work to a bow, I will check the whole bow's condition. I check the tip to make sure there are no cracks in the tip or the tip plate. If there is a crack, the tip needs to be replaced before re-hairing. I will also check to see if the bow is straight or if there is a crack or spline in the shaft, before tightening it and again after tightening.

Some bows need straightening or cambering. This needs to be done by an experienced bow maker.

The frog and button need to be checked as well. If there are cracks in either, or chips in the frog, these should be repaired. The frog and button need to be kept clean and lubricated in order to function well. The grip and thumb leather are there to protect the shaft of the bow from wear from the hand. These need to be kept in good shape.

I'm finding that a lot of musicians are over tightening their bows. Too much tension can cause the bow to break off at the tip. Too much tension over time will also stretch the hair in the bow and can cause warping. The bow needs to be tightened enough, but not too much. Putting too much tension on the bow doesn't really help the sound or the way the bow works. If the bow is not strong enough for a player, they might need a stronger bow, or they might need help with their bow handling skills.



This is what can happen when a bow is tightened too much.

Over time, the hair will stretch. This is

normal. Bows need to be re-haired and checked generally once a year. After playing, and before putting the bow back in the case, the bow needs to have all the tension taken off the hair. This is something I've noticed that hasn't been happening during the pandemic with online lessons, I think because teachers can't see students doing it.

Winter is coming, and once again we need to pay attention to humidity. When the heat comes on, the air gets dry, and if

not protected from the change, instruments will crack. Cracks are expensive to repair, take time, and will influence the value of the instrument. This can be prevented by humidifying the room where the instrument is kept, the case, and the instrument with humidifiers. There are many choices of humidifiers. Keeping a hygrometer visible and keeping an eye on the humidity will let you know when to take action to keep the instrument from getting too dry.

Tip: Use humidifiers.

John R. Waddle is a violin maker, dealer, and restorer whose shop is in St. Paul, Minnesota. He is a 1981 graduate of The Violin Making School of America in Salt Lake City, Utah, and has had his own shop in St. Paul since 1986. John is a member of both The American Federation of Violin and Bow Makers, and the Violin Society of America. †