



FROM THE MAKERS BENCH

Better Instrument Setup

by John Waddle

This is the nut that lifts the strings, which are pressed to the fingerboard, which is attached to the neck, which is glued into the body, which supports the bridge, which transmits the vibrations on the violin that an artist built.

What a player feels when he or she presses down on a string is determined by a large variety of factors, including the height of the bridge, the height of the nut, the shape of the fingerboard and the choice of strings, to name just a few. When the bridge is shaped properly, the neck is set into the body properly, and the fingerboard and nut are shaped properly, playing is much easier. When any of them are even slightly off, a good player will feel it, and it will make it much more difficult to play and express the music. These issues figure into the “playability” of the instrument. Here are a few of parts of your instrument that, if properly aligned and adjusted, will make it play well.

Starting at the top end of the instrument, the nut is the piece of ebony that lifts the strings off the fingerboard near the peg box. Grooves in the nut keep the strings at a proper distance from each other and away from the edges of the fingerboard. The sign of a well-made nut is that your left hand doesn't notice that the nut is there. If the nut is incorrectly made, it can cause the alignment of the strings to be off which can affect the tone. If the grooves in the nut are not shaped correctly, you can get annoying buzzes. But the nut is only the first aspect of a good setup. If the fingerboard isn't shaped correctly, the playability won't be as good as it can be.

The fingerboard is also made of ebony. It, like most everything on a violin, viola, or cello has three functions: artistic, acoustic, and practical. A properly made fingerboard will look elegant, enhance the sound of the instrument, and feel just right to the player. Knowing how to make a proper fingerboard, or how to correct what is wrong with one that is not made correctly, is part of making a good setup. The shape of the fingerboard is very complex. Not one of the surfaces a player feels on the fingerboard is flat. It takes quite a bit of skill, experience and training to optimally shape a fingerboard. But the nut and fingerboard sit on the neck, which also plays a part in the setup.

The neck is usually made of maple. What sort of maple the maker chose (soft or hard, plain or highly figured, etc.) can affect on the sound of the instrument. It is critical that the angle between the neck and the body be properly set for optimum playability and sound. The neck must be cut right to feel comfortable to the player, and still hold up under the tension of the strings (roughly 50 pounds of tension on a violin, which is the heaviest suitcase you can take on the airplane without paying extra money. Imagine the suitcase you took to the ASTA convention last year sitting on top of your violin!). The neck, fingerboard and nut are there so your left hand can create your perfect intonation by pressing down the strings, and the strings are also part of your setup.

The strings introduce variables. Many variables. There are high and low tension strings, thick and thin strings, smooth and rough strings. Perlon core, gut, gut core, steel core. Ad nauseum. What will work on one instrument may not work on another. What one player likes, another can't stand. A player can spend a fortune on

strings, have a nut that feels invisible, a properly planed fingerboard, perfect neck angle, but still be unhappy because something else may be off. For example, the bridge.

The bridge is made of maple, which is a hard wood, though not as hard as ebony. There are many styles of bridges that can be used on an instrument. The style, the wood of the bridge, and how much wood will be removed in cutting the bridge determines much about how the instrument will sound. Each bridge is carefully fitted to the top of the instrument, shaped at the top in accordance with the fingerboard, and carved for optimum sound, beauty, and function. Each instrument is different, and a bridge made for one instrument would rarely work on another instrument. If the bridge is wrong in some way, a good player will notice it.

At this point all the possibilities begin to seem a bit daunting, and this has only been a very quick look at what goes into a good setup. All of the factors are interdependent, and all can be optimized. However, a misdiagnosis can lead to a chain of errors. For example, a student came into my shop with a violin whose strings were quite high off the fingerboard. She had been told that the bridge needed to be made shorter so that the strings would be closer to the fingerboard. In fact, the bridge was of standard height, but the angle of the neck to the body was quite low. If I had simply cut the bridge shorter, the flatter angle of the strings would have meant less pressure being exerted on the top and soundpost. This would have resulted in a violin with much less projection and a change in tonal qualities. Also, with a lower bridge, there would have been less clearance for the bow in the c-bouts. Instead of cutting down the bridge, the angle of the neck was raised. The violin was much more playable, and the instrument ended up with better tone and more projection.

Understanding all of the factors and their relationships, and being able to implement the correct improvement, are two things that separate a top quality repair shop from a repair person who may have the best of intentions but lacks the training, experience or knowledge gained over many years of working on good instruments played by good players.

This has been a very brief overview of the many minute facets of what goes into a properly set up instrument. Many musicians play for years on instruments that are poorly set up, not knowing that if they just had a few things adjusted or changed, their instrument would play much better. If your instrument is set up properly it is easier to play and that removes one more obstacle from your journey to becoming as good a musician as you can be.

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