



# From the Maker's Bench

## Rediscovering Lost Sound

by Laurence Anderson

I had on my bench recently a beautiful violin by Leandro Bisiach, a celebrated 19<sup>th</sup> century maker from Milan, Italy, whose career extended into the first decades of the last century. The violin is in remarkable condition, not a single crack, very little wear; the varnish has begun to take on the inevitable glow and depth of age. The instrument is at an age when it should be reaching its tonal peak, but unfortunately it had been sitting idle in a vault for several years and was out of adjustment. The G-string was weak, the instrument was unbalanced with an overall nasality to the tone, and it was difficult to play in tune. My challenge was to get it into shape.

When adjusting for sound, I always keep in mind that any adjustment is done with a purpose. Musicians purchase instruments because they are in love with the sound. In adjusting an instrument, the maker must try to improve the sound without changing it. Makers must know what they are looking for.

This violin had an unfortunate neck graft sometime in the middle of the last century. The graft was too short and too deeply set into the mortise. The consequence of this graft was that the vibrating string length was almost a half a centimeter too short and the angle of the neck was too steep. The short neck caused problems with fingering which was why the musician had problems playing in tune. The steep angle of the neck caused the strings to exert too much pressure on the bridge, pinching the sound. The problems with the neck were further exacerbated by a severely worn fingerboard. Resetting the neck and replacing the fingerboard were easy decisions to make. They would solve both the problems of nasality and

of playing in tune. Of course the reset would change the feel of the instrument but it would be something the musician could get used to in a few days.

The weak G-string was a more difficult problem. The sound of the G-string was uninteresting and unbalanced. Nothing I did with the sound post or the bridge helped. The problem was the bass bar, a thin strip of wood running the length of the instrument glued to the inside of the belly under the G-string. The original, made of soft spruce was 4.7 mm thick. This is very thin for a modern bass bar. In a violin, the normal thickness is 5.5 mm. The maker probably chose a thin weak bar for the new top to compensate for the strength and stiffness of new wood and a freshly varnished instrument with gut strings. But now, after nearly a century of play, the top had lost much of its stiffness and the bass bar was inadequate to the demands of modern strings. In choosing to replace the bass bar, I knew I would run the risk of altering the sound and the response of the instrument. It would feel, at least for a few months, like a new instrument.

In a recent article in the *Washington Post*, Robert Sheldon, the curator of musical instruments at the Library of Congress, commented factiously that a violin is just a pine box that vibrates. Essentially he is correct. But the way this pine box responds to the demands of a musician is nothing short of miraculous. As a maker, I am always astounded how dramatic a change tiny adjustments can make. I took out the old bass bar and replaced it with a new bass bar .8 mm thicker, about the thickness of a fingernail. In resetting the neck, I lengthened it by 1/8 of an inch, raised it by 1/32 of an inch, and changed the tilt by less than 1/64 of an inch. I replaced

the fingerboard with a new one that was 1/16 of an inch thicker.

I made these changes based on experience. Before a musician tells me what is wrong with the sound, I like to look at the set up to see if I can diagnose a problem by the neck, bridge and soundpost. Then I compare my diagnosis with the musician's actual problem. In many cases I can predict a problem before the musician describes it. As I said in the beginning, everything a maker does to adjust the tone is done with a purpose.

The final adjustments were made with the string selection. Oddly the choice of the E-string has a profound effect on the others. If you change the tension of the E-string, you have a corresponding change in tension on the G-string. A nasal G-string can be improved by a Hill E for example; a weak G-string can be improved by a Jagar E forte.

The response to these repairs were as I predicted. The G-string gained power; the nasality disappeared. But the new bass bar stiffened the top taking away some of the instrument's responsiveness and the new neck and fingerboard felt "funny" to the musician. The city of Cremona, Italy, hires a local musician to come each day to the museum that houses instruments of her celebrated sons, Stradivari, Guarneri, and Amati, to play on them to keep them in shape. An instrument is meant to be played and suffers if it is left idle for long periods of time. The violin I worked on is a magnificent instrument; its sound will be rediscovered after a few months of vigorous play.

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