Sound Analysis Report on the Comparison of the Schneider Violin Bridge to that of a hand carved and tuned Maple Bridge of Standard design and shape. By: Dennis Boring 04/2012

PRELIMINARY:

Upon receiving the Schneider Bridge(s), I was excited and eager to get to work. As they fell out of the manila envelope onto the desktop I was surprised, and I was shocked. I expected to see something akin to a current maple bridge. What I saw was a poorly manufactured, hand shaped, inconsistent attempt at making a violin bridge. There was no way any two of these bridges were remotely the same. Although the bridges appeared to be a lamination of some sort with a metallic center, it was impossible to determine if that metal was in fact gold or silver or aluminum or another shiny metal without scientific metallurgical analysis. The weights as received were as follows:

Silver Inside – 3.528 grams
Silver Inside No contouring – 3.977 grams
Silver/Gold – 3.272 grams

At first thought you would expect the silver/gold combination to weigh slightly more than either of the other two, but that was not the case, which makes me question the metallic composition of any of the bridges in the picture below. But given the 'rough' finishing done on all three, I am not surprised after examining them more closely.

In an attempt to fit the one bridge that came tagged with handwritten words saying, "silver inside no contouring" I was needing to reduce the overall height of the bridge to somewhere close to my existing maple bridge since I require E string height of 3.5mm and a G string height of 5.5mm. In order to follow the instructions and ONLY remove material on the feet, I would've ended up with no bridge at all, having needed to cut up into the opening of the center. So… in an honest effort to give this bridge a fair analysis, I cut on the top as well, keeping the shape as sent to me but using a carbide burr and deepening the depressions between the strings and sanding the top of the bridge as required to lower the strings to a distance closer to what I needed. Although I was reluctant to cut anymore off the bridge, I was able to get my strings down to a height of 4mm and 6mm respectively.

INSTALLATION & PREPARATION:

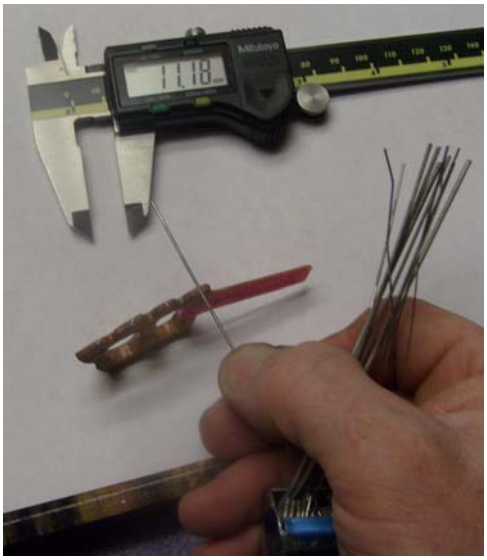
Before trimming

After trimming

Although it is obvious this would have affected the mechanics of sound transmission, there would be no other way to install this bridge so it had to be done. In an attempt to install it in the same location of my existing bridge, I attempted to 'swing' it up into position and deeply scratched the surface of the body from the harsh metallic content within the laminate. After removing the bridge I was able to refinish the affected areas with a combination of the 'French polish' procedure and a tiny bit of oil varnish diluted with 180 proof alcohol AND will wait about 3 days for it to cure before final polishing and reinstalling of my original maple bridge. The instructions said the end user should mix up some epoxy, spread it on the bottom of the feet and allow it to cure, then shape it to fit… etc. which is a complex job even for a luthier to accomplish and would add to the already high cost of the product making it prohibitive for most customers to even consider, and besides, the bridge was too tall already, and adding anything would make it too tall to even function properly.

STRING GROOVES:

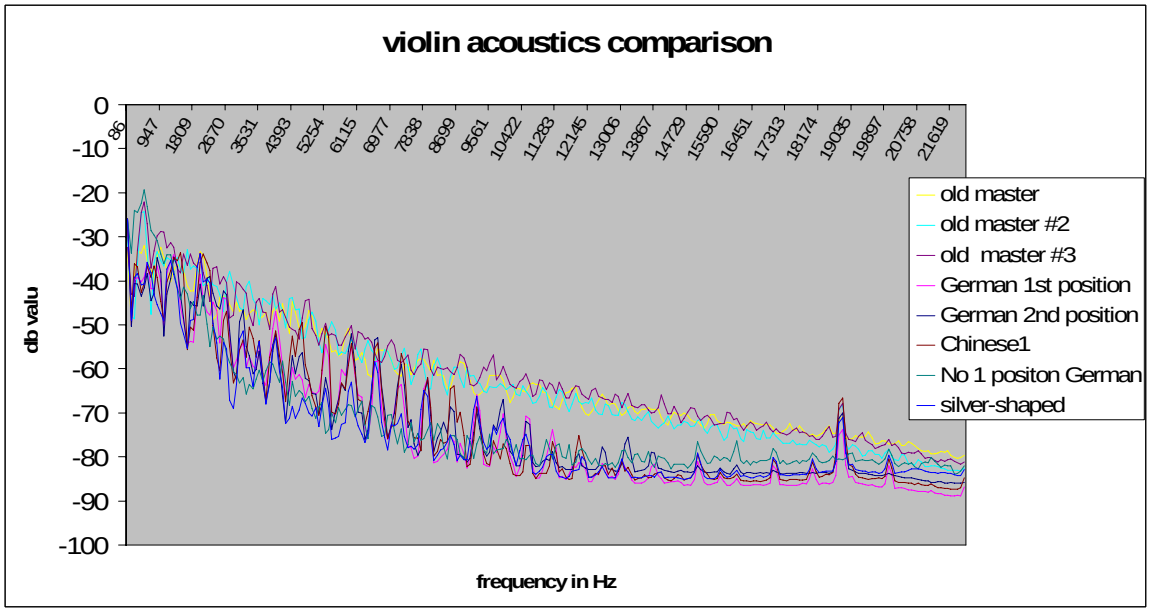
The string spacing for my violin is referenced as 34 mm outside and 11.18 mm between strings, which I was able to achieve with a little juggling. As you can see from the left side picture, the 34 mm spacing center of string to center of string would be near the edges of the top surface to the separation cutouts and if that centered measurement was held, the between strings dimension would very close to the center cutout. In order to keep the strings from falling off, it was necessary to slightly file (using a tiny round luthier file set for bridge work grooving) the top of the bridge This was extremely difficult since luthier files are made of aluminum for cutting maple wood and not a metal laminate! I think I will need to buy a new set after this analysis work is done. These are ruined. It is apparent from the pictures the inconsistent openings of the bridge, but perhaps the inventor has determined that this difference is required to achieve the magic result although they don't have the same shape on the other two bridges provided.



The filing was done to a minimum depth to just hold the string vs. the standard ½ string diameter depth of normal bridge tuning and design. Although there was a substantial metallic core to this bridge I still installed the sleeve over the E string as it pass over the bridge to keep the test results valid as it was also installed on top of the wood bridge.

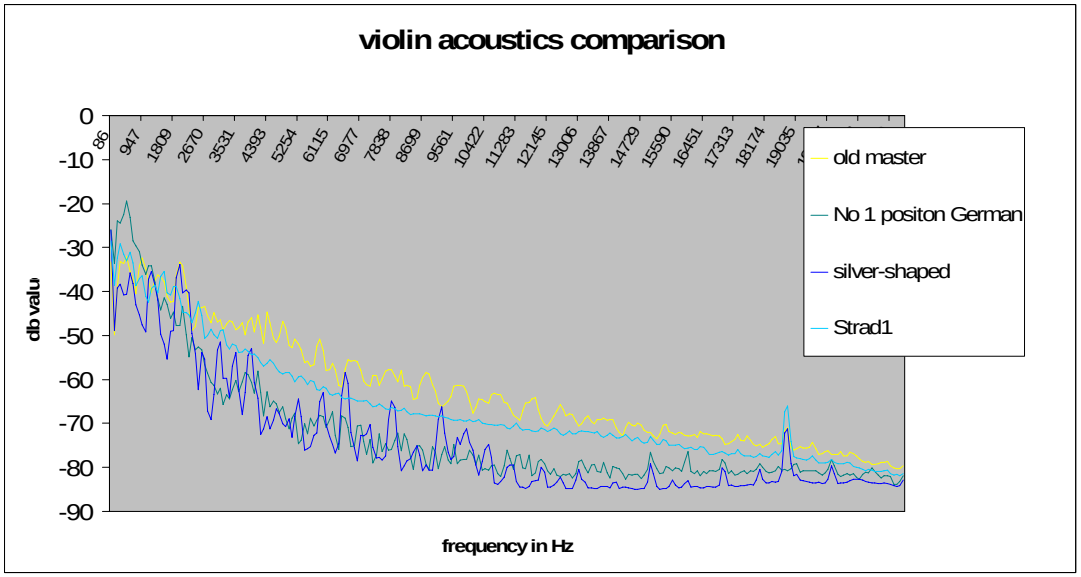
DATA ANALYSIS:

The data received from the sound sample test was compiled using a sound spectrum analyzer software and the data copied and pasted into excel where it could be calculated and charts developed for the ease of seeing & comparing the results of many, many samplings and precise calculations achieved.



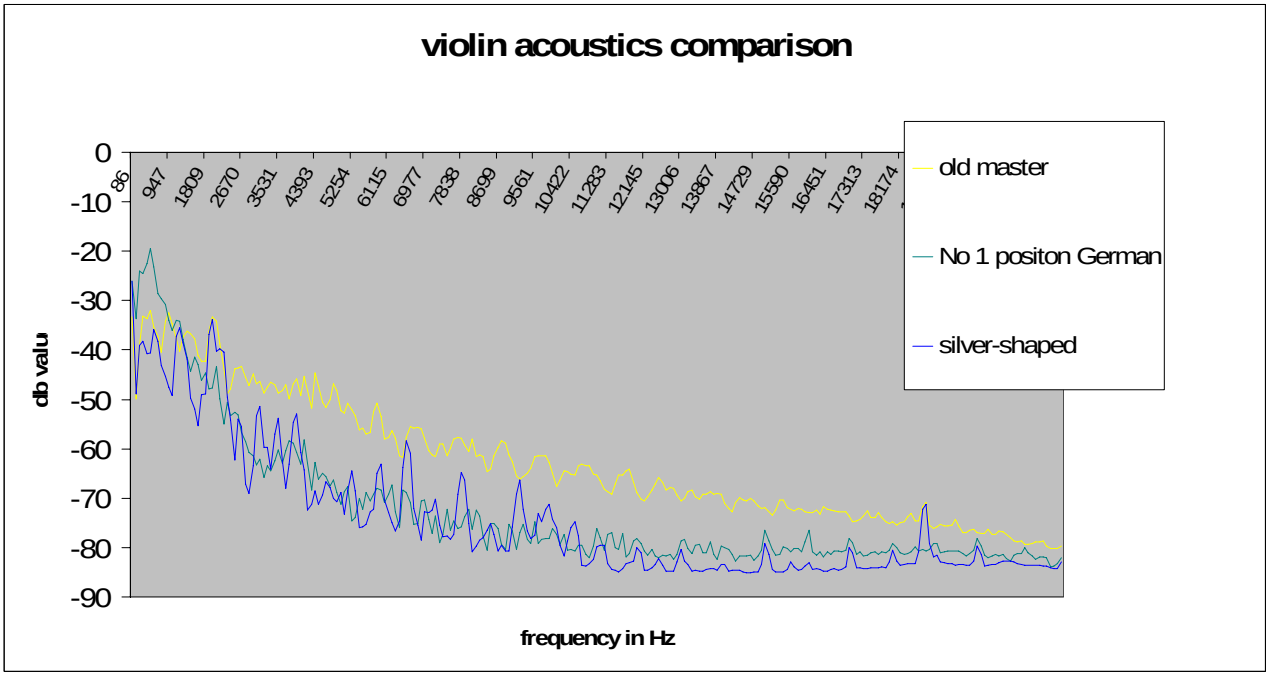
This chart was developed from hours of testing and sound analysis. The "old master" traces (the top three on the legend as well as the chart) are 1920 German violins demanding a price tag of $18,500 to $20,000 in range. As can be seen below those three traces, several of the others are mixed in. The bright pink trace named "German 1st position" is my violin (90 yr old German production instrument only valued at $650) as it was originally set up by a luthier with a 'good ear'. The remaining traces all show the various performance curves as labeled. The Chinese violin was a student model approx 10 yrs old with original metal strings installed as a comparison trace.

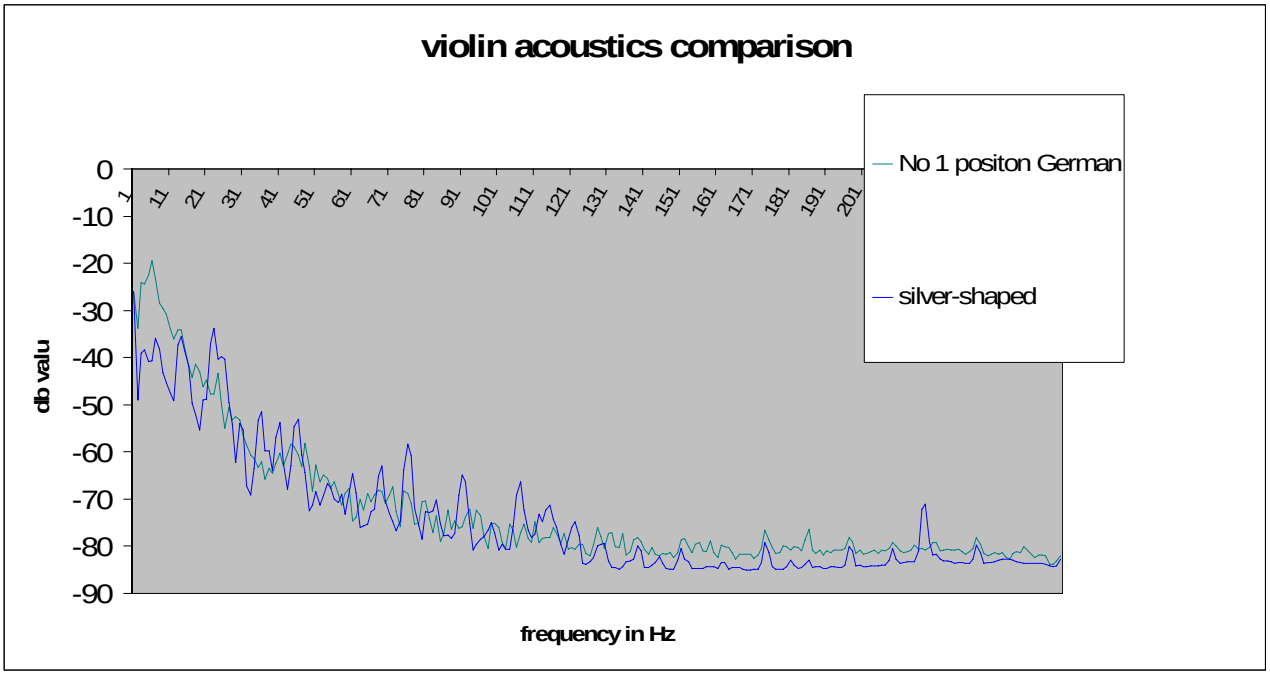
Below is a sound analysis from a true Strad ($3.2 mil) violin. Notice the smooth light blue trace! The finest violin isn't the one that is the lowest db reading from analysis, but that of the one with the least variation from frequency to frequency, and the Schneider Bridge does nothing to achieve that at any level of db performance.



PEAKS & TRACES:

The trace labeled “No 1 position German” is the final position I achieved for the maple bridge and my sound sampling software analysis of my personal violin. Below is the same chart with the non-relevant traces suppressed. I left one “old master” trace for comparison. As you can see, the best sound I could achieve using a maple bridge is far better than the “silver – shaped” trace. Although throughout the entire spectrum the “silver – shaped” bridge “jumped all over”, it was far below the actual performance of the old school maple bridge. The trace was the best I could achieve with moving the bridge forward and back and still keeping it centered on the instrument. As you will notice in the lower frequencies, the lack of sound transmission was significant and with the slight exception of some occasional ‘peak’, was well below that of a well made maple bridge.

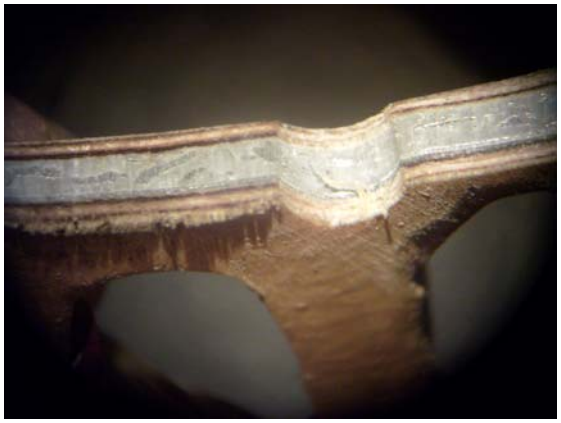


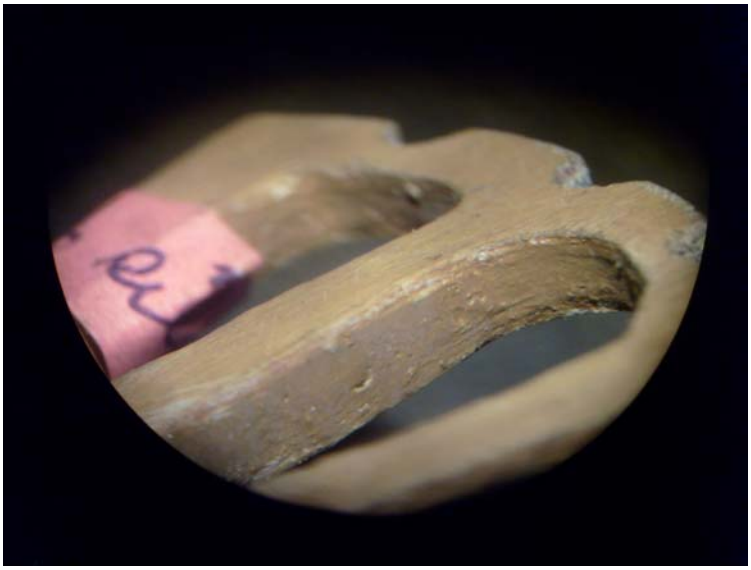


COMPARISONS:

Since this "silver" based bridge showed virtually no improvement over my maple bridge of tried & true design and construction and in many frequencies actually showed a significant decrease, the claims of it magically achieving an increase in sound, or "making your violin play like a Strad!" are completely unfounded as determined from these tests using this old German violin. Although you would think that last claim, "…play like a Strad" would imply it would also SOUND like a Strad, it is safe to assume that this claim is valid…since putting a decent set of strings on even a Chinese student grade will make it seemingly "play like a Strad" from the standpoint of the beginning violinist when comparing the sound(s) achieved. Another claim from the inventor is… "…Our Schneider Bridge will thrill you." And it certainly did. You can just imagine the thrill and excitement I felt when I first noticed the scratches deeply embedded in the body of a near century old instrument!

The inventor had sent 3 bridges for testing, but after examining them closer with a microscope, and then having such issues with the first one as scratching the violin severely, then the poor construction details, uneven surfaces, inconsistent openings, inconsistent mass, and poorly distributed flakes of silver colored metal particles in a resin mixture sandwiched between 2 small .042" thick plywood sheets, I chose to end this analysis since any data achieved beyond the initial plots shown above for initial curiosity would be meaningless in a controlled study except for that single one under study and the results will not apply to all bridges made by the inventor. Just because there's a patent issued for a design, does not indicate an acceptable product per the claims.





The poor craftsmanship of all 3 of the samples would indicate a handmade and/or prototype appearance …unworthy of retail sale at any cost. The inner surfaces were "painted by hand" with what I would suspect was an artists' watercolor brush, the texture consistent with lumpy epoxy glue of tan color as show in the above photograph. This would also contribute to the lack of performance as suggested.

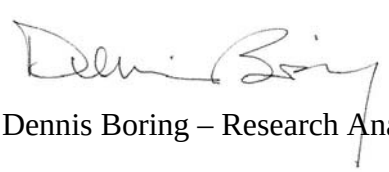
SUMMARY:

I found no indication that the Schneider bridge was anything other than a “home grown” version of an attempt to make a bridge using basic hand tools, simple techniques and no professional manufacturing practices or molds at all including the use of measuring devices to duplicate the dimensional shape of the bridges, in order to achieve a consistent saleable product. A better item could be made by a high school shop student. I also found no reason to change from my existing maple hand carved and hand tuned maple bridge, which has in all respects performed better than the Schneider Bridge at all levels, from aesthetics to functionality as indicated in the above analysis and proofs.

It is entirely possible, though not probable, that this item may in fact be manufactured in a satisfactory manner so as to produce a symmetric, consistent, well designed and duplicated blank that may only require a minimal amount of modification by the end-user to fit properly and in doing so in no way damages their instrument but unless future analysis is done and the design refined, it’s performance is still way below that of a standard maple bridge and as such makes it undesirable.

It is suggest that the designer look into the use of modern manufacturing techniques using laser, waterjet, and/or CNC processes and perhaps the use of molds and proper mixing machines to achieve a uniform recipe for the metallic/resin mixture and provide a method to prevent that metal compound from causing either string or instrument damage. The samples sent to me for analysis were exactly that… SAMPLES. In my opinion, without extensive tooling, assembly and packaging/marketing skills, this item is still in the prototype stage of development and is still a far ways from full retail production. If the use of modern manufacturing techniques and equipment were used and perhaps a professional facility, then the cost of manufacturing could easily be reduced to levels that will compete with current products. The estimated time to mfg one item in an assembly line environment can most likely approach a few minutes, instead of 2 hours as indicated by the inventor. The instruction sheet was poorly written, margins were minimal which made reading difficult and the font was all BOLD on the first and second pages with the use of all capital letters highlighting a ‘sales pitch’ style verbiage which lent no useful content to the ‘instructions’. Hand drawn sketches and the lack of photographs lent the air of ‘home made’ to the entire package and the lack of professional formatting also confirmed those suspicions.

The instructions indicate a possible move of the soundpost and since majority of the players will not have the tool required to reset the post, frustration will prevail and the customer will NOT be very happy. The instructions contain redundant sentences and need a proof reader to go over them completely and edit those areas. A combination of gift ideas, ordering and payment information and return information was found to be cluttering, also redundant in content, confusing, and also could be edited for content of relevance & importance. The instructions sent along with the ‘samples’ was very consistent with the look of the web site as well. It was poorly constructed, confusing, cluttered with non-relevant subjects and topics and forced the viewer to either painstakingly attempt to read through it or become disinterested in it’s content and leave.



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