Paul Unger's Bass: The Third Hundred Hours

(in true chronological order)

[March 8, 2010]

Here's a picture of the purfling miter on the lower corner on the back of Paul's bass. It still bears the marks of the hammer and has not been smoothed into the arching yet, but it is still interesting to see at this stage. There is an area that we call the "sinking" that follows the purfling all around the outline. The sinking will rise to the highest point of the edgework on the outside edge, shown here by the pencil line for now, and on the other side it will be integrated with the arching. This takes me a while and can be rather Zen-like, which gives me a chance to think about the steps that come next. After the arching is nearly complete, the bass will be rolled over and the same steps taken on the top. There will be no more work on the back now until it is removed from the rib assembly and the interior graduations begin. Time on the project to date is about 205 hours.

[March 16, 2010]

Here's the top of the bass, fully purfled but without the connection to the archings just yet. That will be done by the time you read this. If you look closely, you might be able to discern the outline of the f-hole on the side nearest the camera. To make it visible I had to increase the contrast quite a bit, which makes the color of the heavy grains look somewhat darker than they really are. The ground coats of the varnish process will also tend to even out the difference between the lighter and darker areas.

I lay out the f-holes now for three reasons: first to integrate the archings at the lower wings, which is often a dicey process, and, second, to be sure that the short string length is observed. Third, because this will be a five-string bass, I must be sure that there is enough space between the upper eyes for the dimensions of the bridge, which will be wider than it would be on a bass with four strings. I had to do a little tweaking to get everything to fit on the frame of a 3/4-size model, so this is getting close to being my last chance to get it right before I drill the eye centers. Once the wood is cut, there's no turning back!

In a few more days, the top and back will be ready to come off, and interior graduations and plate tuning will begin. Time in the project to date is approximately 215 hours.

[April 5, 2010]

In the Belly of the Beast.

The top has been removed from the ribs, and this picture shows that the wood on the inside is being removed. Luthiers call the process "graduating" the plate. The eyes of the f-holes have been drilled out, and near the lower corner on the viewer's left you can see the hole of the lower eye (that's the lower corner of the bass, not the picture :-)). This is an old trick from the Northern German school of violin making: drill out the eye-holes from the outside to the same depth that you want the thickness of the plate to be at that point. Then flip the plate over and plane in that area until the eye reveals itself. This eliminates a great deal of measuring the thickness and marking the plate, which saves time. Graduating will continue until the tap-tone frequencies appear to be approaching an optimal point. As wood on the interior is removed, the plate becomes very light. The time clock now points to 240 hours.

[May 10, 2010]

That Hollow Feeling!

Both plates have been removed from the mold and are completely gouged out. I've switched to finger planes for more control. You can clearly see the lower eyes of the f-holes in the top: the upper eyes will appear shortly as more wood is removed. Now the final graduations have begun, and the plates are light enough to be picked up between the fingertips of one hand. I've had to hold off on photos for several weeks because the camera can't really show much when I plane out half a millimeter overall. This part of the process is both slow and boring. It's the part that leads me to tell people that if you love tedium, you'll love violin making! However, it's an exciting part for me because this is the stage where I can begin to give the instrument its voice. Whatever time is invested in this task now will pay dividends for the life of the instrument, so I don't stint. The usual procedure is to take one plate to a certain point, and then do the same for the other. Switching back and forth like this is a prudent way to keep things in step. If one side gets too far ahead of the other, sometimes it is not possible to match them again. Some makers in violin work will build three or four sets of plates at once, and then match them according to their tap frequencies and weights. Since it would likely take a couple of years to do this on basses, the option is out of the question. I'm really beginning to like the way this bass looks. I'd better: I've been looking at it for 280 hours.

[July 15, 2010]

Mode Matching

The major hogging is now long done, and I have since spent way too much time tuning the plates and matching the modes. A lot of folks are going to hear this puppy, and I want it to be the best it can. What you're seeing in the photo is mode 2 in the top plate. I call this the "quality" mode, because most of the time I get it right, the instrument has good tonal quality. In bygone days, the bass maker had to tap the plate with his finger to get an idea of how it rang. Easy enough on a violin or viola, but the great size of a bass makes it difficult. Following the Hutchins method, I use a speaker instead of my finger. You can see the circular magnet assembly and the downward-facing speaker basket just behind the center of the plate. By feeding a sine wave into the speaker and holding the cone close to the plate, I can use the pulses of air to "tap" the plate as many times per second as I like. Depending on where I hold the speaker over the plate, and how often it vibrates each second, different mode patterns will form. The mode 2 pattern on the lower bout (to the right) is excellent. The mirror pattern on the top (left) is also quite good, but the photo doesn't show it. The speaker moves so much air that it pushes around the aluminum glitter (the black stuff) and distorts the pattern. The tuning of both the top and back plates is now essentially done, and shortly I will clean them up to make them ready for the next step. Time to date: 303.5 hours.