

## Chapter Ten

### Sanding, Scraping and Finishing

Finishing can be very involved. I spend about 2-3 hours finish sanding and scraping a harp. Some builders will spend considerably more, a few spend less time. Over time, I have found that touch will often work better than sight for identifying areas that need work. Here is the basic procedure I use for surface preparation

80 Grit Sandpaper with Random Orbital Sander - I only hit the areas with obvious glue spots and significant roughness. 80 grit is way too coarse for sanding veneer, so I don't use it for sanding round back shells or laminated soundboards. I used to be pretty stingy with sandpaper disks. Now I rarely sand for more than 10 minutes or so before I change disks. Trying to sand with a worn disk wastes a lot of time, and disks (in bulk) are not very expensive. I carefully round all the edges, paying close attention to the tactile points – the parts most frequently touched by the harpist. This includes the corners the sound box, and all the square edges on the neck and pillar.

120, 160 Grit Sandpaper on a random orbital Sander - I sand most of the harp with these two finer grits, carefully inspecting for scratch marks left from the last paper. I usually wipe the hard wood areas with a wet rag to raise the grain and identify any glue spots or glue haze before sanding it with the 160 grit paper once again.

Scraping - I carefully burnish a fine edge on the scraper and scrape down all of the surfaces, working to remove any last burn or machine marks on the harp. Again, I use my fingers more than my eyes to inspect the harp at this point, working to ensure all the surfaces are uniformly smooth.

#### Finishes

For 10 years I built furniture and boats. I liked Bartley's gel finishes, Deft Brushable Lacquer or Behlen's Master Finish ®. They can work well if you have experience with them. The purists really frown on polyurethane, but I think it may be suitable if you expect the harp is going to have to live in a rough environment. Many of the harp woods (hard maple, cherry) do not take stains as readily as oak or Mahogany, and I am really quite reluctant to stain a harp for my clients.

The largest problem I had with all of these finishes had to do with their drying time and reparability. Most of them take several hours to dry, and even with a separate finishing room, I had to spend a lot of time sanding out dust motes that

had settled into the finish. After hearing Howard Bryan (A pedal harp restoration expert working out of Richmond, Virginia) extol the virtues of a spirit based varnish, I found a traditional alcohol-based finish called Behlen's Violin Varnish®. It dries to the touch in a matter of minutes. I can finish the harps right in my shop if I put a drop cloth down on the bench and let my air filter run for 15 minutes. It dries before any dust can settle in it



*Finishing kit: Counter clockwise from the top. Behlen's Behkol® Solvent and Violin varnish®, a French pad tied off with a zip tie, printer paper, the dispensing bottle, 220 and 320 grit sand paper, and a some samples of finished wood.*

The Alcohol based varnishes are really easy to repair. I used to wonder why instrument builders and furniture refinishers dwelt so much on the reparability of a finish.

Reparability is not just valuable for restoring a harp that has been damaged in some way. Every finisher is going to miss one or two glue spots, lay on a finish too thick and have it run or sag. A repairable finish allows me to go back and fix those spots and blend them into the existing finish. The job ends up looking as perfect as my patience allows.

There is one drawback to traditional spirit based varnishes. Shellac is a primary component, and shellac has a limited shelf life. I order from a supplier that is turning over their inventory at a good rate and store it in my basement shop which stays cool throughout the year. I know it lasts at least 10 months under these conditions. If the varnish is old, or has been subject to heat, I would recommend trying it on a sample to make sure it will cure. Old shellac will not cure into a hard coat, and will remains sticky. Make sure it will cure hard before applying it to the harp.

After reading a few books on rubbed varnishes, I was thoroughly intimidated by the French pad technique. If you can find an expert willing to tutor you on the intricacies of the traditional technique and method, great. They work best on flat horizontal surfaces, and my harps have a lot of surface that isn't flat or

horizontal. I adopted a simplified technique largely based on Howard Bryan's advice to the harp list.

## **Description of the Simplified French Pad technique**

### **-Tools and Materials**

The varnish is applied to the harp with mushroom shaped pad that is made from an old, clean cotton T-shirt. The outer layer is an 8" x 8" square of cloth held in place with a rubber band or zip tie. When the pad is compacted and formed, it should be about 2 1/2 "in diameter and 3/4" thick.

I mix equal parts of varnish and Behkol® solvent in a half pint "squirt bottle". My bottle was originally used for dispensing saline solution for contact lenses. I drilled the hole in the cap to 1/16"

I use a Q-tip to apply finish into nooks and crannies, and I store two pads and Q-tips in an a discarded Sour cream container (with a tightly sealed cap) between uses. The layer of cloth on the outside of the pad will wear through after applying three or four coats of finish, and I replace it with a new square of cotton. The tools to apply the Violin Varnish cost pennies at most. The Varnish is \$19 per pint (in 2005), and the Behkol runs another \$9, but that is enough to finish three or four harps.

### **-Method**

Finish is applied to the pad then the pad is used to apply the finish on to the harp. It takes a couple of tablespoons of finish to saturate the pad the first time you use it. The first three of four strokes are made in a circular motion to distribute the finish evenly over the area. I use the pad to move finish from areas that are puddling, sagging or running to areas that are dry. Within 8-15 seconds most of the alcohol has evaporated and the finish will become tacky. The final strokes should be made before it begins to tack up and are linear, along the grain.

Because the finish dries rapidly, I usually limit the area I am finishing to a square foot. When I am ready to move on to a new area, I renew the pad with a squirt of fresh finish.

It takes me about 25 minutes to apply one coat of finish to a five octave harp. At that point, the first area varnished will be dry to the touch, and I will put on a second coat. Invariably there will be one or two spots where glue dripped onto the wood, or excess varnish pooled, ran or sagged. I will jot the location of these flaws spots on a notepad ("glue spot, right hand edge of shell, by the middle

sound hole”) so I can scrape them down to bare wood after the first two coats of finish have cured.

It takes four or five hours for the varnish to cure hard enough for sanding. I take care of any flaws, then sand the entire harp with 220 grit paper. The object of this sanding is to remove any surface roughness – no more than the top 30% of the finish. Do not sand the finish off to bare wood.

I brush the sanding dust away with a shop brush and apply two more coats and let them cure for another 4 hours (or overnight) before sanding the parts with 320 grit paper.

At this point I am getting a pretty good build on the finish. I will apply 1-3 more coats, “sanding” in between coats with copy paper. This paper seems to cut about as well as 500 grit sandpaper. As you rub the finish, the paper will take on a sheen, at which point you will need to change to a new fresh sector of the paper so it will continue to abrade and smooth the finish. Copy paper loads up a bit quicker than real sand paper but is much cheaper.

I pay special attention to the string rib and the side of the neck that will be under the strings. If I get the finish I want in these areas, I can proceed with mounting hardware and stringing. I can return at my leisure to touch up any areas after I have strung the harp. It takes about two weeks for the harp to start holding its tension before mounting levers, so I have ample time to inspect the harp and identify and correct any blemishes.