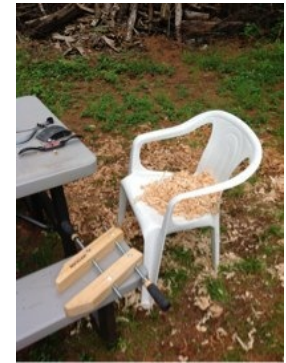


Last year we started our new bowyers off with splits of black cherry wood, and let them chip, chop, scrape and rasp away for weeks to get their piece of wood to bend. This year we plan to make it a lot easier on beginners, by using machine tools to prepare workable staves from boards. While we may do much of the work described here on your first stave, I thought you'd like to see the process from the start - very few people who make wooden bows stop after their first!



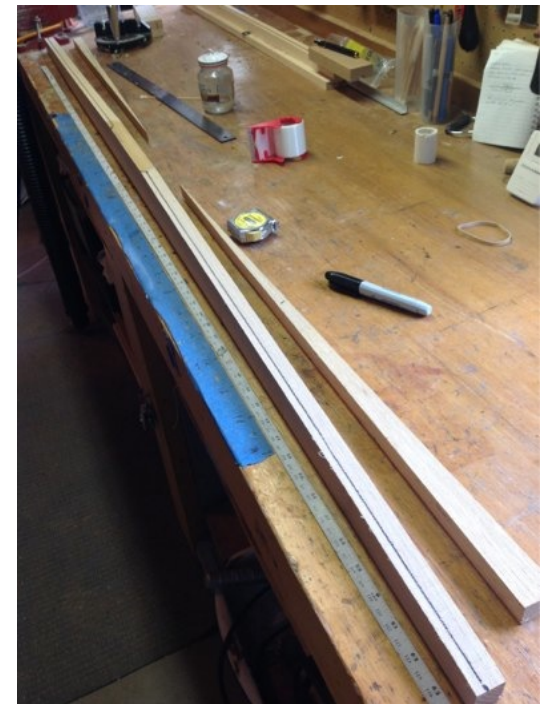
The design we'll use this year is a "pyramid" bow, which our Dave Martin has explored in some detail. The idea of the pyramid is that if the width changes enough from the handle area to the tips, the bow will bend nicely without having to do much thickness tapering.

Here is one of the white oak blanks we've cut from a fairly straight-grained board. We need our bow limbs to follow the grain, because that's how woods grows, and how it best handles bending loads. Wood bows can break where the grain is cut across. Unfortunately,

the grain isn't perfectly straight - this grain sort of bends in the middle. Actually, boards with perfect grain are a rarity, so we've developed tools and processes to straighten them.

The dotted "center" you see here follows one grain line, picked because it was at least 1/2" from an edge at either end - that's enough for the 1" wide tips we want to start with. We are using full width (a bit over 2") near the handle, to maximize the pyramid effect. One of the limb sides will run right along the side of the board, the other limb (shown at left above) needs a bit of cutting. Obviously the limbs won't be perfectly aligned at first - we'll take care of that later. It's more important that the limbs follow the grain.

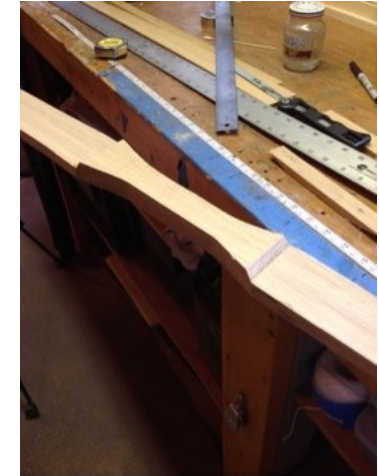
I used a bandsaw to remove the thicker wedges from one side of the board, leaving one side flat. That's so the board will sit flat on the bandsaw while I thin down the limbs (so you don't have to do all the work with hand tools, but you certainly could- our ancestors did this with sharp stones!)





With the width wedges cut off, I marked the cut edges of the limbs to 1/2” thickness, and put them back on the band saw. After first making a couple of stop cuts at the ends of the handle area, I set up a fence and ran the limbs through until reaching the stop cuts.

This leaves a thicker “pedestal” in the handle area which you can see at right. We want a 4” handle, about 1” wide, and we’ll leave another 2” on each end for a gradual transition from the thin-wide limb to the narrow-thick handle. Abrupt changes in wood sections are usually where they break - so we want everything to be gradual and smooth. In our present case, the narrow handle will help us out, because the narrowness will allow us to bend the bow quite easily at the handle, so we can align the limbs.



This took just a couple of minutes on the band saw- but you can do the same thing with a handsaw and chisel, rasp or even a small hatchet. Just be careful not to cut into the limb thickness there at the ends of the handle- its a common mistake when trying to create smooth curves, especially using a power sander. Ask me how I know.



This starts to look like a bow, but clamping a test cord between the tip centers clearly shows that they don’t line up with the center of the handle.

We could leave it like that, but the result would be a an uncomfortable bow to shoot, one that would try to twist in your hand as you pull back. No need for that, we’ll use heat and pressure to reshape the wood into “almost perfect” straightness.

Later, once the tillering process is largely complete, we will reduce the width and weight of the tips (to improve performance). Since we’re leaving them a full inch wide now, we can make plenty of adjustment by removing more from one side than the other until the string lines up perfectly.





Here’s the same stave after coating the center section with vegetable oil, to prevent burning and to carry heat into the wood. Using the heat gun (around 1350 degrees F) we get the wood too hot to touch without scorching.

The fixture here is a simple brace with leather pads, set into a vise. The same thing can be done with clamps, or a workmate as shown at right. When wood is properly heated, it becomes quite plastic - we just need to leave it until it is fully cooled or it will return to its original position.

If you look carefully at the photo at left, you’ll see the trial cord is sitting a bit to the left of the handle center. That’s done on purpose, because we can expect the wood to spring back slightly when the pressure is relieved. The idea is to get close enough to center that we can make final adjustments by trimming the limb tips.



Here at right is the blank after heating and cooling. The trial cord is sitting almost perfectly on the handle center, and we have plenty of room to adjust the sides. The finished tips will end up around 1/2” to 3/8”. The wider tip is suitable for “pin nocks”, a simple and efficient way to hold a string. We just cut a “head and shoulders” pattern on the end of the limb and the string loop goes over it.



Narrower tips often get “tip nocks” of contrasting wood colors, which can be decorative and also provide a bit more tip strength and protection from string wear. They are recommended if you intend to use the thinner, lighter low-stretch strings - in that case you’ll want a layer of phenolic or other strong material that won’t be worn away by the hard strings.

We’ll provide clinic attendees with a selection of woods for tip nocks and also for handles, the topic of my next installment. Then we get down to the real work of bow-making, “Tillering”, or getting it to bend smoothly, evenly and safely.