

greenwood

The people's Windsor

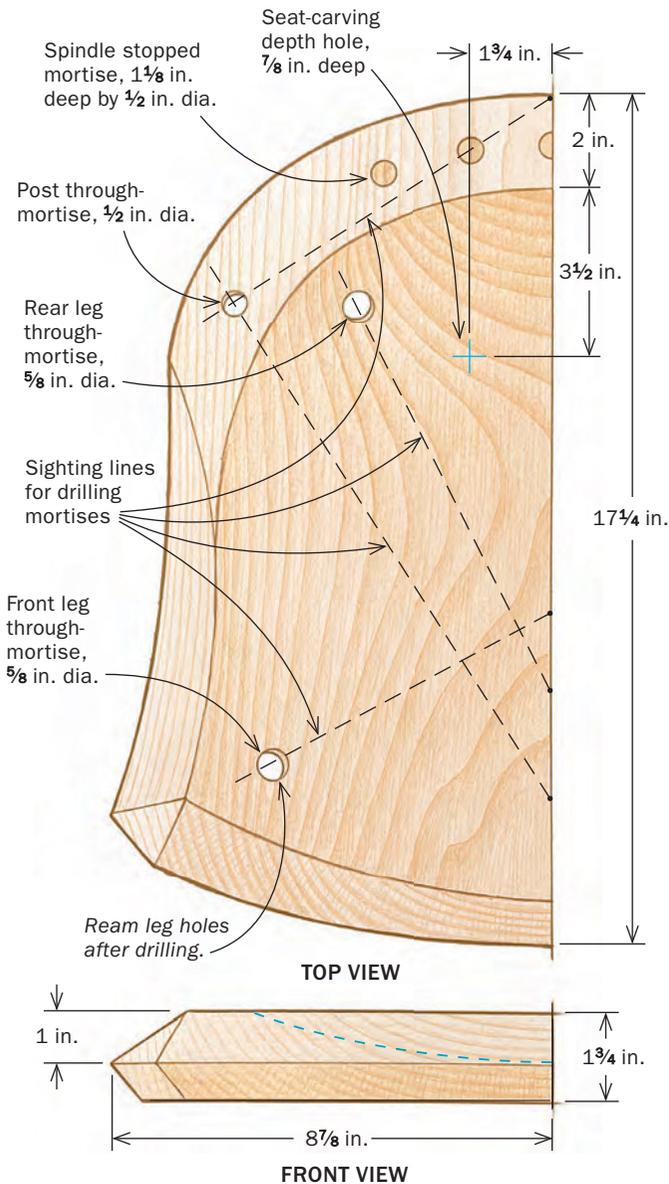
BUILD A HANDSOME CHAIR
WITH AN INEXPENSIVE KIT OF TOOLS

BY CURTIS BUCHANAN

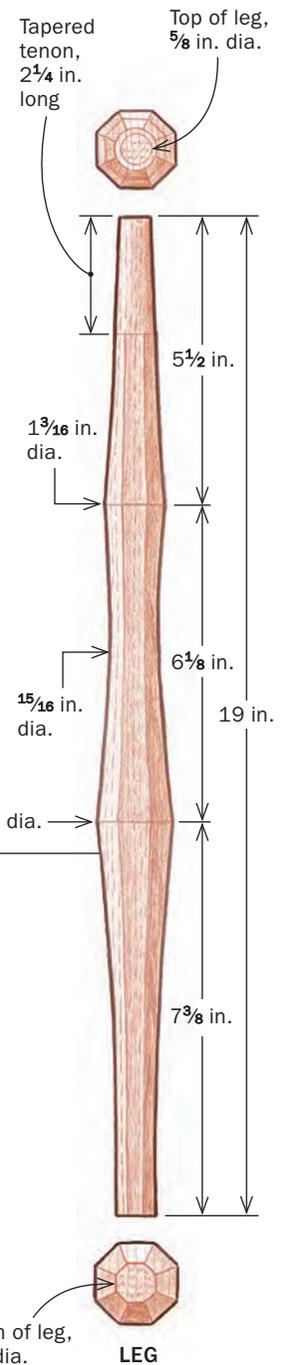
PART 1: SEAT AND UNDERCARRIAGE



WHITE PINE SEAT

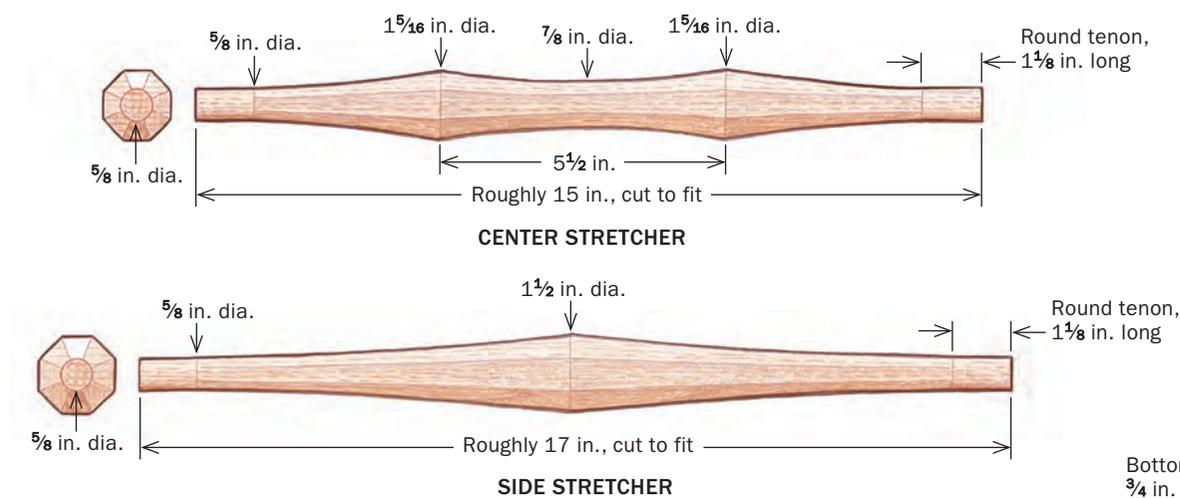


I've heard it said that poverty makes for a good cook. In 1983, I fit at least the first part of this saying very well. Forced to make chairs with only a few basic tools, I pushed those tools as far as I could. With no bandsaw, I learned to use a bowsaw; with no power drill, I used a bit brace. Not having a spokeshave, I pushed my drawknife far beyond the point where I might otherwise have abandoned it for a more refined tool. Taking these tools past what seemed a point of diminishing returns built my skill and helped me maximize the ability of the tools. My work became more efficient, more enjoyable, and of higher quality.



To obtain expanded plans and instructions for the Democratic Chair, go to Curtisbuchananchairmaker.com

RED OAK UNDERCARRIAGE



SHAPE THE LEGS



Lay out the legs. Having split a billet from a red oak log and flattened one face of it with his drawknife, Buchanan uses a simple template to lay out the leg's tapers.



Hewing to the lines. Using a hewing ax, make a series of short swings perpendicular to the length of the blank to break up the fibers; then hew downward with the grain to remove long chips.



Flatten the tapers. Working on the blank's radial plane, which is easier to shave, use a drawknife to create flat planes right to the layout lines.



A second session with the pattern. Once the first tapers are cut, trace the same pattern and then cut the tapers in the tangential plane.



On to the octagons. Next begin shaping the leg to an octagon, making a series of shallow, feathering, stopped cuts.



Feathering. To complete the octagonal facets between the leg's two bobbins, Buchanan reverses the leg and makes a set of shallow cuts back toward the first set of feathers he sliced. The facets in the bottom two sections of the leg are slightly concave.

Apply heat, then shave tenons.

With the legs and stretchers shaped, Buchanan puts them aside for a few weeks to dry. Then he superheats the ends that get tenons, setting them in holes in a light-bulb kiln. To make tapered tenons with the drawknife, first score the top end of the leg with a $\frac{5}{8}$ -in. auger bit. Hold the bit by hand and twist it to give yourself a target for the tenon.



Trial by powder. Buchanan cuts a tapered test hole in a white-pine scrap and smears it with black milk paint powder. When he has shaped the tenon to near final size, he twists it in the test hole.

Finessing the tenons. As the tenon nears finished size, take light shavings with the drawknife to remove the black rub marks.

Simplifying your life, or keeping it simple, is not easy with the whole world pushing and pulling you in the other direction. For some, the goal is to climb El Capitan using just your hands and feet. For me, making chairs with the simplest of tools is the ultimate; adding superfluous tools, jigs, and gizmos feels like a reverse evolution.

Slowly, though, we all seem to evolve down the path of more tools, redundant tools, a larger shop to hold the tools. While I still clung to my bit brace, I did find, after 35 years, that I had a plethora of fine spokeshaves, travishers, scrapers, tenon cutters, a Oneway lathe, and two bandsaws. I started to hear students commenting on how expensive it would be to tool up for green woodworking; and I would want to scream, "NO!" But as I stood back and looked at my shop and the shops of other chairmakers, I saw what the students were responding to.

The more I thought about this dilemma, the more I wanted



PREPARING THE SEAT



Fine white pine. White pine makes excellent seat stock: It is light, oblonging under edge tools, and thick planks are usually available. Start by flattening and thickening your blank with a handplane, then lay out the seat's shape, the mortise locations, and the orientation lines for drilling.



Angle block guides the drilling. To drill at the proper angle for the leg mortises, Buchanan aligns his auger bit with the "sighting line" drawn on the seat and with an angle block with its face parallel to the sighting line. Further angle block info is available at CurtisBuchananChairmaker.com.



A turn from below. After boring the mortise from above until the auger bit's lead screw just emerges through the seat, Buchanan backs out the bit and finishes the hole with a twist or two from below.



Ream it. With all the leg mortises drilled, turn the seat upside down and use a reamer to taper them. Ream in a series of steps, inserting the leg repeatedly to check its orientation and adjusting the reaming angle as necessary.



Double-check the leg angles. Once the leg mortise is partly reamed, insert the tenon and use the angle block to check the orientation of the leg. Using the block's 90° edge, sight the tip of the leg, the top of the block, and the sighting angle. Then place the block's angled edge up to the perpendicular sighting angle and sight the leg, block, and sighting angle.

Drilling for depth. Before you begin carving the seat, drill a pair of $\frac{7}{8}$ -in.-deep holes to establish the lowest points in the bowl of the seat.



Carve cross-grain with the scorp. Begin scooping out the seat by carving cross-grain with a scorp. All the primary excavation is accomplished from side to side.



Finish cuts from front to back. When you have established the contours of the seat with cross-grain cuts, create the finished surface with light cuts taken with the grain.



Bold bevels surround the seat. Buchanan says that cutting the bevels around the seat with a drawknife is pure fun. He emphasizes the importance of leaving sharp arrises where the beveled planes intersect. It is those planes and clean corners that create the aesthetic of the chair.

to build and teach a chair that could be made with a drastically scaled-back tool kit. This is that chair. It's a design I made in the 1990s while working with GreenWood, a sustainable forestry initiative in Latin America, where I was often teaching how to build chairs without access to electricity or many hand tools. The goal then—which I've adopted again for this chair—was simple to define but difficult to execute: Eliminate every tool possible and still make a fine chair. Maybe even a better one.

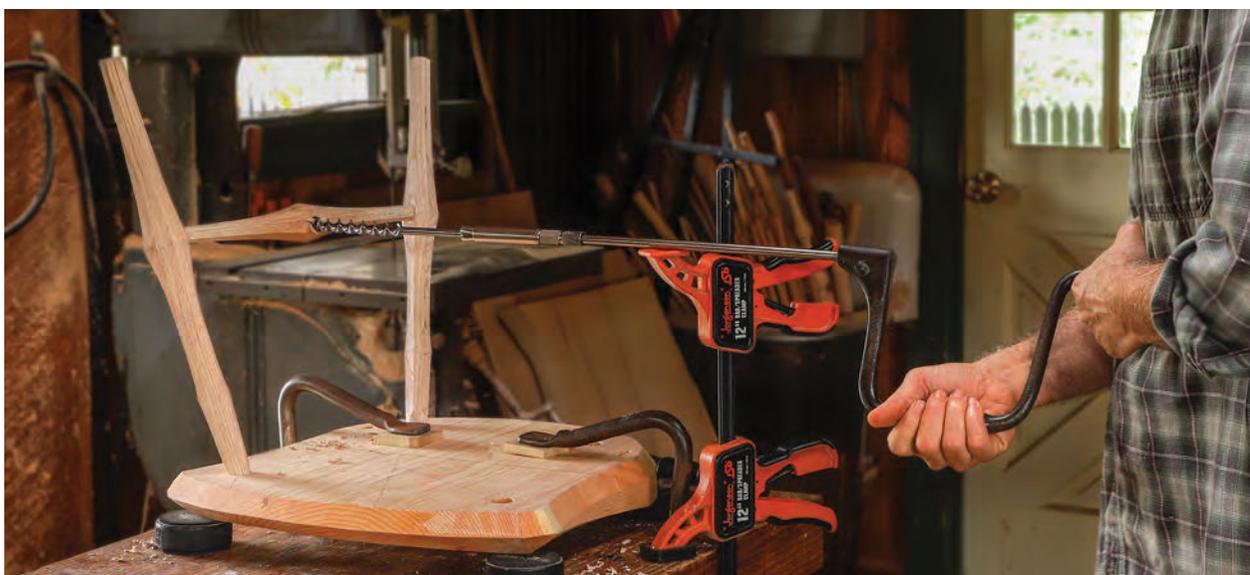
The froe was eliminated; you can split wood with an ax. The adze and travisher vanished, their places in carving the seat replaced by the scorp. Even my simple steambox was exchanged for bending the wood cold. I dropped the lathe from the list, trading turned parts for shaved ones. In place of a spokeshave is a well-tuned drawknife taken further than ever.

CONNECT THE STRETCHERS



Aim for the bobbin. Drill mortises for the stretchers with an auger bit extension added to your brace. Twist the target leg just enough so the bit's two nickers contact it simultaneously. To keep the bit horizontal, use the peak of the bobbin on the near leg as a guide.

How to get the height right. To cut the center stretcher mortise, line up the drill bit with the sightline you drew on the seat. To maintain the correct height, you can support the bit on a scrap block, or use an adjustable setup like this one, made by adding an extra clamp head to a quick-release clamp.



The last stretcher. With the side stretchers nudged into their mortises, and the legs toeing into the seat, Buchanan pushes the center stretcher into place.



Prepare to drill for the center stretcher. After driving the stretchers and legs home, lay a straightedge across the side stretchers from bobbin peak to bobbin peak; lay a second straightedge on the seat, aligning it with the first, and strike a line on the seat. This will guide your drilling.

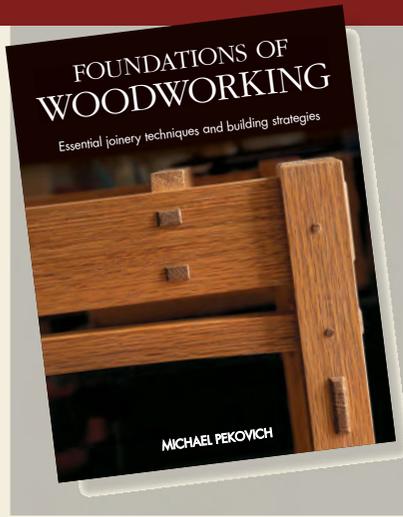
I wanted the chair to announce itself visually as something different, too. Instead of smooth surfaces and refined curved transitions, I chose to express the drawknife shaving with emphatic bevels and facets that meet in sharply defined edges.

I call it a democratic chair, an echo of what writer and maker Bill Coperthwaite called a democratic tool—one that anyone can own and use. I hope that the simple tools and processes required to build the chair will allow more people access to the craft.

In this article I'm building the chair's seat and undercarriage, and in issue #294 I'll add the spindles, posts, and crest rail.

Curtis Buchanan builds chairs in Jonesborough, Tenn. Special thanks to Jeff Lefkowitz, whose drawings of the chair provided the foundation for the ones in this article.

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ASSEMBLY



Lock in the legs. Buchanan first knocks the stretchers tight into their mortises—removing the legs from the seat and using the bench to back up his hammer blows to do so, if necessary—then angles the leg tenons back into their mortises and hammers them all home.



Glueless tenons. You can add glue to the joinery if you wish, but with wedged, superdry tenons, the joints should stay tight through decades of use. To prepare for the wedges, Buchanan uses a chisel to split the tenons.



Wedge it. To prevent splitting, the wedges should be driven in perpendicular to the long grain of the seat.



A dome at the top. Buchanan leaves the leg tenons well proud of the seat, then domes them with his scorp, making the cuts with a slicing action. Avoid levering against the seat, which can create dents in the soft pine.