

This bar stool is a redesigned version of one that I made about seven years ago. The seat is thinner and the legs are more curved and thinner at the bottom to give the stool a more streamlined look and reduce the weight (Photo.1).

The photographs are of a pair I made of the new design in Blackwood (*Acacia melanoxylon*) for our home.

Equipment

For this project you will require a bandsaw or jigsaw, disc sander, router, preferably a table saw and drop saw, drill press and power carving tools. All the rounding over can be achieved with hand tools but the power tool options will save lots of time.

Templates

The first step is to make templates for the seat, front view and side view of the legs, plus the top and front views of the front and back bottom rails and the centre brace. Refer to Fig.1 for the dimensions and shape.

From thin ply or MDF, cut and sand the templates and check that they match the drawing before marking the position of the mortise holes. Drill these with a 2mm diameter drill so that you can trace through the holes onto your timber.

The position of the holes in the back legs are different from the front legs so make sure you note this on your template and drill both holes.

Gluing the Seat

When laminating the blocks of wood to make the seat blank, it is a good idea to



Photo.2: Gluing up the seat

Photo.3: Tracing the shape of the legs onto the wood



Carved Seat Bar Stool

— Version II —

by Neil Scobie

biscuit or Domino the joint to stop it sliding when the clamps are tightened. The biscuits or Dominos need to be placed about 10mm up from the bottom side of the seat so that they will not be exposed when carving out the top of the seat.

Use three sash clamps, two underneath on the outer edges and the middle one on top to help keep the joint flat (Photo.2).

I use a polyurethane glue such as Wurth Multi Fibre Adhesive or AV Syntec 515. You can use a good quality PVA if you prefer.

Making the Legs

Trace the template shapes onto the legs, marking the side view template first (Photo.3).

If you have wider boards you should be able to nest the legs together or even top and tail them to reduce waste.

Bandsaw the legs about 1mm outside the template lines. This will be trimmed back to the line after the second side is bandsawn.

Using the template, mark the position of the mortise holes on the inside face of the legs. Drill these 25mm deep (Photo.4) with a 19mm dia. saw tooth drill bit (these are similar to Forstner bits but have a saw tooth cutting edge). Make sure you mark which are the front legs and which are the back legs, as the hole locations are different.

Trace the second template on the front view of the legs with the raised section next to the drilled hole. Bandsaw the second side of the legs, again about 1mm from the line (Photo.5).

To sand back to the line you can use a disc sander for all the convex curves and flatter sections (Photo.6).



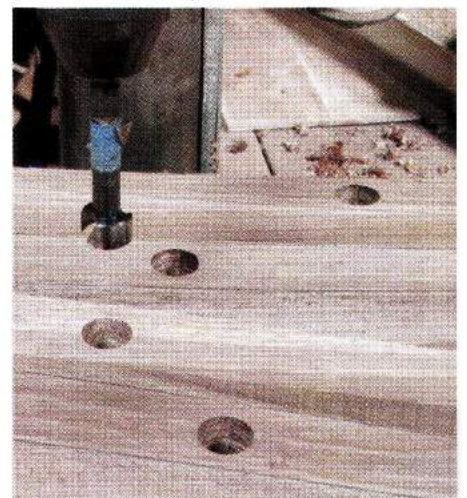
Photo.1: The completed bar stool with carved seat, made from Blackwood

Trim back the concave curves on the legs. In my workshop I have a home-made linisher with a curved section on one side and two different diameter drums at either end (Photo.7). This machine is terrific for this process but it is not available commercially. As an alternative you can use a flat linisher and the curve around the drum. If you do not have a linisher, a spokeshave still does the job really well.

Using the leg side view template, mark the centres of the legs on the top and bottom ends. Square the lines down the ends and gauge halfway (ie. scribe across the ends at the centreline). Centre punch the centres ready for turning on a lathe (Photo.8).

To round over all the edges, start by mounting a sash clamp in a vice. Then clamp one of the stool legs between the shoes of the sash clamp, with the ends protruding above the clamp shoes. I have

Photo.4: Drilling the mortise holes with a 19mm dia saw tooth bit



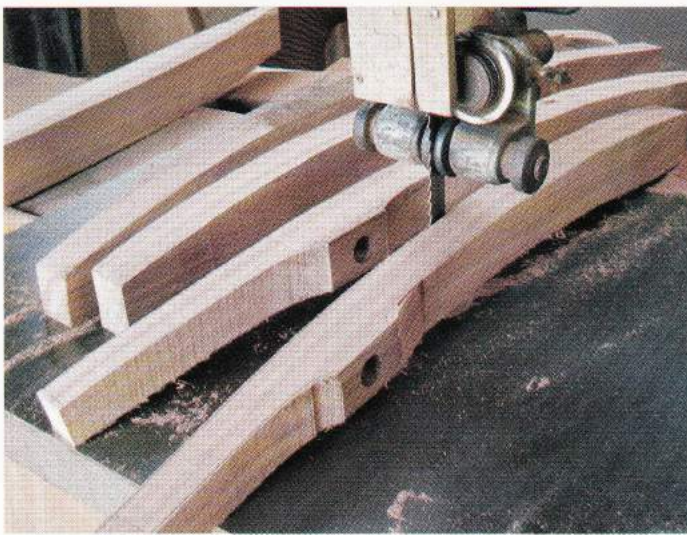


Photo.5: Bandsawing the second side of the legs

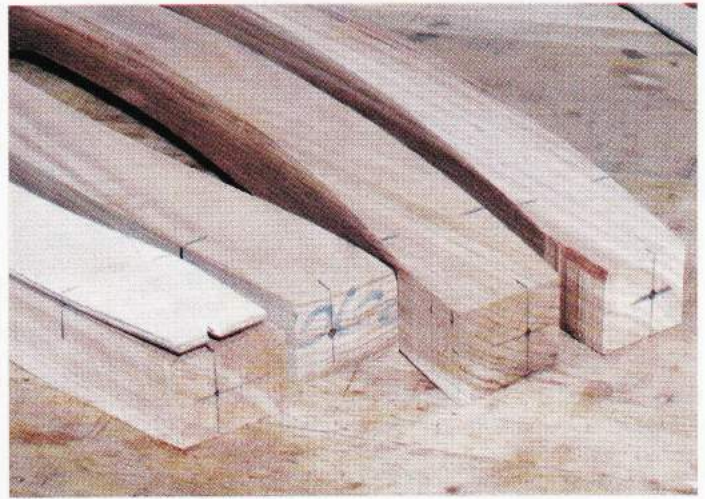


Photo.8: Marking the centres for turning on the lathe

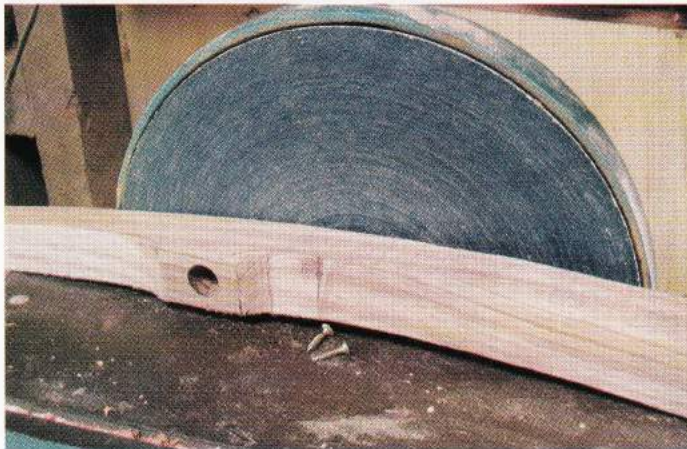


Photo.6: Removing the one millimetre waste back to the line on a disc sander



Photo.9: Rounding over the edges with a router



Photo.7: Sanding the inner curve on the legs back to the pencil line on the author's homemade linisher

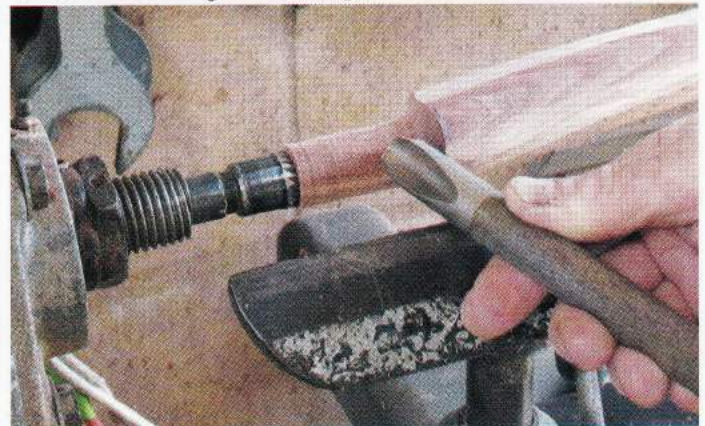


Photo.10: Turning the tenon on the top of a leg

found that this is an ideal way to hold the legs for routing so that you do not have to keep moving the leg around in a vice.

With a 12mm radius round-over bit in a router, rout the legs, cutting in an anti-clockwise direction (Photo.9). Stop the routing about 30mm from the ends so that the hole in the router base does not fall over the leg ends.

By rotating the legs in the sash clamp, you will be able to round over all the long edges, except in the concave section near the raised part where the holes have been drilled.

If you have a lathe, place the leg between centres with the top part next to the headstock. Make sure that your tool-rest is close to the leg, but not so close that it hits the wood when you rotate the leg by hand to check for clearance.

Using a spindle gouge about 12-15mm in diameter, cut towards the end of the leg and form the tenon (Photo.10). If you point the gouge towards the end of the leg when starting the cut, you should not have any trouble with kickback.

It is a good idea to drill a 25mm dia. hole in a waste block of timber the same thickness as the seat, so that you can keep checking the fit of the tenon as you progress.

Materials List

All dimensions in mm

Part	W	D	L	No
Seat	360	35	330	1
Glue two pieces, 200mm wide, together; grain runs front to back				
Legs	150	40	660	2
Bottom Rails	65	40	650	1
Brace	55	40	283	1
Abrasive paper, glue, finish and tenon wedges				



Photo.11: Using a spokeshave to refine the 'axe handle' shape of the top section



Photo.14: Refining the shape of the seat by sanding



Photo.12: Drilling the leg holes



Photo.15: Contouring the underside of the seat



Photo.13: Initial shaping of the seat with the Arbortech TURBOPlane blade



Photo.16: Two seats after final sanding with a random orbital sander, ready for the glue-up

If you do not have a lathe, the other option is to mark out the shape of the tenon and bandsaw it from each side so that you have a square tenon. To round the square section into a cylinder you could use a die grinder or a Dremel with a coarse burr. A rasp and half round file will also work, but all these methods are much slower than the turning process.

The next step is to spokeshave the legs so that the top section is more like an axe handle rather than flat sides with rounded edges (Photo.11). The bottom of the legs will be reasonably round. The spokeshave is the tool to use to round over the edges that you could not finish with the router.

Drilling the Seat Holes

Refer to Fig.1. Mark out the position of the mortice holes and the centre lines to help you line up the position and angle on the drill press.

Clamp a piece of MDF (I used a sheet 15mm thick) on the drill press. Draw a centre line on the MDF which is perpendicular to the centre line between the drill and column. In other words, if you drew a line from the centre of the drill bit to the centre of the column, it would be at 90° to the line on the MDF.

Angle the drill table 10° down to the right, with the centre line on the MDF directly under the drill chuck. Line up one of the centre lines marked on the seat, clamp the wood in place and drill through it into the MDF.

Because of the position of the column on my drill press, the centre lines for the back holes had to be moved closer to the middle at the front of the seat (Fig.1).

In turn, drill all four holes right through the seat, making sure each time that the centre line on the seat lines up with the centre line on the MDF (Photo.12).

Shaping the Seat

In Fig.1 there are three points that you should mark onto your seat template. These are the depth holes which are used as guides when hollowing the seat. The back one should be 18mm deep and the



Photo.17: Cutting the 6° angle on the bottom rail



Photo.20: Rails and brace being glued together



Photo.18: Drilling the dowel holes with an angled jig

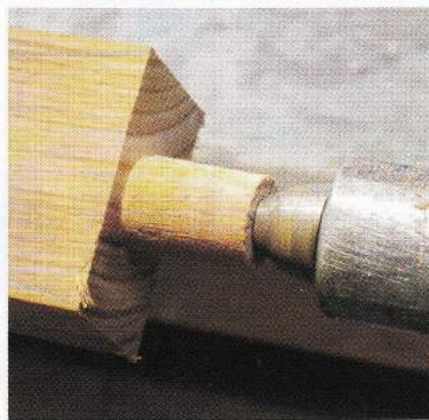


Photo.19: The turned tenon on the brace

an angle grinder with a 36 grit sanding disc (Photo.14). By now you should be able to see the bottom of the depth drill holes. Removing the last of the waste can be done with the final sanding.

Set up a 19mm radius round over bit in a router and round over all sides of the seat on the top and bottom surfaces. This will not be the final shape on the bottom so do not worry too much if you leave a few bumps.

On the bottom of the seat the additional rounding over can be done with the same tools that you used to hollow the seat (Photo.15). Mark a line just outside the leg holes so that you know where to stop carving.

To fine sand the shaped seat, use a random orbital sander with a soft interface pad to help it to hug the curves (Photo.16). These pads are available from businesses that supply panel beaters. Start with 80 grit (after the 36 grit disc) and then proceed up through the different grits to 400 grit.

Making the Bottom Rails and Brace

Refer to the Materials List for the sizes of the rails and centre brace. The front bottom rail is cut at 6° at both ends and the back rail at 7° both ends. Set the angles on your dropsaw and make the cuts (Photo.17). The centre brace is 90° at both ends.

Mark out the position of the dowel holes on the rails (Fig.1) and set up a 19mm saw tooth or speed bore drill bit in the drill press. Rather than angle the table



Photo.21: Checking the cut for the wedge in the top of the leg

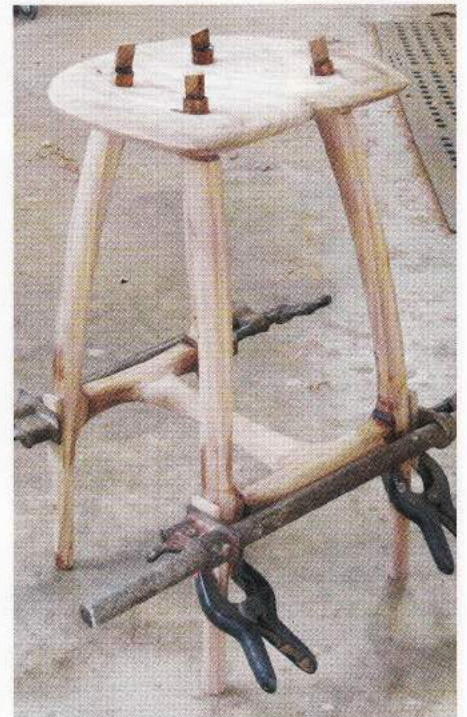


Photo.22: Assembling the stool

two front ones 10mm deep. The drill diameter isn't critical but 8-10mm works fine.

Scribe a line about 25mm in from the outer edge of the top of the seat (but not across the front of the seat) to give an outline to carve to.

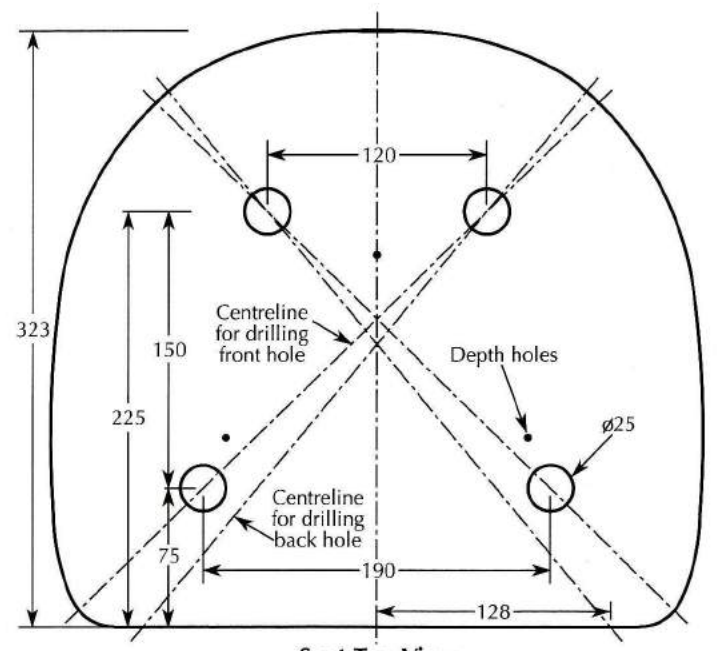
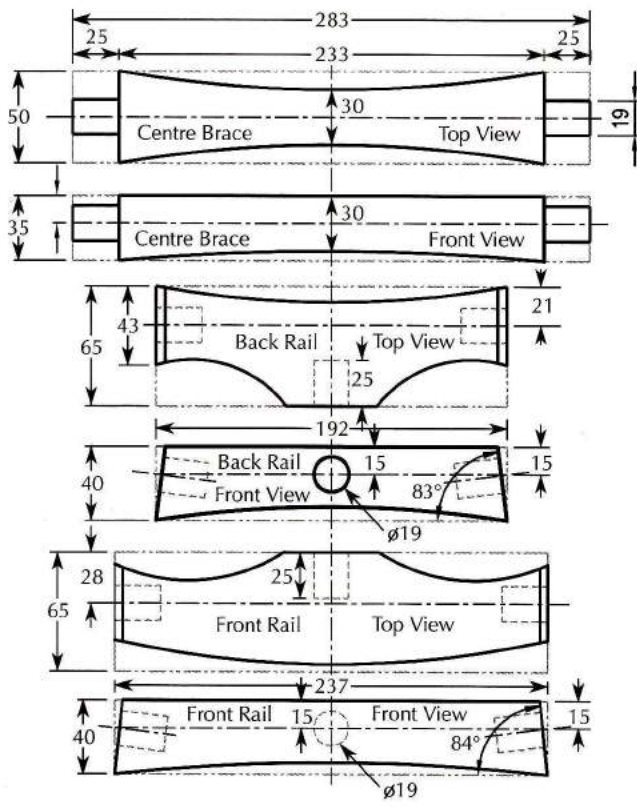
If you are carving with power tools, have the seat well clamped to a workbench or carving table.

There are many power carving options that you could use for shaping the seat, as well as hand carving gouges if you have the time. My preference is the Arbortech TURBOPlane blade set up on a 100mm angle grinder (Photo.13). This will remove the bulk of the waste quite quickly without being too aggressive.

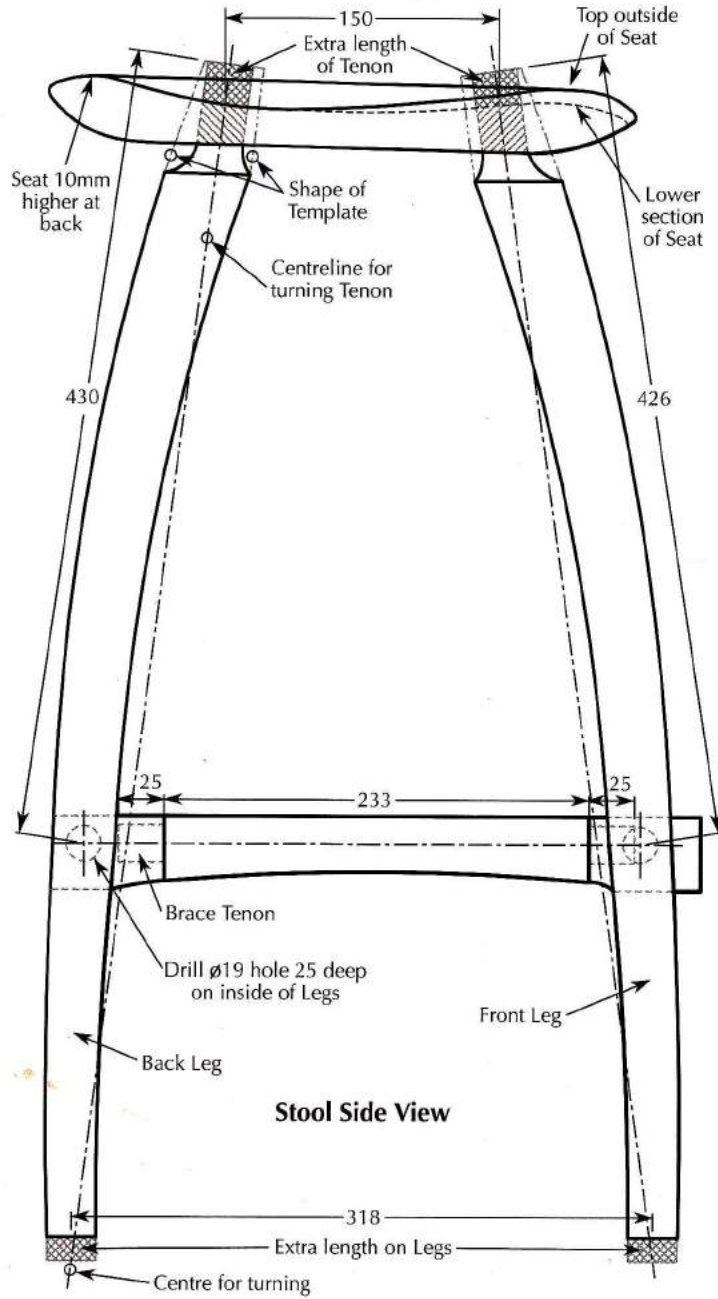
Alternatively, any of the rotary carving tools will do the job for you.

While roughing out the shape, keep about 5mm from your outside line and about 1.5-2mm above the depth holes.

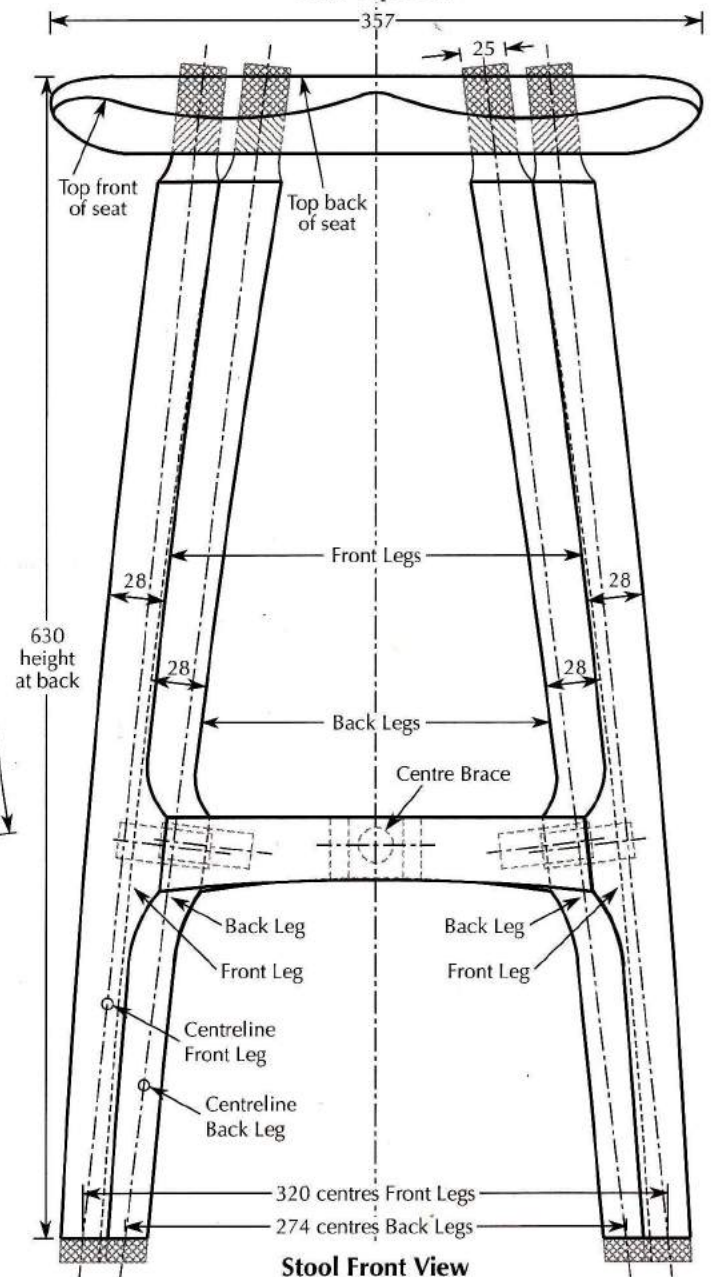
To smooth the roughed out seat, use



Seat Top View



Stool Side View



Stool Front View

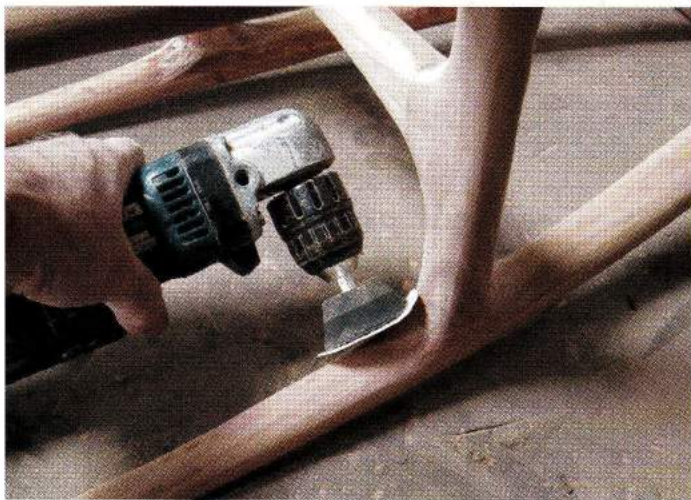


Photo.23: Using a soft sanding pad to shape the joints

on the drill press, it is easier to quickly make an angle jig by cutting the ends of a piece of scrap timber at 6° and screwing this onto a base (Photo.18). You can use this 6° jig for both front and back rails.

Drill the holes in both ends of the rails and also in the middle of the inside face to take the tenon on the middle brace.

If you do not have a lathe (to make the tenons on the brace), you can cut the centre brace shorter and drill the ends to take 19mm dia. dowel.

If you have access to a lathe, set up the brace between centres and turn the 19mm dia. x 25mm long tenons on both ends. I use a spindle gouge to cut away most of the waste, followed by a wide parting tool to square the corner, making sure that I had a square shoulder and firmly fitting tenon (Photo.19).

Using the templates for the rails and brace, mark out the top and side profiles. Remove the waste on the bandsaw, before sanding back to the line with a linisher and disc sander.

Once you have finished shaping these components, glue the tenons of the brace into the rails, checking that the rails sit flat on the bench and the joints have pulled in tight (Photo.20). If you have loose joints, you can use two pack epoxy glue which is gap filling.

Assembling the Stool

On the top of the leg tenons, use a

Photo.25: View of smoothed joints



Photo.24: Sawing the leg bottoms

tenon saw to cut a slot about 25mm deep to take wedges (Photo.21). *The wedges should be orientated at 90° to the grain of the seat, not parallel.*

Glue the front and back rails to the centre brace. The more sanding you do around the joints of the brace and rails at this stage, the easier the final sanding will be.

Cut dowels to join the rails to the legs. Check that the dowels are not too long for the holes in the legs. Glue the dowels into the rails.

Before the final glue-up, set your sash clamps to length and have angle wedges ready so that you can use clamps to pull the assembled stool in square. The wedges can be secured to the legs with spring clamps, to free up your hands to hold the sash clamp at both ends. Also make the wedges required for the top of the legs.

For the glue-up I use epoxy resin for two reasons. Firstly, it gives me more time to get the job together before it dries, a situation that can happen with PVA glue. Secondly, it is gap filling, in case there are any cavities in the joints.

Glue and assemble the four legs, seat and rail/brace (Photo.22). Glue the seat wedges in place and tap them-down as tight as they will go. Clean up any squeezed out epoxy with methylated spirits.

Shaping the Joints and Sanding

I prefer to use a die grinder, followed by an electric drill with a soft sanding pad, to do the final sanding around the

joints (Photo.23).

If you blend the joints together up to 320 grit with the sander, most of the work will be done, except for a little hand sanding.

Use a flush trim saw to saw off the excess top of the legs and wedges.

To cut the legs to length with a small pull saw, first mark the length as shown in Fig.1.

Fine Sanding and Finishing

Final sanding is best carried out by hand sanding with the grain to up to 400 grit. To sand the top of the seat, use a smaller random orbital sander with a soft interface pad on it, again sanding to 400 grit.

I like to apply a non-toxic oil finish which is hand rubbed on and off. I use Livos Kunos oil, giving four coats with a rub back with 0000 steel wool between coats. This finish is easy to apply, healthy to use and with four coats it will last for years. Another benefit is that it is easy to touch up if it gets knocked around with use.

Most woodworkers should enjoy this project as it is not too difficult, but offers a few challenges. The completed stool (Photos.1, 25 & 26) is very comfortable to sit on and light to move around.


This design is available as a full size plan with expanded instructions from www.neilandlizscobie.com. 

Photo.26: Connection of the legs to the carved seat

