

The Drawknife

Learning to use this simple tool

by Drew Langsner

Although many woodworkers own a drawknife, I am continually surprised to learn how seldom these tools are used. Drawknives are among the most versatile handtools available to woodworkers. They are fast and easy to use for roughing out stock and for some kinds of finish work. Traditionally drawknives were needed by a wide range of skilled woodworkers. I first used one during a summer of intensive training with a Swiss cooper. Other craftsmen who once depended on drawknives include furniture makers, carpenters, turners and wheelwrights. Drawknives are perfect for dressing shingles, making tool handles, debarking poles and pointing fence posts and pickets. They're also excellent for quickly making odd-size dowels, pegs and wedges, especially from straight-grained, riven stock. There's no better tool for adding a decorative chamfer to furniture parts and even house parts.

A drawknife is a viable alternative (or addition) to machine tools for various kinds of work, especially for individual pieces or small production situations. Chairmaker John D. Alexander, Jr., for example, used to work with sawn lumber which he turned on a lathe. His book, *Make a Chair from a Tree: An Introduction to Working Green Wood* (The Taunton Press, 1978) gives good reasons for his becoming a drawknife convert. Ring-porous hardwoods can be split out quickly and shaved with a drawknife to graceful dimensions while maintaining the strong, continuous grain structure. There is also

the pleasure of working in a shop with quiet tools that run on human energy. And the waste from a drawknife is shavings, not sawdust that can cause various respiratory problems.

Old drawknives were often homemade or produced in small runs at local blacksmith shops. A good source of steel for forging a drawknife (see "Basic Blacksmithing," *FWW* #9, Winter 77) is a worn-out file or rasp. Grind off the file teeth along the drawknife cutting edge before doing any forge work.

Early tool catalogs list a wide variety of drawknives for general and specialized uses. The basic drawknife has a straight blade, 6 in. to 10 in. long, with a handle at either end, usually at right angles and in the same plane as the blade. Most often only one side of the blade is beveled, though some old drawknives have symmetrically shaped blades, beveled like a knife or an ax. Slightly dished drawknives (with a bevel on the concave face) are used for dressing flat surfaces, such as the slats of a ladderback chair. Radically curved drawknives, called inshaves, can be beveled on either side. For hollowing (as for barrel staves) or quickly reducing the thickness of a board, a bevel on the convex surface is best. A bevel on the concave face is used for finer work.

There are also variations in the angle between the handles and the blade. Coopers and wheelwrights sometimes used a drawknife with one of the handles extending straight from



Various drawknives satisfy different needs. Above, from top to bottom, straight blade is for general-purpose work. The second can be used to slice wood with the blade at an angle or, with its straight handle out, to chamfer the inside of a bucket rim. The third has a slightly curved blade with the bevel on the concave face—best for light cuts and finishing work on flat surfaces. At top right, a similar drawknife, but with round, French-style handles, takes a fine shaving. The fourth drawknife has a radically curved blade with the bevel on the convex face. This tool makes fast work of hollowing out barrel staves, removing large shavings (photo, right). Also known as an inshave, it is the drawknife equivalent of the scrub plane.



the blade, so the tool was shaped like an I. It could be pulled with the blade at an angle for a slicing action without the handles bumping into the bench or workpiece. Drawknives with both handles extending straight from the blade are used for work where angled handles are in the way, for example when shaving the exterior of a bowl, secured rim down on a workbench. Like spokeshaves, straight-handled drawknives are pulled or pushed, whichever is more convenient. It's harder to control a straight-handled drawknife; standard handles provide leverage for controlling the cutting angle.

I sometimes use drawknives while standing at a workbench. However, the best workmate of the drawknife, used long before screw vises were invented, is the shaving horse, an ingenious foot-operated hold-down that grips the work fast and sure. Over the centuries various shaving horses were developed. In one style, called a dumbhead, a central arm pivots in slots mortised through the bench. Jaws on either side of the head hold the work against a ledge 8 in. to 10 in. above the bench seat. The treadle can be a cross peg or a board mortised to the tenoned bottom of the swinging arm. An English shaving horse, sometimes called a dodger's bench, uses two lighter arms pivoted at the sides of the bench and connected by a top crossbar that holds the work, and a bottom crossbar that is the treadle (see "Holding the Work," *FWW*#12, Sept. '78). Like Roy Underbill (*FWW*#14, Jan. '79, p. 4) I prefer the single-arm, dumbhead horse pictured at top right.

If you've used a drawknife and been disappointed with its performance, it's probably because it was poorly shaped or dull. Many new drawknives are ground at an angle that makes them practically impossible to use. Like other edge tools, drawknives must be sharpened with care and precision. Sharpening should begin with a check of the blade bevel angle, usually 30° to 35°. Very thin drawknives, such as the Marples, work well with a 25° bevel.

The wide blade and bent handles of a drawknife require adaptations of standard sharpening procedures. Herr Kohler, the Swiss cooper I worked with, uses a small sandstone wheel whenever rough dressing is necessary. For honing, he props one handle against the work-ledge support on the shaving horse while holding the other handle in his left hand about chest height. In his right hand Kohler first lubricates with spit a small natural stone, then rubs it in circles up and down the blade. When a slight wire edge develops, he flips the knife over and whets the flat side, using the same circular motion until the wire edge disappears.

This method is slow and results in a hollow area gradually developing in the handstone. Wille Sundqvist, a Swedish woodworking instructor, teaches a method that works faster and maintains a flat whetstone. Sundqvist mounts his stone in a shallow cavity chiseled into the side of a wood block. The block is secured in a vise or with dogs and wedges on a workbench. The block's thickness keeps the drawknife handles above the bench surface when the blade is bevel down on the stone. Sundqvist begins with a coarse or medium-grit synthetic stone, depending on the condition of the edge. He holds the right end of the blade, bevel down across the far end of the stone and pulls the drawknife diagonally towards his chest and to the right, so that the left end of the blade is whetted by the end of each pass. He repeats this motion until a wire edge develops across the entire bevel. The wire edge on the flat side, Sundqvist says, should be removed using the next harder-grade stone. Usually a new wire edge forms on



Drawknife and shaving horse offer an ideal combination of direct shaping and quick, sure gripping of green stock.



Two methods of sharpening drawknives. A Swiss cooper teaches supporting the drawknife on the shaving horse, center, and rubbing a handstone first over the bevel, then over the flat face, moving it up and down the length in small circles. A Swedish woodworking instructor teaches mounting the stone in a block of wood held in a vise, above. The drawknife is drawn diagonally over the stone, toward you and toward your right, so the entire length of the blade is whetted in each stroke.



Pieces that do not fit under the shaving-horse head can be held between the end of the shaving horse, in a notch or rabbet, and a roughsawn breast bib. Note that cuts do not start on the endgrain; the waste at the far end of the stick will be removed after the stick is turned end for end.

the bevel side. He turns the knife and lightly whets across the bevel. The final wire edge on the flat side should be gently removed with a soft Arkansas stone. The bevel can be dressed very lightly once again with this last stone. Throughout the procedure he's sure to maintain a flat bevel at the proper angle. Whetting a microbevel is faster but necessitates frequent regrinding or coarse-dressing. Sundqvist also emphasizes keeping the flat side perfectly flat.

Drawknives are relatively easy and safe tools to use. It's almost impossible to pull the blade into your belly, though I have seen torn pants and cut legs. Skill is a matter of practice; tuning up with this freehand tool takes time. I generally work with the bevel down. The bevel acts as a slide and fulcrum for directing the angle and depth of cut. Some woodworkers use the drawknife bevel up. Drawknives with a slight bevel on the "flat" side will work in either position. The particular job and tool used should dictate the method. Practice different cuts, from shallow plane-like shavings to rougher work, shaving to $\frac{1}{2}$ in. Then try curves, concave dips and other shapes. Drawknife technique is a combination of strength with the careful control necessary for doing accurate work. With practice it's possible to shape elaborate curves, using a narrow blade and pulling slowly, but with maximum muscular exertion and control—like an isometric exercise.

Drawknives work best with straight-grained woods, especially softwoods and ring-porous hardwoods. It's possible to shave dense woods like beech or dogwood, but convoluted figure requires working back and forth from each direction. This is where quick setups with a shaving horse really pay off. Wild grain may work better with an adjustable spokeshave.

A fast technique for roughing straight-grained wood to approximate size is to start a very deep shaving, then raise the handles to split off the waste wood. To drawknife very thin strips, such as basket splits and bucket hoops, place the work on a 1x2 extension stick held under the shaving-horse head. It's even possible to dress across the end grain of softwoods. Dampen the end grain a few minutes before starting. Use a keen drawknife. Work bevel up, from a low area to a high point. Pull the knife diagonally across the grain with a side-

ways slicing action, cutting only halfway across the section.

Here's a typical procedure for shaving a 1 $\frac{1}{2}$ -in. diameter chair leg from a split piece of wood roughly 2 in. square. If possible use straight and clear-grained green oak. Grip the stick on the shaving horse with the growth rings oriented vertically; radial surfaces are easier to cut than tangential ones. The first cuts will take the stick down to 1 $\frac{1}{2}$ in. square. Start by tilting the drawknife slightly down on the right and take a shaving off the upper right corner of the stick, so the vertical side of the stick becomes 1 $\frac{1}{2}$ in. high. Next tilt the drawknife slightly down on the left and do the same. These two cuts will leave a slight apex on the top surface. With the drawknife level, shave this off. Now rotate the stick 90°, and tilting the drawknife first left, then right, take the two shavings that will bring the other two sides of the stick down to 1 $\frac{1}{2}$ in. Hold the drawknife level and remove the apex on the top surface. The stick is now 1 $\frac{1}{2}$ in. square for the half of its length close to you. Turn the stick end for end and repeat the procedure to make the whole stick 1 $\frac{1}{2}$ in. square.

The next step is to shave the square into an octagon. Tilt the drawknife 45° to the right, then 45° to the left, to shave the corners off the square. Try to make the three planes this produces equal in width. Rotate the stick 180° and chamfer the other two corners of the square. When all eight planes are the same size, you should have a regular octagon 1 $\frac{1}{2}$ in. across. Turn the stick end for end and repeat the procedures to make the whole stick octagonal.

Now to produce a perfectly round chair leg, it's simply a matter of taking thin shavings off the corners of the octagon, rotating it between strokes and checking it occasionally with a go/no-go gauge. It can be finished up with a spokeshave. Alternately shaving and repositioning the stick proves the value of the shaving horse; the hands can concentrate on the work while the feet quickly hold and release it. The dumb-head horse is particularly advantageous because the work can be slipped out the side to turn end for end, instead of drawing out its whole length from under the head, as is necessary with the English-style horse.

Slipping can be a problem with very green wood and hard-to-hold shapes. Check the shaving-horse head for height and jaw-angle adjustment. If slipping continues, place a small block with coarse sandpaper glued to both faces between the work and jaw of the shaving horse. Woodland craftsmen who continually shaved slick wood sometimes inserted a strip of serrated metal into the upper jaw. I've used a small rasp.

Sometimes it's necessary to drawknife a piece of wood that won't fit into the shaving-horse jaws. Or you may want to shape a flare or curve going into the grain at the end of the wood. A method developed before screw vises uses chest pressure to hold the piece against a rabbet or in a notch cut in the end of the shaving-horse work ledge. A breast bib (a small plank hung by a string around one's neck) distributes pressure and protects against accidents. Breast bibs are made from roughsawn wood; a planed surface will slip against the work.

For drawknifing large work use a conventional wood vise or a peg and wedge-holding system. A machinist's vise with wooden jaw-inserts is excellent for drawknifing irregular shapes or small work. The narrow jaws located above the workbench allow drawknifing at a variety of angles. □

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