Scrapers Refine Turned Surfaces

Some experts say don't use them, but scrapers clean up ridges left by gouges and greatly reduce sanding time

BY RICHARD RAFFAN

Photos, except where noted: Anatole Burkin

Within minutes of venturing into the workshop on the first day of my wood-turning career, I was initiated into one of the great myths and practices of wood turning. With a twinkle in his eye, the boss said, "You might have heard that real turners don't use scrapers—but we do in this workshop. It makes life a lot easier."

In the wonderful but sometimes bitter world of wood turning, those of us who use scrapers often are maligned and dismissed as inept by the cutting-tools-must-be-used-at-all-times brigade. This myth appears to have arisen in the late 1960s and seems to have come from a popular wood-turning author. The advice must have held back thousands of would-be turners who thought they would be breaking some divine regulation by even so much as *looking* at a scraper. Some wood-turning teachers even advertise the fact that *no scrapers* are used in their workshops. Don't they know how? Or are they too blinkered to try? It would be comical if it wasn't so sad.

I am certain the origin of this myth that real wood turners don't use scrapers lies with spindle turners who do indeed use only gouges, chisels and parting tools, except in some highly specialized areas involving very hard woods and intricate detail, such as in the manufacture of boxwood chess pieces. Scraping techniques rarely produce good surfaces on spindles, but they excel for end-grain hollowing and faceplate work.

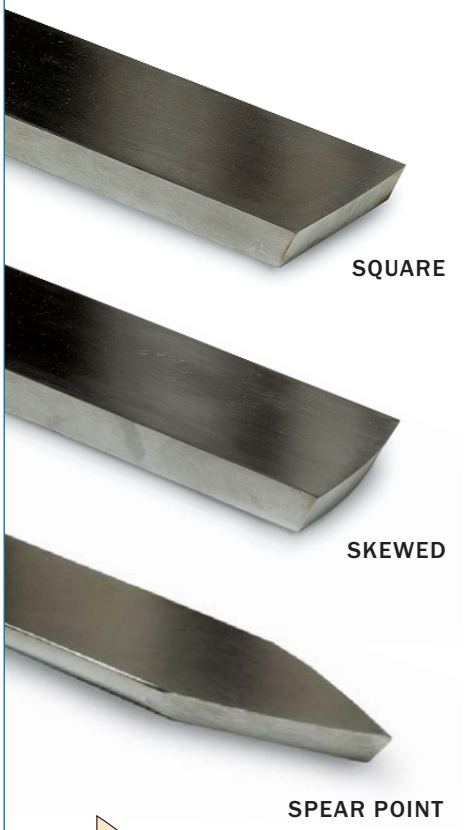
Scrapers refine gouge-cut surfaces on faceplate work (where the grain is aligned 90° to the lathe axis) and surfaces within end-grain hollows such as goblets or boxes. Remove the bulk of the waste using gouges, then finish with scrapers if need be. Even in expert hands, gouges leave a slight groove, which must be removed for a truly smooth surface.

To burr, or not to burr

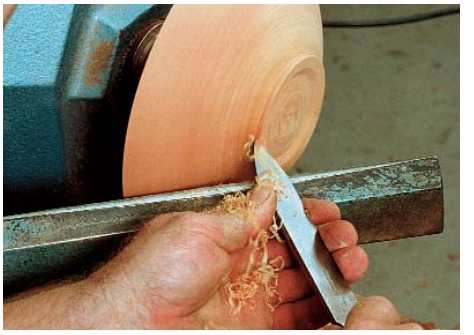
The edge I commonly use has a slight burr straight off an 80-grit grinding wheel. I find this edge to be ideal for general use, especially for the relatively heavy cuts that sweep across the inside curve of a bowl. A honed edge can leave a smoother surface, but when I'm in production mode (working fast), I rely on abrasives for the final step, which is faster than trying to get a perfect surface with just a scraper. There

EXTERNAL SCRAPING CUTS

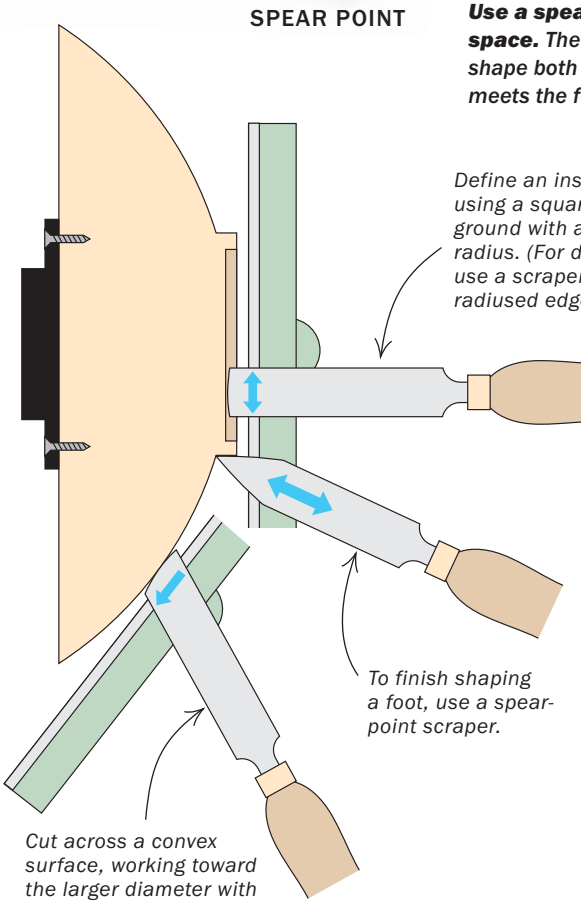
Apply light pressure, angling the tool in the direction of the cut.

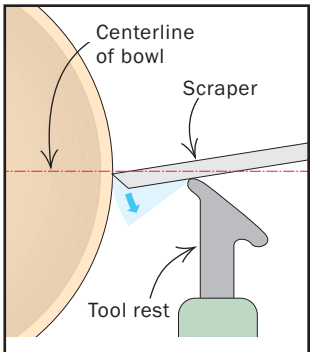


Approach the stock with the tool at an angle but with its shank flat on the tool rest. *For a more aggressive method, called shear cutting, roll the tool slightly to one side, which will create ribbons of shavings.*



Use a spear-point scraper in a narrow space. *The tool's narrow profile allows you to shape both the foot and the bowl where it meets the foot.*





The tool rest should be set lower for external cuts. If the tool does catch in this position, it will fly off harmlessly into space.

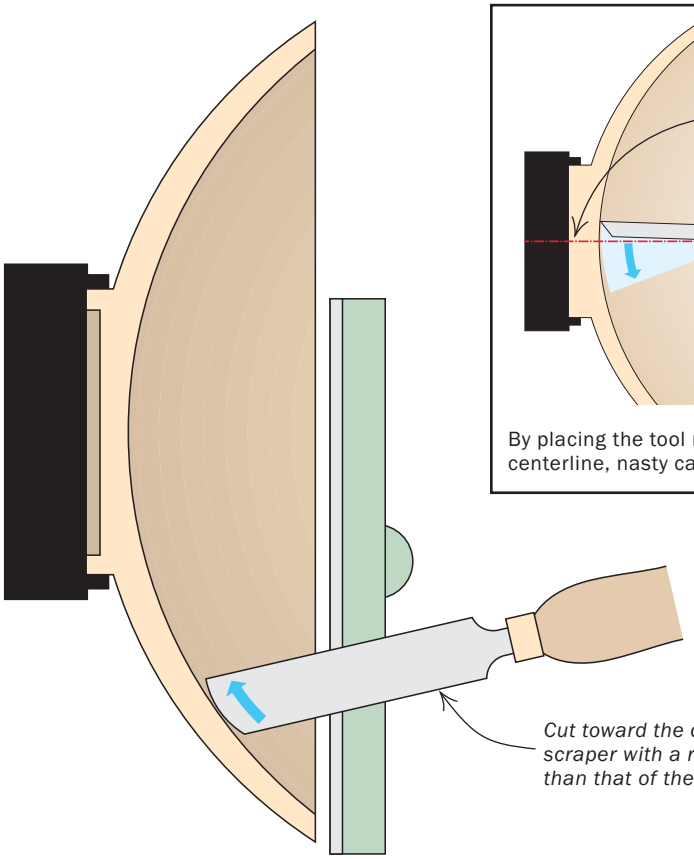
Photos, facing page (bottom) and this page (top left): Erika Marks

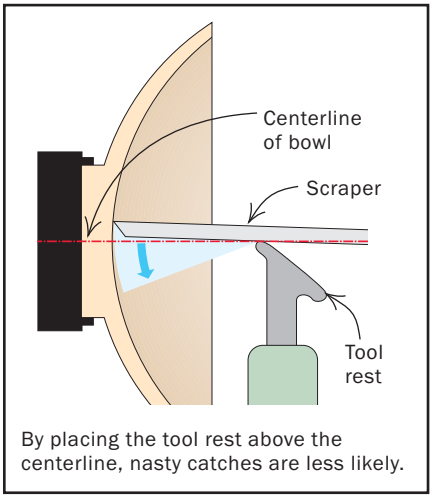
INTERNAL SCRAPING CUTS

Because the tool rest can't get in close to hollow sections, greater leverage must be applied to control the tool.

SKEWED

Radiused scrapers are best for inside cuts. *As the wall of the bowl gets thin, place a finger behind the area being worked to dampen the vibration.*





By placing the tool rest above the centerline, nasty catches are less likely.

Cut toward the center using a skewed scraper with a radius slightly less than that of the region being worked.

are times, however, when a burred edge may cut too aggressively and be prone to catching. When I turn extremely hard woods, such as cocobolo and African blackwood, I hone the sharpened edge with a diamond stone to remove the burr. Let experience be your guide on which woods work best with what type of edge.

A bench grinder is the perfect tool for raising the burr on a scraper. Most turning tools today are made of high-speed steel and may be ground and sharpened quickly using aluminum-oxide wheels of 36 and 80 grit. Hone the top of a scraper flat to remove an old burr before grinding a new one. Keep the tool flat on the grinder's rest and swing the handle to grind the edge. For a single facet bevel, start with the bevel heel on the wheel, then raise the handle until sparks come over the top of the edge.

Don't be shy about regrinding the edge profile of a scraper to better suit the particular piece being turned. When removing a lot of metal, you should quench the tool occasionally in water to prevent it from overheating. Use the 36-grit wheel for reshaping; the 80-grit wheel is all you need to maintain a burr. For most turned work where the surfaces are generally curved, you'll want scrapers with radiused edges. But for some jobs, such as deep hollows, you'll need to grind the scraper with a straight edge.

Scrapers are rarely used to advantage by the majority of wood turners I've met, because most people don't sharpen them frequently enough. If the lightest touch against the revolving wood fails to produce a little curly shaving, resharpen the edge rather than force the tool into the wood.

Avoiding catches

A scraper must always be held so that if it catches, the edge will swing directly into space. When scraping profiles (external surfaces), use the scraper with the blade tilted down a degree or two from horizontal and with the tool rest at the centerline of the piece (see the inset drawing on p. 57). On internal curves, such as working inside a bowl or end-grain hollow, you may tilt up the tool a degree or two, as long as you're above the centerline of the piece, and not risk a major catch. But on all internal *flat* surfaces, such as the bottom of a bowl or coaster, the scraper must be tilted down. Typically, when working internally, I adjust the tool rest so that it resides at center, or just a hair above center (see the inset drawing at left).

The very word scraper has an onomatopoeic ring to it, implying the sort of grating force needed to remove old paint from surfaces being refurbished. A more appropriate term would be strokers, because that's how they're used. As with all turning, the secret is to let the wood come to the tool. If you force a scraping edge into the wood, the tool will invariably tear the fibers and very likely catch. You need to sweep a radiused scraper *across* the surface so that it skims along it like a boat planing over water. Square, flat-edged scrapers used at 90° to the surface need a fine touch to avoid catches. Use them for

scraping deep hollows where a skewed edge can't reach.

Working convex curves and corners

Whenever possible, angle a scraper in the direction you want to cut, across the surface rather than directly against it. A tangential angle limits the pressure you might put into the cut. If the tool blade is 90° to the surface being cut, a catch is more likely. Additionally, a tool aligned at 90° is difficult to sweep smoothly across a flat surface, let alone around a curve.

For working convex curves, such as the outside of a bowl, I recommend using a skewed flat-edged scraper (with a very slight radius) because it's the easiest shape to work with. When scraping convex surfaces, take light cuts. Apply the same kind of pressure you would while rubbing your hands together under a hot-air drier. And remember to avoid attacking the wood with the tool at 90°.

For all of these cuts the scraper shank remains flat on the tool rest. You may find that the scraper doesn't work well on the end grain, where wood fibers are barely supported. The secret to getting a better finished surface is to tilt the tool on its side so that the edge slices the end grain at a slight angle. This shear cut allows you to stroke the curve of the wood tangentially by easing the tool back and forth to work on a recalcitrant bit of grain.

When shear cutting, keep the point of cut in the lower half of the edge. Here the tool rides on the bottom left corner of the shank, which may make it difficult to move smoothly along a tool rest, especially one that is pitted. Such a tool rest should be filed smooth. Some modern skewed scrapers have a rounded side, which makes them slide across even the roughest rest.

Smoothing concave surfaces

The above rules also apply to using scrapers on internal curves (the inside of bowls). Concave sections have their own problems, however. On a smaller bowl, the width of a tool rest may prohibit getting in close; consequently, greater leverage must be applied to the tool. And because hollowing reduces the wall thickness of a piece, vibration becomes a problem.

As you cut near the rim, your touch must become delicate. I am exceedingly wary of scraping internal rims of bowls because the walls become thin and vibrate with the slightest excess pressure. So I cut the first inch or two using only a gouge, then refine the rest of the curve using a scraper, which gives me more control. Support the back of the thin workpiece with your fingers. If your fingers get too hot, you're pushing the tool too hard into the cut.

On internal curves I use as big a scraper as possible with a radius slightly tighter than the curve being cut. Despite the large tool, I use only a small portion of the edge at one time and never use it as a profile cutter, which will eventually result in a huge catch. A large tool makes it easier to visualize the shape of the curve being cut. It also requires less movement because you can pivot the tool and use different sections of the cutting edge to do the work. With a narrow scraper, you need a much broader motion to produce an accurate curve.

If you keep the tool rest at or slightly above center when cutting internal curves, the tool blade needs to tilt below horizontal only when cutting at center. Elsewhere the tool may be tilted up a degree or two without the risk of catching.

Spear-points refine details

I find a spear-point scraper enormously useful for getting into corners and around details such as beads. The long point reaches into the top of a foot at the base of the bowl wall, an area that can be very difficult to cut cleanly with a gouge. Spear points may also be used to clean the area around beads. If you don't own one, simply regrind a ¼-in. by 1-in. chisel to suit your needs.

Scrapers in all their forms are wonderful tools and not to be sneered at. In the appropriate situation, they perform well and can greatly reduce the time required to sand a piece to completion. □

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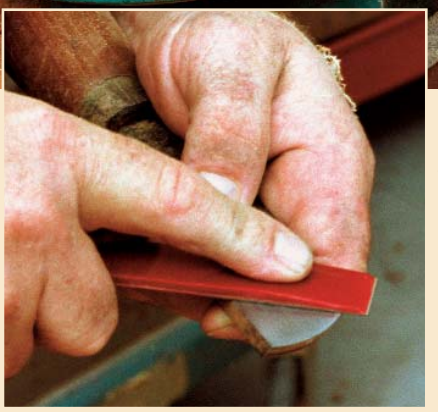
SHARPENING A SCRAPER

Use silicon-carbide grinding wheels for high-speed-steel tools. *To raise a burr, grind the bevel on an 80-grit wheel at 45°, then go right to work.*



Extremely dense woods require a honed edge. *When using very hard woods, hone away the burr to avoid catches.*

Drawings: Michael Pekovich