

# Scraper Magic

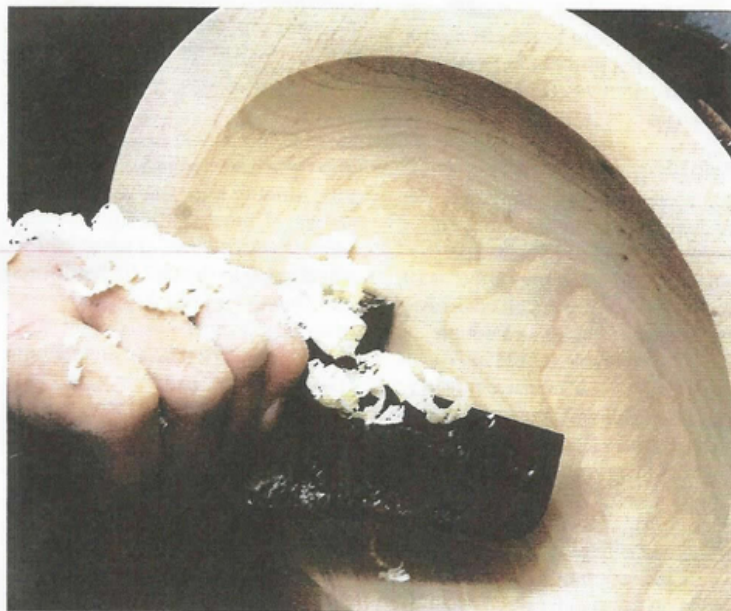
## Getting the Most from Scrapers

*Real woodturners do use scrapers...a lot*

**O**n the first day I turned wood, as I entered his workshop, Douglas Hart said, "You might have heard that real woodturners never use scrapers, but we find them pretty useful." That was 1970, and I hadn't a clue what he was talking about. I forgot his comment until seven years later when I was told by a turner destined to be a renowned pedant, that I had interesting techniques but scrapers should never be required. By then I'd come to regard scrapers as essential for many jobs and had developed a range of scraping techniques using gouges.

I continue to meet novice turners who feel guilty that they even own scrapers, so the myth is perpetuated. It makes me wonder if the perpetuators are limited in their turning activities and abilities, superstitious, or merely ignorant. Whatever the reason, their assertions are of little benefit to the craft.

As a turner of bowls, endgrain boxes, and scoops, I've always found that scrapers enable me to arrive at the shapes I want with maximum speed, efficiency, and above all, with control and minimal sanding. Scraping techniques frequently produce glasslike surfaces right off the tool, especially on the endgrain of tropical hardwoods such as cocobolo or African blackwood. On bowls, scrapers will often improve a gouge-cut surface: The inside of the claret ash bowl in *Figure 1* couldn't be cut much cleaner.



It's certainly true that when turning spindles, scrapers should not be required, but they make life a lot easier when hollowing endgrain—try using a gouge to square the inside of an endgrain box, or turn a flat-bottomed dovetailed rebate for an expanding chuck.

### Selecting scrapers

The scrapers I use all the time are shown in *Figure 2*. The scraper I use in a given situation will have a radius only slightly tighter than the curve I'm intending to cut. The scrapers with broad-radius edges (top of *Figure 2*) are primarily for bowls, while the tighter radiuses (bottom of photo) are for hollowing into endgrain.

The square-end and spear-point scrapers (to the right) are for convex curves and getting into corners when hollowing boxes or detailing around beads.

The standard square-section scrapers I use are high-speed steel (HSS) or Kryo steel and mostly  $\frac{3}{8}$ " (9 mm) thick for cuts more than 2" (50 mm) over the toolrest. The narrower tools,  $\frac{1}{2}$ " (13 mm) or less wide, although used very close to the toolrest, are never less than  $\frac{3}{16}$ " (5 mm) thick, with  $\frac{1}{4}$ " (6 mm) thick being preferable.

Heavy scrapers,  $\frac{1}{2}$ " to  $\frac{3}{4}$ " (13 mm to 19 mm) thick, are worth avoiding, however inexpensive. They are tedious to grind and offer

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strength and weight not required on such short tools. A better option for working a long way over the toolrest is a boring bar with a replaceable square cutter, but make sure the cutters are the same width as the bar and are on top of it.

Controlling leverage can be a problem so it pays to have long handles. An old rule-of-thumb says a handle needs to be four times the length of the distance between the toolrest and the cutting point of the edge.

### Shaping and grinding

All my scrapers start off with bevels of about 45°, which on rounded edges steepen until vertical on the side. If you're grinding on a 6" (150 mm) wheel, however, an edge can become very fragile, so a double bevel is preferable. Those in *Figure 3* are typical. I don't want a long bevel on the side of a scraper because that makes it too gabby.

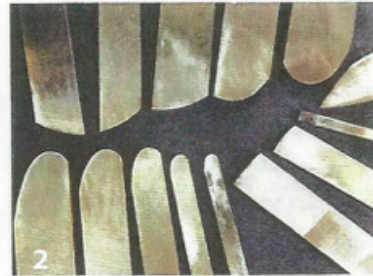
Before grinding any scraper, I hone the top. This can be accomplished using a diamond hone, but generally I use the well-worn 180-grit sanding disk stuck between my grinder rests (*Figure 4*).

For decades I've used an edge straight off a 60-grit wheel, only honing the edge for very hard and dense timbers at one end of the spectrum, and very soft woods at the other. For the easy-to-work timbers suited to production work (ash, cherry, teak, yew, and fruitwoods), I've used an edge straight off the wheel and get shavings like the ones in *Figure 1*. But all that might be about to change: A couple of times I've used the new-to-turners cubic boron nitride (CBN) grinder wheels that seem to produce a much finer edge with less chance of burning an edge. They're expensive, but getting my serious consideration.

For scrapers that are near square-ended, you can adjust the platform to the desired angle, then keep the



The inside of this ash bowl barely needs sanding after a gentle sweep with a bowl scraper.



Bowl/facework scrapers (top); tools for hollowing endgrain (bottom); square-end and spear-point scrapers for convex curves and getting into corners (to the right).

tool flat on it as you ease the edge into the wheel (*Figure 5*). The idea then is not to force the edge into the wheel, burning the thin cutting edge. Think in terms of letting the wheel come to the tool with minimal tool pressure against the grinder wheel. With the platform set in position, touching up an edge should take only two or three seconds. On my high-speed grinder I have my platform set for skew chisels, so for all other tools I'm using only the top of the platform to support the tool. I bring the bevel heel onto the wheel, then raise the handle until I see sparks come over the top of the edge. With HSS and Kryo tools, there are few sparks, so when the edge changes color slightly, stop grinding, (*Figure 6*).

To grind a round profile to the cutting edge, I tend to push the tool up the wheel (*Figures 7, 8*) rather than swing the handle sideways, as the edge is less likely to catch or flatten out.

### General approach

As a general rule and to avoid catches, scrapers should be used flat on the toolrest—that is, not tilted on edge. After that, make sure the blade tilts down slightly so the angle between the wood and the top of the tool is less than 90°. The currently popular negative-rake scrapers aim to make scrapers more forgiving and you don't need to be quite so

careful about the blade angle, but I'd still aim to keep the edge down, especially on a flat face or in the bottom of a bowl. I see no advantage in a negative-rake grind when all you need to do is raise the handle of any standard scraper to achieve the desired angle between the wood and upper bevel.

Use a straight rather than curved toolrest. On a curved toolrest inside a bowl, a scraper must be kept horizontal or tilted up, which can be dangerous: If you drop the handle, the scraper is supported where the sides contact the toolrest, but the edge points up and is likely to catch. If you raise the handle to drop the edge, then the flat blade rocks on the curve of the toolrest and that also leads to catches. Curved toolrests and scrapers don't go well together.

I have lots of scrapers of various ages, widths, and lengths, and I never use one longer than is necessary. To cut flowing and smooth curves, I choose a tool with an edge that has a radius only slightly tighter than the curve I'm cutting. I find creating a long curve using a narrow round-nose scraper really difficult, no matter how smoothly I move the tool. I also try never to have the tool blade at 90° to the surface I'm cutting. It's usually much easier to have the blade at an angle to the surface you're cutting so you can drag or push the edge



3  
The bevels on my scrapers start at about 45° on the nose, becoming near vertical on the side.



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around a curve or across a face of a bowl base.

Used aggressively for rough hollowing bowls or enclosed forms, square-end scrapers can shift a lot of waste in seconds. Using a 1" square-end scraper, it took me about 45 seconds and five cuts to hollow most of the 4" x 8" (10 cm x 20 cm) bowl in *Figure 9*. Provided cuts are directed nearly parallel to the lathe axis, toward the headstock and

within the diameter of the chuck or faceplate securing the job, you can be quite aggressive and force the edge into the wood. Negative-rake scrapers are not so efficient here because the corners are not on top of the tool.

At all other times, and especially when making finishing cuts, you should think in terms of letting the wood come to the tool (rather than pushing the tool into the wood). You need to hold an edge firmly in position so the wood is shaved as it comes onto the edge. And, as the wood is shaved, ease the edge forward. Don't use more than half the edge at a time, and even less as you cut beyond the diameter of the chuck jaws and farther from center.

For finishing cuts, use the same scrapers for delicate stroking cuts. Tool pressure against the wood is about the same as when you rub your hands under a hot-air dryer.

### Scrapers on bowls

*Figure 10* illustrates a number of ways scrapers can be used for refining surfaces on a bowl. Both the round-nose and V-shaped spear point are more often used tilted on edge to shear scrape. Each of the others has a radius slightly tighter than the curve it's cutting.

Working into corners or around beads, skewed scrapers enable you to get better detail (*Figure 11*). To shear scrape up to a bead or into a corner you need a spear point.

I try never to use scrapers on the upper half of a thin bowl, especially if it's a thin open form, as the wood is inevitably flexible. Catches are almost guaranteed if the scraper is flat on the toolrest. I prefer to cut in from the rim cleanly using a gouge. If, however, scraping techniques are the only way to eliminate chatter marks and torn grain (other than sanding), never attempt to use a scraper flat on the toolrest near a rim. Instead,

shear scrape by tilting your scraper on edge (*Figure 12*). I support the rim as I clean up the inside using an asymmetric round-nose scraper. Dropping the speed a few hundred RPMs makes the task less exciting when things go wrong.

Long before I began shear scraping with scrapers (which for years I wrongly thought too dangerous), I used gouges for similar cuts to great effect, mostly for eliminating small bumps on bowl profiles. The gouge must be rolled right on its side so it doesn't catch (*Figure 13*), and I still prefer this technique for truing up a bowl rim that's running slightly out of whack, or to cut the rim of a face or base in preparation for a shear cut using a scraper.

### Hollowing endgrain

The scrapers I use on and into endgrain form the bottom row in *Figure 2*. All my round-nose scrapers are asymmetric with the left wing longer than the right because I always work inboard (to the right of the headstock) so I never need a symmetrically domed scraper. These are ground with a 45° bevel on the nose that becomes ever steeper to the side like the bottom two scrapers shown in *Figure 3*.

These scrapers are not profile cutters: If you get the entire edge in contact with the wood at once, you'll have a big catch. The idea is to use only a small portion of an edge at a time, and by swinging the handle around you can use all of the edge at some time.

I use an edge with a radius only slightly tighter than the curve I'm trying to cut, which makes it easy to develop smooth and flowing curves. When finishing an interior of a hollow like the one in *Figures 14, 15, and 16*, I opt for the larger scraper (to the left in the photos) and avoid using the narrower scraper (to the right). In this situation the tool



6

To grind a rounded edge, use the top edge of the toolrest to support the tool and push the tool up the wheel.



7



8



9

Using a 1" square-end scraper, it took me about 45 seconds and five cuts to hollow most of the 4" x 8" (10 cm x 20 cm) bowl.



10

Working into corners or around beads, skewed scrapers enable you to get better detail. Spear-points enable you to shear-scrape right into corners.



11



12

Never use a scraper flat on the toolrest near a rim. Instead, shear scrape by tilting your scraper on edge.



13

To shear-scrape using a gouge, the tool must be on its side.

moves out from the center, and in from the rim, barely brushing the wood to remove little more than dust and tiny curly shavings. If you move the tool smoothly with minimal pressure against the wood, flowing curves should follow. And if you get it right in a couple of passes, be grateful and get sanding. Don't feel you have to stick the tool in the hole again. At the rim of the hollow form, you can have the edge tilted up slightly, but at center it must be tilted down. On a tighter curve, a slightly smaller round-nose is used, but again, I use the largest-profile scraper I can fit in without having the whole edge in contact with the wood at once.

My square-end scrapers are actually slightly skewed to the right for getting into corners of a flat-bottomed box (Figure 17). This enables me to get into the corner without the right corner of the tool messing up the flat endgrain. The slightly curved edge of a "square end" means you can turn a flat surface without having both corners of the edge in the wood at once.

### Enclosed forms

When hollowing enclosed forms I use standard scrapers if the opening is large enough to accommodate them (Figures 18, 19). The main irritation in using these tools in this situation is that the large shavings are not easily extracted with the lathe running. Initial roughing is with square-end scrapers (see Figure 9), then I complete the inside curves with a round-nose that is as large as can reach the area I'm completing. The more the rim is undercut, the narrower the tool you need.

When there are smaller openings or undercut rims that I can't reach with a straight blade, I resort to the undercutting tools,



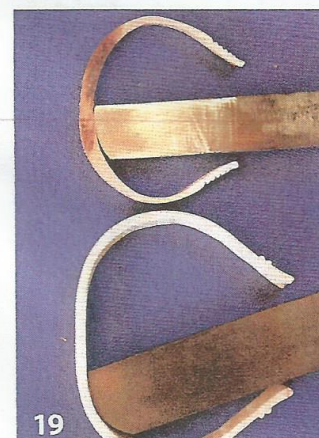
14 Use as large a tool as possible (left) with a radius slightly tighter than the curve you want to cut.



17 My square-end scrapers are actually slightly skewed to the right for getting into corners of flat-bottomed boxes. The profile of the round-nose scraper is such that the entire cutting edge does not make contact with the wood all at the same time.

which still produce a decent shaving and remove waste in a hurry (Figure 20).

If you've been taught that scraping is not something real turners do, I'd urge you to give it a go.



18 Standard straight blades can be used through quite small openings.



19 Standard straight blades can be used through quite small openings.

**Richard Raffan**, now semi-retired and living in Australia, is the well-known author of classic woodturning books and videos from the Taunton Press. Visit Richard at [www.richardraffan.com](http://www.richardraffan.com).