

**BUILD YOUR
SKILLS**
BY UNDERSTANDING
THE SKEW

Jim Scarsella

Certain cuts achieved with a skew chisel are superior to that of any other tool. However, the skew seems to strike fear in the hearts of many woodturners. In truth, it is that very reputation that got me interested in the skew when I was new to turning. I had to find out for myself exactly why this tool is despised by so many. It did not take long for my untrained hands to discover the answer. So began my quest to better understand and develop skill with the skew. Hopefully, what follows will convince you to give the skew a chance and to shorten your learning curve if you do.

It is true, if you exclusively make facegrain-oriented bowls, you may not find much use for the skew. But you do not need to be a production spindle turner to find countless applications for this tool. Any time you are working on projects with the grain running parallel to the ways of the lathe, the skew shines—and not just on spindles for furniture or architecture. Endgrain hollow forms, toys, pepper mills, ornaments, and boxes present numerous applications for the skew chisel. So let's take a closer look and see if there is a place for the skew in your shop.

Anatomy of the skew

There are several skew shapes, bevel grinds, and sizes, but they are all just variations of a simple flat-edge chisel. Those who are fans of the skew have varying preferences, and this can be confusing for novices just learning about the tool. But the reality is that,

provided the tool is sharp and free of nicks along the shaft, most will perform well, regardless of their differences.

Photo 1 illustrates the names of individual parts common to all skew chisels.

Three cross sections

Skew chisels are available in three different cross sections: rectangular, round, and oval (*Figure 1*).

Probably the most common shape is the rectangular skew. However, some are made from unaltered bar stock and are sold with sharp, square edges, rendering them nearly useless out of the box. The sharp edges will catch on any imperfection in the toolrest and make it difficult to slide and roll the tool smoothly. At the very least, the sharp edges need to be rounded over and softened. Ideally, a rectangular skew has the edge that runs to the short point fully radiused, and the edges that run to the long point chamfered and softened, removing any nicks and bumps. This allows for fluid movement of the tool when planing and rolling the short point and provides a stable surface when holding it vertically for penetrating cuts with the long point. Most tool manufacturers now sell skews already machined with this profile. Look for this shape when shopping for a new tool, and know that with older, used tools, you may need to tune them for optimal results.

Round skews, ground from small diameter steel blanks, are great for forming details on finials, chess pieces, and other fine spindle work. As round

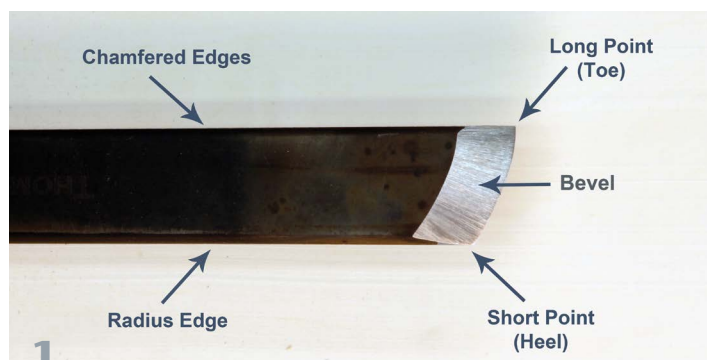
skews get larger, the width of the tool limits their usefulness because they cannot easily reach between close elements. Many turners also find them difficult to sharpen due to their tendency to roll when presented on a grinder. For these reasons, I limit my use of round skews to fine details.

Oval-shaped skews allow smooth travel over the toolrest and are great for planing cuts and rolling beads. They are less stable on the toolrest than a rectangular profile during facing or V-groove cuts. Also, because of the curved body, some find it more difficult to sharpen with consistency. However, there are many woodturners who prefer this shape, and in skilled hands it makes a great all-purpose skew.

Skew sizes and angles

Skews come in a wide variety of sizes. The very small and very large do offer some advantages in particular circumstances, but I find that I reach for my ½" (13mm) and 1" (25mm) skews most often. If I were to recommend one tool to the new turner, it would be a ¾" (19mm) or 1" rectangular skew for the versatility that size and shape offers.

Most skews come ground with a cutting edge that forms a straight line from long point to short point, typically with about a 70° angle measured from the long axis. This is a very usable profile and a good place to start when learning. However, many experienced turners favor a curved profile, with a straighter section for only about a third of the tool ▶



Common names of skew parts.

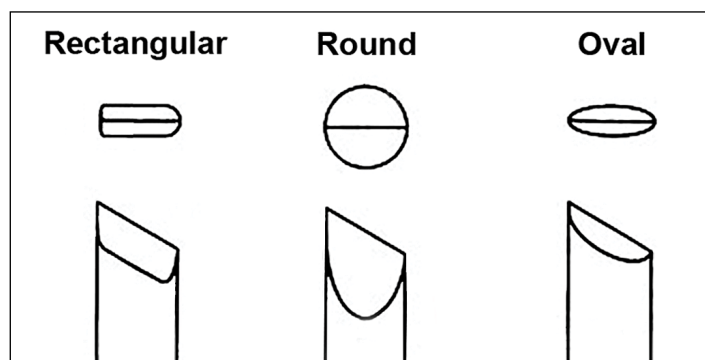


Figure 1. Skew cross sections.

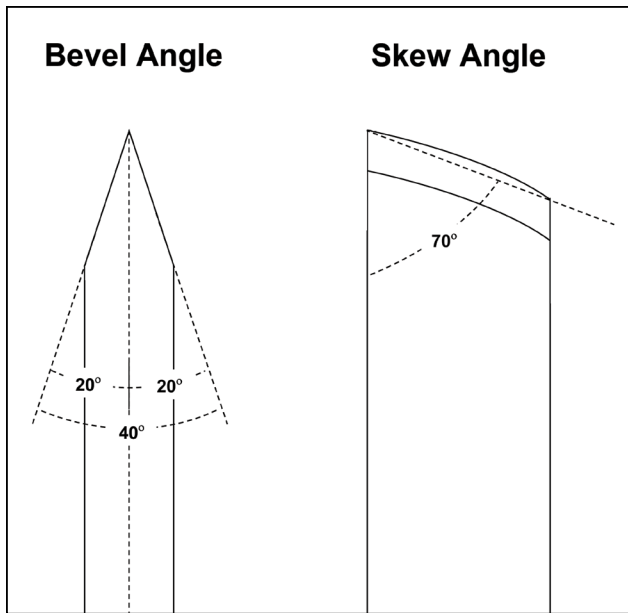


Figure 2. The difference between the bevel angle and skew angle.

shallow, sweeping coves and working in tight areas, and some may find flatter angles better for rolling beads.

Note that the skew angle and bevel angle are two different parts of the tool, as illustrated in *Figure 2*. Bevel angle considerations are discussed later in this article.

Geometry of a skewed cut

The skew chisel can make exceptionally clean cuts because, as the name implies, its cutting edge is skewed,

the wood, the actual cutting angle is reduced, effectively making the cutting edge “sharper” and generating a cleaner cutting action (*Photos 3, 4*).

This effect occurs with many other turning tools, too. Think of how we manipulate a bowl gouge, tilting the flute to the side or rotating it vertically when shear cutting. Even a spindle roughing gouge, when presented with the bevel pointed in the direction of the cut, has a skewed cutting angle. These are all examples of skewed cuts, and they produce a finer surface because they slice along the wood fibers and effectively introduce a sharper edge to the wood. With this in mind, when using a skew chisel on a difficult piece of wood, experiment by altering the presentation angle of the edge simply by swinging the handle one way or the other. This can dramatically affect the quality of the cut.

Bevel angle

A 40° included bevel angle (20° on each side) is considered typical for skew chisels, but the exact angle is not critical. In practical use, an included bevel angle anywhere from 25°–55° is common.

near the long point, arcing into a gentle curve to the short point (*Photo 2*). The overall slope is maintained at about 70°, but the curved profile offers an advantage when making rounded or arcing cuts.

The typical 70° skew angle can be altered to good effect for individual uses. Steeper angles are great for cutting

or angled relative to the directional rotation of the wood. This orientation creates two benefits. First, cutting occurs by slicing along the wood grain rather than directly into it, reducing the tendency of wood fibers to pull out. Second, when any cutting edge is skewed in relation to the rotation of



2 Skew angles can be straight (bottom image) or gently curved.

3 Skewing the angle of the tool effectively produces a “sharper” edge, which generates a shearing or paring action and ultimately a cleaner cut surface.



5 Skew with a hollow-ground bevel.

6 Skew with a convex-ground bevel.

7 Skew with a flat-ground bevel.

Depending on the application and material, moving toward a more acute or obtuse angle may offer advantages. A blunter angle can provide added durability to the edge when working with very hard wood. More acute angles work well on soft woods, and the thinner cutting edge also allow clearance when working in tight transition areas. As illustrated in *Photos 3 and 4*, the actual cutting angle is not just dictated by the grind angle, but rather a combination of the grind angle and the angle of attack relative to the directional rotation of the wood. It is not possible to position the tool and have a cutting angle greater than the grind angle, as that would cause loss of bevel support and become a scraping cut. But, depending on how much you skew the position of the tool, the cutting angle can be greatly reduced from the grind angle.

I find a 40° included bevel angle a good all-round compromise between durable and sharp. A handy, nontechnical method of finding that angle is to grind the bevel length to about one-and-a-half times the thickness of tool. It so happens this bevel length will equal about 20° (actually 18.4°) on a tool of any thickness. The result is a tool with an included angle of about 40°.

Sharpening

There are three common ways to sharpen a skew chisel: hollow grind, convex grind, and flat grind. Opinions vary on which is the best. Ultimately, tool skill is the most important factor and someone proficient with these tools will work effortlessly with any grind.

Hollow grind

Grinding a bevel on a round stone produces a concave profile or a “hollow” in the bevel, as indicated in *Photo 5*. The smaller diameter the wheel, the deeper the hollow grind. In my experience, a concave bevel on a skew has the tendency to make the tool catchy and harder to control, especially when learning. Because the cutting edge is

pivoting on the back edge of the bevel, rather than supported directly behind the cutting edge, the cutting edge is not naturally pointing towards the direction of the cut, but is rather directed deeper into the wood. As a result, a hollow ground tool tends to self-feed and is a little more grabby in use. This tendency can be overcome with practice, but I find this grind less user-friendly, especially for beginning turners.

You can improve a hollow-ground skew’s performance by honing the edge on a flat surface after grinding. This produces two flats in a single plane at the front and back edge of the bevel. These flat surfaces lead the tool in the direction of the cut and reduce the tendency of the tool to dive further into the wood. If you hollow grind your skew, try honing with a diamond stone between trips to the grinder. You may find it makes the tool more stable and easier to control.

Convex grind

You can produce a slightly convex bevel by gently rolling the bevel up on the grinding wheel while sharpening. After sharpening the edge, gently advance the chisel up the wheel. This removes the trailing edge of the bevel and produces a slight convex or bullet shape (*Photo 6*). I find this grind easy to master freehand on the grinder with only a toolrest set to the appropriate angle, and it is very good for most of the common skew cuts. Keep in mind, the key here is a very slight convex shape. It is easy to overdo it and render the tool nearly useless. Monitor the shape closely as you grind the tool, as you only need to remove the concave hollow and nothing more.

Flat grind

After much time using all manner of grinds, I favor a dead-flat bevel on a skew chisel (*Photo 7*). Since it is easy to control and maintain bevel contact during the cut, a flat-ground skew is the easiest for beginners to use. As noted, the flat surfaces lead the tool in the direction of the

cut and reduce the tendency of the tool to cut aggressively. I sharpen all my skewers with a flat bevel. The problem is, it is hard to consistently produce a flat bevel free-hand on a grinder. Practically speaking, this requires a belt sander sharpening method with a platen, which produces a flat, even edge.

To be sure, you can have a long and happy woodturning career, making beautiful work, without ever mastering the skew. In fact, there probably isn’t anything you can do with a skew that you can’t do with some form of gouge or scraper. However, I believe there are many things the skew simply does better. For one, it leaves a cleaner surface off the tool, which means less sanding. I think if you give it a fair chance, you will be glad you added this tool to your workshop. ■

Photos by Roger Meeker

Jim Scarsella is an avid turner and carver and an active member of the Detroit Area Woodturners. Although a passionate furniture maker for almost thirty years, Jim started turning in 2008 and hasn’t made a piece of furniture since. To see more of his work, visit jimscarsella.com.

(Editor’s Note: A detailed description of how to make the most common skew cuts can be found in Keith Tompkins’ article on page 32. Also, please see page 34 for a link to an instructional video by John Lucas that further illustrates the techniques.)

JOURNAL ARCHIVE CONNECTION

Much has been written about the skew chisel in *American Woodturner*.

One example is Russ Fairfield’s article, “Humanizing the Skew Chisel” (vol 25, no 5, page 32), which offers another take on this versatile tool. AAW members can access this and all past journal articles online at woodturner.org.

