Sharpening Basics with Phil Holtan

- Sharpening is always a trade off between sharpness and long edge life. The smaller the angle the sharper the edge but it will also dull more quickly.
- The best way to see if a tool is dull is to look at it in very good light. If the tool is sharp, it will show no reflection from the edge except from the bevel. A dull tool will reflect light from the rounded edge.
- It is very important that the cutting edge of the tools is not rounded over in sharpening. Concave (hollow ground) or flat are both good but convex makes cutting impossible.

Grinding basics

- Use a jig if necessary to get a consistent grind. I like One-way style; or your jig can be shop made.
- A white or pink wheel will work best with high speed steel tools. Gray wheels use the same Aluminum oxide abrasive, but the bond is too strong and even when the particles dull, they don't let go but hang on and tend to burn the steel. Dress regularly with a diamond dress to true the wheel, remove glazing, and expose sharp fresh abrasive particles.
- The wider the tool being sharpened, the coarser the grinding wheel should be, down to a 60 grit. For multipurpose work, an 80 grit wheel is probably best; with miniature tools, perhaps 150.
- You will need to sharpen often, because heat and wear will round over the tool edge and two things will happen- the edge will no longer cut cleanly and the rounded edge will change the bevel angle and not allow you to take a controlled cut at the same angle.
- To round off the sharpness of the side edges of the tool on skew chisels, make several small passes on the grinder. Smooth further with a coarse honing stone. Otherwise the edges will catch and prevent a smooth motion on the tool rest. They will also damage the rest.
- Sharpen skew chisels to about a 30-degree angle, scrapers to 60-80 degrees, gouges, average 45, with a range from 60-70 for a bottom-cutting gouge to 30 for a fast cutting gouge for soft wood.

Honing basics

- Make sure that you keep the diamond or stone from rounding over the edge. Concentrate on keeping the stone in contact with the base of the bevel at all times.
- I like to use the tool rest to support the tool as I hone.
- Hone the inside of the flute as well, with a gouge slip or round honing tool.
- After two or three honings and the "lands" of honed surface get too wide, you will need to regrind the flute.

What grind for a bowl gouge?

There are two main choices, fingernail and Ellworth grind.

The first is the fingernail. If you want to be able to rotate the tool in the cut and have it cut consistently anywhere on its edge, you will need to either swing the tool or slide it when sharpening. You can't just roll it at the grinder or you get a useless shape.

I teach people to sharpen the fingernail by sliding it forward on a One Way Wolverine jig or its equivalent. Establish the angle by sight and then start the grinder and inspect that you really are getting a grind on the full bevel of the tool. If you don't have many tools, you can scratch the slide there to mark the angle. Start with the gouge all the way back in its cradle when it is flute straight up. Then, as you roll the tool to right or left, slide the tool forward the width of the tool. For example slide 3/8 forward for a 3/8 tool, ¾ for a ¾ tool, etc. A common mistake that beginners make is to simply roll the tool and then at the last minute, slide the tool all the way forward. To do this grind well, you must begin the forward slide immediately with the roll and keep both the slide and the roll moving at the same time. If you slow down and watch carefully, you can also observe the grinding in process. When the wheel is grinding up to the edge, you will see sparks coming down the flute and a slight color darkening happening right at the edge. When you have finished the grinding run, carefully observe the edge, for you may need to make another grinding run to get a consistent grind on the whole edge. The grind I want for the fingernail is about a 45 degree angle and a back sweep of 45 degrees for about a 90 degree angle where the bevel and the back sweep meet.

The fingernail grind is almost always the best grind for spindle gouges and definitely the best tool for beginners as a bowl gouge too. It is more forgiving and easier to sharpen.

The other grind is the Ellsworth grind, named after David Ellsworth, who adapted the longer Irish grind and popularized it for America. It is a more complex grind with a very blunt end and further swept back and very acute wings. It is a more versatile tool but as with all multipurpose tools, like the Shopsmith, it doesn't do any of the processes as well as a specialty tools, and it is very grabby. That's why I don't recommend it for beginners. For more accomplished turners, it is absolutely wonderful. It encourages a pulling cut that allows bevel rubbing more easily even to the base of the bowl. It is blunt for access right to the bottom of a bowl. It can do its own shear scraping if you lay the gouge on its side and use its long wings at a right angle to the edge. And it does a unique cut that is very helpful on hard-to-cut woods that it allows an almost skew chisel cut using the very acute wing in an extreme shearing angle. No bowl cut is sharper than this.

For sharpening, I like to use a genuine Ellsworth jig, with a Geiger Vertical solution slide on the One Way Wolverine. It is essential to get the shape right, and the Wolverine fingernail jig does not have enough control. It is important to get t he jig angles and distances correct. For the Ellsworth grind, I use a height of 3 7/8" from jig pivot to the grinding wheel center, a 7" distance from the grinding wheel edge to the pivot point, and 4" of gouge extending from the intersection with the 45 degree swing arm.