Sharpening Guidelines

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EQUIPMENT:

- Wheel grinder (I prefer a 1725 or 1800 rpm) set just below chest height, with 6, 7 or 8 inch diameter wheels at least 1 inch wide, 60 and 36 grit friable aluminum oxide wheels (usually white, pink, or blue) in J or K hardness
- rock solid tool rests
- eye protection and dust mask
- wheel dresser (star-wheel, dressing stick, or diamond dresser-all work, but leave different surfaces, my choice is the diamond)
- medium India slip stone or diamond slip stone
- flat stone in fine (these are optional, with my preference being diamond hones).

I. Guidelines for sharpening "cutting" type tools such as gouges, skew chisels, parting tools and hook tools:

Objective:

Single facet with a slight hollow grind

Mental Objective:

Grind the bevel and not the edge

Strategy:

1. Profile or shape the tool first-don't be too timid in removing large amounts of material to reach desired shape-check a book, video, or a turner for recommended shapes/angles.
2. Next, begin to match the desired bevel angle to the profile (to actually sharpen the profile). Start at the heel (back edge) of the bevel and gradually lap forward towards the edge.
3. Use light pressure, be slow and deliberate, and maintain a relaxed attitude and grip, elbows in, controlled stance.
4. Leave the tool on the wheel, looking at your progress only occasionally-use the spark trail as feedback to determine where you are grinding. Stop grinding when sparks just come over the top of the tool edge-further grinding burns away the edge, producing a "saw-toothed" edge. When full bevel is in contact with wheel, tool is sharpened.
5. Avoid heating the tool to such a temperature that you see temper colors developing (yellows, purples, blues). When grinding carbon steel tools, quench in water quite regularly. If using high-speed tools avoid quenching when tool becomes hot-grind in stages, allowing the tool to air cool between sessions.

Sharpness Indicators:

If you can see the edge on cutting tools (skews, gouges, parting tools, etc.), there is no edge! The amount of effort or pressure it takes to remove material is a great indicator of sharpness-a sharp tool seems to allow the wood to cut itself, a dull tool requires extra force. Look at the material coming off the tool-dull tools tend to produce dust or short chips, sharp tools tend to produce ribbons and curls even if short. Listen for sharpness: sharp tools make a hissing sound (much like a sharp plane); dull tools sound flat or make a scraping sound.

Honing Guidelines for skews, gouges, parting tools:

It is easier to keep a sharp tool sharp than it is to use a tool so long that you must return to the grinder. Get in the habit of regular honing, especially before final cuts. For gouges hone the outside ground bevel first by touching the heel of the bevel first, then gently rock into the area just below the edge, still touching the heel of bevel-always a two-point contact. Next, hone the inside flute: hold the curved edge of the slip stone perfectly flat within the flute and move the stone in and out of the flute until the entire edge has been honed. Hone both ground surfaces of the skew and parting tool in a similar two-point strategy. You can only hone a properly ground tool-grinding is still more critical than honing. **Rule:** Hone the bevel and not the edge!!

II. Guidelines for sharpening scraping type tools (flat steel, ground on one bevel only, similar to the cabinetmaker's scraper in its edge-a burr):

1. As with tools above, shape or profile the tool first. Scrapers are the most readily shaped tools-ground into

whatever shape is needed.

2. Aim for a bevel angle between 70 and 50 degrees.
3. Although normally the bevel is not rubbed on the wood-and we do not hone these tools like cutting tools-I still aim for a single faceted tool.
4. Start at heel of bevel and lap or grind forward until sparks just begin to appear over the top of the tool.
5. The burr that is raised from grinding or raising with a burnisher IS the cutting edge at least 90% of the time. On some woods where the burr is too aggressive, we remove the burr and scrape with a sharp edge.
6. Leave the heavy burr from grinding if the intention is to remove considerable material and quickly. If you are using the scraper as a finishing tool, remove the burr with a flat honing tool (face of the slip stone or your flat Japanese or diamond stones). Next raise or pull up a more delicate burr with a burnisher-anything harder than the steel. I use the flat face of the slip stone or a cabinetmaker's burnisher to raise the burr. This is accomplished by tilting the burnisher just a few degrees past 90 to fold the steel back-and traveling along the full length of the edge. The burr size is also determined by the amount of pressure you apply to raise the burr-more pressure, the heavier the burr. You can successfully raise a burr 2 to 4 times before the edge is too rounded and you must then return to the grinder.

Sharpness Indicators For Scrapers:

Feel for the burr by running your finger off the edge, not along the edge. When working with a sharp scraper it should also produce small ribbons-if saw dust, then the tool is usually dull.