

Beginner's Corner

Some Light Along the Path!

by Robert Gulley

Sharpening Techniques

Welcome to the Beginner's Corner! This column will focus on those woodturning issues especially related to beginning turners—of course you advanced turners may want to brush up on the basics too! Some of the topics we will touch upon include proper tool use, sharpening, wood selection, and those common problems encountered as you begin turning. I would also like to answer some of your turning questions, so I encourage your feedback and welcome your questions regarding techniques, problems, and general woodturning issues. Most of you already find woodturning to be an incredibly enjoyable experience. I want this column to encourage that enjoyment by providing you with useful material to help along the way. With that in mind, I will begin by looking at a very important issue for any new woodturner: how to get really sharp tools.

My greatest difficulty and frustration as a new turner came from trying to turn bowls with less-than-sharp tools. Conversely, my real enjoyment of woodturning came when I discovered the difference between "this tool looks sharp enough" and "wow, look at those shavings!" Sharp tools made the difference between a frustrating evening at the lathe and an enjoyable one. Woodturning often becomes an addiction for people who try it and understandably so. That happened to me the very first time I turned a square piece of wood down to a cylinder. Three years later I find myself more addicted than ever! But I almost gave it all up from the frustration of trying to cut wood with less than razor-sharp tools.

SHARPENING SYSTEMS

Many people hold different opinions on sharpening tools, ranging from those purists who contend serious turners only sharpen by hand to those who maintain you must purchase the most expensive sharpening system on the market. My advice will undoubtedly ruffle somebody's feathers somewhere, but I believe good sharpening necessitates a good sharpening system. You do not need the most expensive system on the market, but neither should you try to pinch pennies. I had to learn the hard way. I would rather have a good sharpening system and a less capable lathe than the other way around. You can live without variable speed drives and ten different chucks, but you can't cut wood with a dull tool!

Look for a sharpening system that holds your gouges in

a pocket on one side, while giving you a large, adjustable platen on the other side for sharpening your scrapers, skew chisels, etc. (see **Figs. 1 & 2**). You can choose from several different systems, each with their own advantages and disadvantages, but any of these systems will work well (see Sources listing). A well-made sharpening system will deliver consistent, repeatable results with excellent quality every time. Talk to other turners and get their recommendations before purchasing.

Woodturning involves many variables such as tool selection, wood grain, lathe speed, and chucking options. Improper sharpening technique should not become one of those variables. Sharpening by hand typically results in either multiple bevels on a tool (thus changing the cutting angle of the tool) as shown in **Fig. 3**, or it results in grinding away more steel than you need—and that costs money! A good sharpening system saves you time, money, and more importantly, lowers frustration levels dramatically! Additionally, when you want to use one of the "specialty"



Fig. 1

A large platen helps to control movement when sharpening scrapers and skewers.

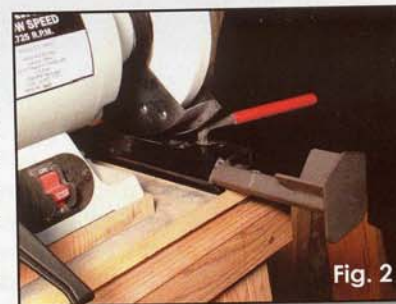


Fig. 2

This pocket holds gouges securely, allowing smooth movement and even pressure.

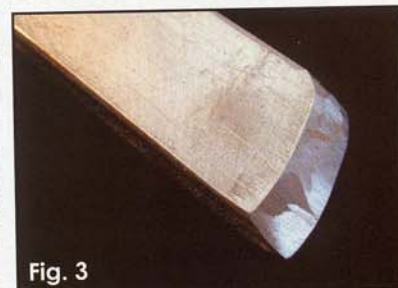


Fig. 3

Multiple bevels change the angle of a cut, making tool control harder.

grinds on your gouges such as a "fingernail" or "side" grind (see Fig. 4), nothing beats a good jig made just for that purpose.

GRINDERS AND GRINDING WHEELS

While you do not need the most expensive grinder on the market, you do need good grinding wheels. Both 6" and 8" grinders work just fine. The larger wheel of an 8" grinder produces a smaller concave or "hollow" grind on the tool bevel and the wheel lasts longer. Regardless of grinder size, do not use the standard gray wheels that come with most grinders. The coarser wheels leave the tool edge rough and they produce too much

heat. Use aluminum oxide wheels for your grinding. These wheels (usually white, pink, or blue in color) leave a much smoother surface on the tool. Other advantages include running cooler as you sharpen, requiring less effort to get a smooth surface on the tool, and taking off less steel when grinding, which ensures your tools last longer.

I prefer a grinder to run at a relatively slow speed, somewhere around 1700 RPM or so. Most grinders run at around 3600 RPM, with some variable speed models running between the two speeds. If you can budget for a slower speed grinder, do so; you will appreciate its advantages. If you're limited to a high speed grinder, however, make sure you only hold the tool to the wheel for a short time. The higher speed generates more heat and removes steel more quickly, running the risk of over-sharpening and changing the desired shape of the tool. Careful sharpening should avoid overheating, and regular sharpening before a tool gets dull requires only brief "touch-ups" to return the tool to proper sharpness.

WARNING!!! Excessive heat while sharpening can damage the two most common types of steel used for turning tools: High Carbon Steel and High Speed Steel (HSS). You can identify HSS tools by the stamp indicating them as such on most of the tools. While you should not overheat either type of tool, HSS tools can endure more heat than carbon steel tools. Overheating causes the tip

of a carbon steel tool to turn blue (or black), ruining the temper of the tool. Slight bluing of HSS tools does not have the same effect, but prolonged overheating will damage them as well. Never dip HSS in water to cool them. This leads to microscopic fractures or "fissures," which weaken the tool edge.

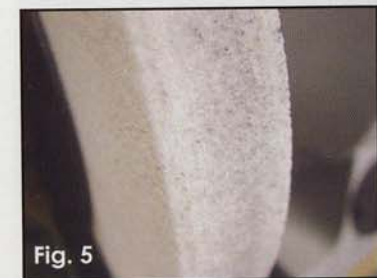


Fig. 5

This grinding wheel needs "dressing" to clean the metal shavings left from grinding.



Fig. 4

The top gouge shows a "side" or "fingernail" grind; the bottom gouge shows a standard grind.

For your grinding wheels, I recommend using two different grit wheels. Equip your grinder with either a 60- or 80-grit wheel on one side, and either a 100- or 120-grit wheel on the other. This allows for relatively quick shaping of the tool with the lower-grit wheel, and smoother honing with the higher-grit wheel. I also recommend a diamond wheel dressing tool to ensure a flat surface on your grinding wheel. Repeated grinding wears ridges in the wheel surface and leaves an uneven grind on the tool. This translates to uneven surfaces on the wood. More importantly, a diamond dresser also cleans the wheel of metal shavings produced while grinding (see Figs. 5 & 6).

SHARPENING TECHNIQUE

Take advantage of the sharpening system's greatest strength by letting the sharpening jig/system do the difficult work for you. Hand sharpening requires you to focus on presenting the tool to the wheel first, with a secondary focus on proper hand motion and pressure to complete the grind. Once set, a sharpening jig allows you to focus on smooth motions and steady pressure throughout the grinding process, all vital to good sharpening (see Fig. 7). Through experience you will develop the right setup and techniques, and you will find your tool rarely needs the extra step of honing (or polishing). With proper sharpening, your tools can often go directly from the wheel to the wood after just a few moments at the grinder.

Finally, sharpen your tools beyond what you think necessary, both in terms of frequency and quality of the sharpened edge. A useful aphorism I once heard from master woodturner John Jordan states, "don't wait until your tools need sharpening to sharpen your tools." This means if you wait until your tools become dull enough to affect the quality of the cut, you waited too long to sharpen them. Few cutting tools go through the beating that woodturning tools take, where big chunks of wood spinning hundreds, even thousands of revolutions per minute constantly attack the edge of your tool. Under these conditions tools become dull in no time at all!

Sharpen your tools frequently, at least several times during each type of cut, and more often when reaching

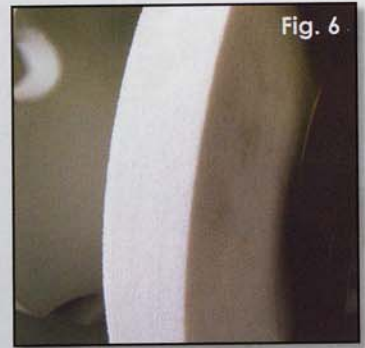


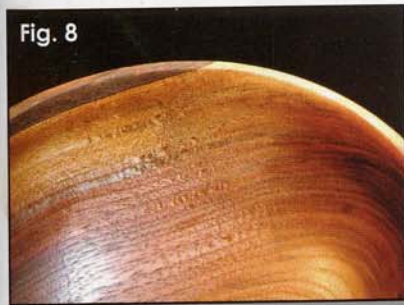
Fig. 6

Use of a diamond wheel dresser cleans the wheel and removes any uneven surfaces.



Fig. 7

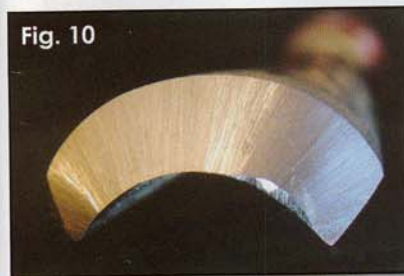
Once set, the pocket remains fixed and a tool can be touched up with the same grind repeatedly.



Tearout occurs when a tool becomes dull. Wood fibers stretch and tear below the surface.



This is a close-up of the same tearout. Notice the surface gaps created by tearing the fibers.



Exaggerated for clarity, notice the reflection on the right edge. Back to the grinder!

the final shape of your piece. For example, when roughing out a bowl to its initial shape you often remove large amounts of wood and your tool quickly loses its cutting edge. As your edge starts to dull, the tool begins to tear at the grain, damaging the wood below the surface (see **Figs. 8 & 9**). You must then spend a good deal of time "cleaning up" the wood, either by making deeper cuts or with more aggressive sanding. Sharpening your tools more often eliminates this problem.

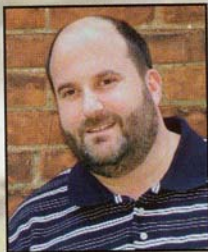
Proper sharpening technique means you usually remove only a slight amount of metal to achieve a sharp edge. A sharp tool reflects no light on the edge when viewed under a strong light source. If you see a reflection on any part of the cutting edge, the tool requires more sharpening (see **Fig. 10**). When you cannot see any reflections on the

cutting edge, you have a reasonably sharp tool; however, I recommend making one more sharpening pass to ensure a really keen edge. This takes the tool to a higher level of sharpness, resulting in faster stock removal and smoother, cleaner cuts.

Different woods will require you to sharpen your tools more or less, depending on a number of factors. Green (or fresh) wood reacts differently than dried wood; walnut cuts differently than oak or maple. Experience will tell you when you need to touch up your tools. Until then, sharpen your tools more rather than less. Remember, sharp tools will save time, money, and most importantly, your sanity! So get those tools sharp, get turning, and have some fun!

(Editor's Note: An excellent resource book for sharpening is *A Complete Guide to Sharpening* by Leonard Lee. Check with your local bookstore for availability.)

Robert Gulley



Robert Gulley is a minister, adjunct college professor, writer, and woodturning enthusiast who lives just outside of Cincinnati, Ohio, in Bellevue, Kentucky. He recently started teaching woodturning classes at the local Woodcraft store.

Robert started turning about three years ago, and while he does other types of woodworking (such as box-making and carving), woodturning is his passion. He states that his wife loves his interest in woodturning, not only for the bowls and boxes she gets out of it, but also for the mental health it brings him! She even forced him to buy a new Oneway 1640 lathe—what a woman!

Little else fascinates Robert as much as taking a chunk of wood, turning it down, and discovering the beauty hidden below the surface. Each cut reveals a part of the mystery awaiting you as the wood spins and the shavings fly—what a life! He says that he can't think of a better way to spend an afternoon!

Robert welcomes your questions and comments and can be reached by e-mail at rgulley@goodnews.net.