

## A Chisel sharpening learning experience

Take note of the title, for I did not say “learning how to sharpen a chisel” or “gaining experience by sharpening a chisel”. My aim here is to share my experience gained from sharpening and testing a chisel so others might benefit by comparing their experience.

Starting out in woodworking my Dad gave me all his second world war Royal Navy chisels. These were in pretty poor condition so one of my first tasks was to make new handles for them, clean off the rust and scale and then sharpen them.

Having had a life of continuous contest with my Dad in his workshop, I was determined to develop/acquire the skill to sharpen these tools properly and to learn about their proper use, not abuse as my Dad and I had mutually imposed upon them.

I am not a collector so I am not interested in preserving fancy patina or old handles. I want user chisels in good condition.

To start with I acquired an 8 inch grinder, a veritas angle setting gauge and honing jig. Then came the dual layer water stone and of course change to the grinding wheel from the rough probably 30 or 40 grit they are sold with to the 80 grit white Norton stones.

I set about sharpening and achieved pretty good results at **least I thought. And this is the point of my story.**

We can all read about something and then even go out and do it, but how do you judge the result? Where is the line for poor, good enough and over the top? What difference exists between good enough and over the top and is there better than good enough but not over the top?

It's only through working with tools and reading of others experiences or if you lucky getting direct exposure to others of greater experience and their tools that you actually get to realize where that line is and what is achievable and the result that comes from working with a tool that is properly set up.

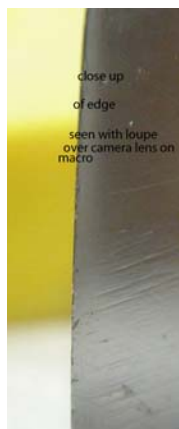
I was not all that impressed when I used these chisels after the initial sharpening and so went on to do more homework and keep the task on the long list of things to do.

First up I wanted a reference work so I bought Mr. Leonard Lees book “The Complete guide to Sharpening” I figured what he don't know is not worth knowing. However my point is you can read a book get all the theory and still not have your reference point. Yes pictures help but only to a point.

I had found out what sharp chisels can do when making the mortises in my new woodworking workbench legs but the chisels were not staying sharp very long.

At that point as is many times the case I blamed my tools and went out to buy another must have and that was a felt wheel. Now I could set about honing and in fact actually almost polishing my chisels to a mirror kind of edge. All in search of that illusive ultra sharp edge and one that stays around for a while.

Trouble is I found that it actually took the sharp edge off. Yeah you still have to develop a feel for how much and how hard to press and **that** means unless you are shown takes trial and error and the willingness to experiment. This implies empirical skill development. Getting the “feel”.



Acquiring a skill like that is great if you doing this kind of work on a daily basis but for me coming back to it once every week or two and perhaps even longer if I don't get to sharpen in my shop each week and depending on what I am doing when I am in my shop. By then the feel part has been lost or forgotten. So I went in search of a little more repeatable process with less feel too it and more absolutes. Also I found the water stone concept expensive and the issue of flattening introduced another variable.

This is when I abandoned my attempts at using water stone, leather and felt wheels to hone and took to trying out the scary sharp system using sandpaper. But not just any sandpaper. First used water paper from 400 to 600 to 800 grit and then onto using special film impregnated sandpaper of around 15 micron and 5 micron grit.

So now the process is simple. Set the grinder up and using my "additional add" on of a steady tool rest and guide I can grind the initial angle and then put the chisel in the angle gauge and fasten up the honing jig. Bobs your uncle is what my mom would say. Implying that was all you had to do to get a perfect edge.

So in the course of the 2010 Christmas holidays I set about sharpening everything in my shop that had a blade that was doable in this manner. I only recently got round to doing the chisels again.

By the way in between I had purchased a little cheap and undervalued tool and that is a plastic loupe with 10x magnification. You see having seen pictures that some guy put on the web, taken using a kids digital microscope and the same pictures in my Lee's book I realized the value of being able to see a little more than just what your eye can see especially with my reading glasses.

See I had also come to marvel at what sharp meant. To the uninformed you think sharp edge would mean no marks on the edge sort of like the shining Gillette blade advert. But there are always marks there it just depends on where you wish to stop abrading the edge and how fine you prepared to go.

Well I used my loupe to examine my chisels before I set out to sharpen them again. Having gloated to my Dad previously about how I had managed to get them sharp I have to admit to being rather embarrassed when I reviewed my prior work with my new found knowledge. They were anything but acceptable.

Fine woodworking contributed to this knowledge base too, through a series that Gary Rogowski presented, which appeared in the magazine as well as accompanying videos. Gary had taken a couple of ordinary readers through the steps of sharpening. At each stage he went to look at their efforts and this made the point I am trying to make here. Most of the guys were either ready to stop too early or go overboard at each stage. Despite these guys being pretty good average woodworkers that knew the process they still did not know where the line to stop was or to reach. With Gary on hand and his experience you get to know where the line is and what the whole point is that you are trying to achieve.

So what did I find when I examined what I had done before.

- Edges that had not held their edge. In fact edges that had all but chipped off and turned over.
- That in my normal routine of wood working up to now that is, I would merrily grab any chisel and use it to scrape glue off a glue up and not ensure I cleaned it off properly before setting it aside and having it find its way back into the set with glue on. More abuse as glue residue is now stuck to chisels and to the edge. Degrading performance for use next time, never mind abusing a sharp edge.



- I had introduced moisture and the accompanying rust.
- Chisels had a chrome like polished edges that looked great to the eye but in closer inspection the backs which I had thought were lapped flat were not and there were still significant scratch marks on that surface right up to the edge.
- As to the sharp edge besides obvious edge failure there was also signs that I had all but rounded over the edges when honing, either on the felt wheel or on leather strop so I had actually degraded the work done on the water stone. See marked up pictures on first page.

This time out I set about measuring the angles on every chisel and writing both the size (width of blade) and angle on the chisel since there was no size marking on any of these old chisels.

They were marked 1943 with the decommissioning arrow stamp on them that was used at that time on anything taken out of service. Some were marked I.Sorby so I recognized the Sorby name and thought they would be well worth sharpening and looking after.

Then I took the biggest one and sharpened it again taking it through the entire process. First I lapped the back of the chisel using my new method of sandpaper on the slab of granite I have. When the back was absolutely nice and flat across the entire width for at least the bottom 2 to 3 inches I stopped. This time I had a smooth fine almost polished finish on the back but not from buffing from proper flat lapping on fine paper.

Next freshly grinding the edge on it and taking care not to heat up the edge during the grinding. In fact I even tried to not get it hot enough to require quenching in water. According to Mr. Lee this leaves fine cracks in the edge which whilst you cannot see them they are there.

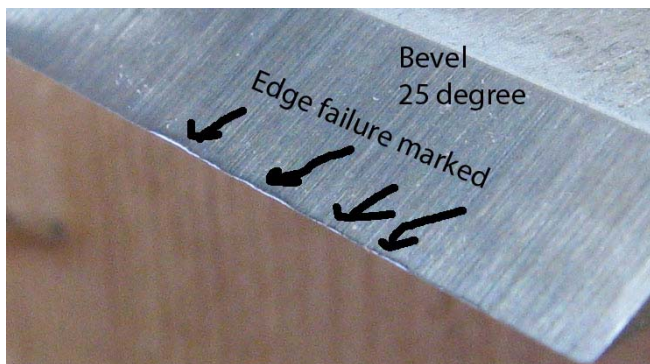
This followed with putting it through the process on the sandpaper mounted on the flattest granite slab I can find. Of course I use a honing jig here to keep it at the same angle and steady. Slowly moving through the various grits removing the scratches of the one that went before it. The result is super. You really get to see if you use the loupe how nice and controlled and systematic and essentially foolproof the system is.

EXCEPT one thing is missing here. What angle do you use?

Reading the book 25 degrees had appeared a good angle for the average firmer chisel. These were not to be mortise chisels in my shop.

This chisel had previously been ground to 25 degrees or there about. The odd chisel where I had a duplicate I had decided I would use it in a pairing mode and even lowered the angle to around 20 degrees.

Now when done with the sharpening I secured some oak in the vise to try out the edge on oak end grain. I expected this chisel to cut the end grain pretty easily since, "hey it was now scary sharp". Well initially it did. I was only using hand force and it cut reasonably well but I was not delighted. Soon it was harder to push through a sliver of end grain.



Examining the edge with the I was to find that the edge had actually chipped away. **Literally broken off in places.** I was very disappointed to say the least but very happy in another way.



See I had found that at this relatively low angle the type of steel this chisel is made from, which I conclude is a soft high carbon steel, cannot support a sharp edge and cut end grain oak. So whilst disappointed I was delighted sufficient enough to want to share the story and see if it helps others over the hump. Testing the edge damaged the chisel but that was far better than putting it back in the draw thinking you done and then finding out upon use that it does not hold its edge. Is that not the very purpose of testing your edge. Now I understood previously the edges had failed not out of abuse but simply too low an angle.

wood where dirt and nails lurk. But I would not do that with my bench chisels. I want them in top condition.

I keep a couple of 30° bevel chisels for cutting end-grain oak or similar destructive woods and the balance are shaped for softwoods or hardwoods, all with the honing angles marked on the tool somewhere: 15° for one paring chisel, 18° for another, skews at 20°, a great gathering around 25° and a few mortise chisels in the 30°s.

If I honed those chisels freehand, all the bevel angles would creep up and none would be as finely tuned nor work as effectively as is the case now. If you are determined to do all your honing freehand, all I can suggest is that you hone with the blade well askew the direction of travel on the stone. This gives you the best shot at good angular control.

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be used for diy hacking and glue removal and will also organize the layout and storage of my newly sharpened chisels in a better fashion.

In fact I plan on making leather protection ends to pop over the sharp edges to protect them and me.

Happy woodworking and learning.

So I went inside to consult Mr. Lee's book. Sure enough I had read the passage, probably multiples of times but it had not sunk in properly without the practical experience. On page 62 Mr. Lee (excerpt image to the left) talks of setting the angle of grind and then on page 63 goes into mentioning that he has set some of his chisels to various bevel angles all the way from 18 degrees through to 30 degrees which he actually mentions he keeps specifically for cutting end grain oak or similar destructive woods. Well I did not know until then that end grain oak was considered destructive so this was a bonus.

**Well reading that is one thing having experienced it and then read it was fantastic and affirmation that I had now experienced failure of an edge due to too low a bevel angle for the application.**

I then reground the chisel to a much steeper bevel angle around 30 degrees in fact probably a little higher and sure enough its day and night the results.

Now I have to go through the whole lot. Thank goodness this happened on the first one. This is why I test and play with each tool after sharpening. When I am an "old hand" at this I won't need to because by then I will be more familiar with how my tools behave and how I have used them.

I have also learnt in the process that I will set aside some rough work chisels to be used for diy hacking and glue removal and will also organize the layout and storage of my newly sharpened chisels in a better fashion.