Maintaining Waterstones for use on the Wicked Edge

Posted by KenSchwartz - 05 Apr 2012 01:10

Well this may be a boring topic at first glance, but I assure you that for any serious sharpener it is one of the more valuable things to grasp thoroughly.

Diamond plates wear out. There's no getting around this. You can slow it down using plates wet to keep from abrading the substrate that holds the diamonds in place, but eventually they wear out. Sandpapers of all types wear out too. But they maintain their shape during this period. In part this is because they present essentially a single layer of abrasive and once it is gone, that's it. Diamond plates do wear VERY slowly, so it is certainly not a cause for panic or a reason not to use them. There are diamond 'stones' that have diamonds going through a depth of material but they aren't used by sharpeners for reasons beyond this topic.

Then there are sharpening stones. Some, like Arkansas stones wear slowly - but cut slowly too and are available over a relatively narrow range of grits, going as fine as the translucent stones with the surgical blacks next in fineness and other coarser ones available. They can be used with water (my preference), oil or plain. They are useful in some instances but primarily on knives of lower abrasion resistance - European kitchen knives, soft Buck knives, etc. There are also India stones etc but let's go on.

Next are both synthetic and natural Japanese waterstones a personal favorite of mine. These are available in a very wide range of grits from ~ 24 grit to 30,000 grit. Instead of a single layer of abrasive the whole thing has abrasive content so there is MUCH more abrasive present. Natural stones span an even wider range of grit sizes although not a lot more, primarily at the high end.

They do wear at various rates. In general softer stones and coarser grits wear fastest but this isn't a direct relationship. Thus several different waterstones, all 1000 grit will have different wear rates, different hardnesses, abrasive density, binding structures and so on. As you use these stones, you will find personal preferences for how you like them to wear and find that you will actually PREFER a faster wearing stone for some applications.

So stones wear. This is a fact of life that any even moderately serious sharpener must understand and work with.

Stones wear unevenly. Why? Because sharpeners (I include honers in this term) sharpen unevenly. For freehand sharpeners, this wear pattern is almost like a signature. For WE users, this is a property of the way the stone is used. For instance, the two far ends of the stone wear less because we don't run the edges to the very ends of the stone - nor should we as this risks damaging the edge we are working on. We don't press evenly throughout the length of the strokes of the paddles. You might press harder on

the left stone than the right or need to correct a bevel by grinding more on one side or the other or by twisting the stone, causing more wear on the right or left side of the stone. And on and on. I could spend a day with examples here.

So eventually we get our stones out of being 'square'. Typically they 'dish' or are thinner in the center and thinner to either side of center. In the extreme they start looking like a saddle. Similarly diamond plates will wear unevenly but just become less effective and aggressive rather than dish.

What to do? This is a key concept:

You MUST be able to keep the surfaces of a stone FLAT. This is as much a part of sharpening as anything else and a key to success. You will at times also need to readjust the stone to make the flat surface parallel to the back of the stone or plate. This is less critical, but still important.

Now before we delve into this topic, I need to address another very important topic of particular relevance to the Wicked Edge and other devices like the EdgePro - **stone thickness.** This is NOT a limitation of the Wicked Edge but rather a much more universal issue for ALL users of stones.

SO let's jump ahead and say that you are now a master flattener and truer of stones and that you now have in your possession a set of stones of IDENTICAL thickness - perfectly flat and true.

So you start out on a knife needing some serious work with a 'butter knife' dull edge and chips - the type your neighbor sends you. You start removing chips with a coarse stone and progress up once the knife is repaired up through a series of grits to say a 5000 grit edge. Or maybe you have a better knife and go all the way to 30000 grit.

Now lets say you do this to 10 knives. By now your stones have dished - not terribly but less than perfect (I promise to return to this more later).

You need to flatten the stones. Yes, you do. So you flatten and true them. Now you measure the stone thicknesses. Do you think that all these perfectly flat and square stones are the same thickness?

They will NOT be. WHY? Because they wear at different rates. This is a fact of life. In general, your finer - and most expensive - stones wear slowest. Thank God! You will completely wear out your coarser stones long before your fine ones. So stones like a 30k Shapton will probably never get replaced from

being worn out - and not used on 'lesser knives' or knives not requiring that level of finish. But especially if you do a lot of sharpening you will wear out your coarser grits first.

The solution to this is NOT, absolutely NOT, to grind down your 30k stone to the thickness of your coarsest stone. Your solution is to adjust for the difference. How? Use an angle cube to be precise. Got a softer knife and need less precision (but still FAR more than freehand sharpeners can produce)? Use a Sharpie permanent marker on the edge and using a light sweep of your next finest grit make a small lateral sweep over a small part of the edge and see where you are at. With a little practice you should get to within a few tenths of a degree in just a few swipes using the continuously variable adjustments - not the premarked notches. If you are off a couple tenths this next grit will fully compensate and give you a clean single bevel angle with just a few more strokes. Not perfect, but if you want perfect - measure.

The old adage 'measure twice, cut once' applies here very strongly. Perfection takes more time. With a device like the Wicked Edge, you approach perfection far more closely than freehand and you see things less than perfect more easily. Slop unnoticed by a freehand sharpener becomes obvious, much like seeing one item moved on a clean desk versus one item misplaced on a desk piled high with everything that hasn't been taken care of.

I'm going to stop here for now and continue this topic in subsequent posts on this thread for emphasis of this one point of stone maintenance - dealing with the variations in stone thickness as a stone is used when comparing coarse stone wear rates to finer stones.

Ken

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Re: Maintaining Waterstones for use on the Wicked Edge

Posted by Mikedoh - 31 Aug 2012 12:49

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For Ken and those in the know

If using something such as a DMT Dia-Flat lapping plate, which is XXcoarse, when flattening waterstones . . . Does one need to progress serially thru less coarse plates before using the waterstone for sharpening? I couldn't find my answer after reading thru the posts. Perhaps my question is texturing related?

Would appreciate advise on flattening plate coarseness relative to waterstone coarseness when

flattening my Chosera stones.

Thanks in advance guys

Mike

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Re: Maintaining Waterstones for use on the Wicked Edge
Posted by PhilipPasteur - 31 Aug 2012 16:56

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Here is something that may help:

jendeindustries.wordpress.com/2012/05/

Phil

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Re: Maintaining Waterstones for use on the Wicked Edge
Posted by Mikedoh - 31 Aug 2012 17:33

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Hi Phil

From the video, I get the idea that it does not matter what the coarseness of the flattening plate is . . . I guess I'd kinda like for him to come out and say so . . .

My Choseras are for a different system (though I might try a mod to use them on the WEPS), and I only have one of each grit . . . I may have some doubles by mixing my brand X Choseras and my WEPS stones though.

Mike

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Re: Maintaining Waterstones for use on the Wicked Edge
Posted by PhilipPasteur - 31 Aug 2012 17:46

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Here is a quote from Ken earlier in this thread

"So you have your diamond surface. What grit is ideal? Well coarser grits leave a rougher surface texture and get the work done quicker. But they leave deeper scratches and wear the stone faster sometimes unnecessarily so. So, for a badly dished stone, use a very coarse plate (eg, 140 Atoma). For coarser stones - also a coarse plate. A finer plate on a coarse stone wears the diamond plate faster. And a very coarse plate leaves a more aggressive coarse stone surface, which is desirable. For finer stones - 1k and above, I use a 400 Atoma, since this leaves a smoother surface or a DMT coarse, however the DMT coarse has very strong Stiction issues so you need to move fast and use lots of water. This also produces a minimum of wasted stone to create flatness."

I use the DMT wxtra coarse up to my 800 Chosera (400, 600, 800). I use The coarse DMT from 1000 to 10K. I usually run the 2000/3000 and 5000/10K lightly on the WEPS 1000 diamond for texturing. I have done the same sort of thing with my 5K Shaptons. 10k Naniwa, 12 K Superstone and the 15K shapton.

I think the imperative it the flattening process. I tend to "feel" that the texturing is more of a technique for stone feedback. I don't think that it will actually make that much difference in the edge. You are still using the same abrasive, though the abrasive release may be greater at first, possibly resulting in faster abrasion of the edge.

I also use two stones of the same girt to rub together for a few seconds before each blade. This may lead to a flase sense of security, but it also begins to release some abrasive which makes the stones initially more agressive.

Phil

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Re: Maintaining Waterstones for use on the Wicked Edge

Posted by Mikedoh - 31 Aug 2012 18:31

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Thanks Phil

I was looking for it to be more spelled out which is what you provided.

Stones are not inexpensive and I don't want to be wasting them by aggressive flattening, on the

other hand, I don't want to spend a life time flattening a stone.

Thanks again

Mike

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Re: Maintaining Waterstones for use on the Wicked Edge

Posted by jendeindustries - 02 Sep 2012 05:44

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You do not need to progress through the coarsest to the finest lapping plate when lapping a stone. However, you will notice a definite difference when you lap a fine stone with a fine diamond plate vs. lapping it with the coarsest.

For general use, I don't think the surface texture of the stone will influence too greatly the final edge, however, when you are looking for perfection, it will. If you lap the 30K Shapton pro with an extra coarse diamond plate, the rather deep grooves left in the surface of the stone can and will influence the final edge. With regular knife sharpening, though, this surface texture will wear down as it gets used.

I still don't recommend lapping the higher grits with the coarsest diamonds, though - a coarse DMT if you must, but the 400, 600 or the 1200 Atomas will do just fine.

In general, I will do one of the following:

Coarse stones (#120 - 1K):

1. Shapton Lapping plate with coarse (~80 grit) powder.

2. Atoma #140

3. DMT XXC

4. WEPS 100 diamond

Medium Stones (1K - 4K)

1. Atoma 400 or 600

2. DMT XXC or XC

3. Shapton DGLP (#350 grit)

4. Shapton lapping plate with medium (~800 grit) powder

5. Shapton DRLP (#600 grit)

6. WEPS 200 or 400 diamond

Fine Stones (5K+)

1. Atoma #600 or #1200

2. Shapton DGLP (#350 grit)

3. Shapton Lapping plate with fine (~2K grit) powder

4. Shapton DRLP (#600 grit)

5. WEPS 600, 800 or 1K Diamond

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