What is the use of a convex edge

Posted by mark76 - 17 Jan 2013 09:36

I moved Ken's question to a separate thread, since it is about a different topic that might develop into a whole new thread. Ken refers to the following thread: www.wickededgeusa.com/index.php?option=c...d=8534&Itemid=63

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Re: Ceramic or 1000 grit stone for convex bevels???

Posted by KenBuzbee - 17 Jan 2013 08:36

Help me understand the goal here?

I get running a thin bevel and adding a steeper micro bevel to give the actual edge more stability, but where does a convex edge fit into the picture?

I've done lots of convex edges, using the mousepad technique, freehand. To me, it seemed like a "cheat" for my inability to hold both primary and secondary bevels to some (any) precise angle. A cheat that worked very well and compensated for my lack of skill.

But I don't understand "why" you'd do this on a WEPS? Seems like you are adding a lot of work for no benefit.

Not criticizing, just trying to understand.

(and if the answer is 'I just like convex edges' that's fine too)

Ken

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Re: What is the use of a convex edge

Posted by mark76 - 17 Jan 2013 09:40

KenBuzbee wrote:

Help me understand the goal here?

Very good question!

There have been heated discussions on the (alleged) advantages of a convex edge on this forum and other forums.

Some people believe a convex edge is stronger than a single-beveled straight edge.

I have seen two plausible reasons for this.

1. A convex edge has more steel behind it than a single-beveled straight edge. (One might ask the question here: a single-beveled straight edge of which angle, but alas.)
2. A convex edge starts rather blunt (at the edge of the edge) and then becomes steeper. The blunt part of the edge pushes material aside, so that the remaining part of the edge glides through more easily.

I don't know which, if any, of these reasons is correct.

However, I can reason that if reason 1 is correct, a multi-beveled edge is just as strong as a convex edge, because it has a similar amount of metal behind it. (Either a little bit more or a little bit less, depending on how the edges are shaped exactly.)

If reason 2 is correct, a multi-beveled edge might either be stonger than a convex edge or not. It might be stronger, because angle changes along the edge are steeper. It might not be strong for exactly the same reason

I'd love to see some experimental or theoretical proof. Opinions are welcome, too

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Re: What is the use of a convex edge
Posted by cbwx34 - 17 Jan 2013 17:03

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mark76 wrote:

1. A convex edge has more steel behind it than a single-beveled straight edge. (One might ask the question here: a single-beveled straight edge of which angle, but alas.)
2. A convex edge starts rather blunt (at the edge of the edge) and then becomes steeper. The blunt part of the edge pushes material aside, so that the remaining part of the edge glides through more easily.

3. Marketing? ☺

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Re: What is the use of a convex edge
Posted by RoccoSanello - 17 Jan 2013 17:10

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Yeah, what Mark said.....and a little bit of "I just like convex edges" lol! The aspect of less maintenance was also appealing to me. I've heard because of the reason Mark brought up, "..has more steel behind it than a single beveled straight edge..." that it stays sharp longer without having to touch it up.

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Re: What is the use of a convex edge
Posted by KenBuzbee - 17 Jan 2013 18:14

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.... but it stays "less" sharp, longer... Or so it would seem?

Ken

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Re: What is the use of a convex edge
Posted by jendeindustries - 17 Jan 2013 18:43

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mark76 wrote:

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3. A convex edge has more steel behind it than a single-beveled straight edge. (One might ask the question here: a single-beveled straight edge of which angle, but alas.)

The angle is everything, and is almost never addressed. On the WEPS, you get a sharper edge, faster with a "V" grind, however, with such precision, the point of the apex of the edge will be rather thin and less stable (What I call the pencil point theory).

Convexing rounds the edge of the edge over, making it more obtuse at the apex of the edge, which gives it more geometric stability.

But the angle is everything - the precision from the WEPS means that you actually need/can/should use a more obtuse angle for a more stable edge than someone sharpening freehand because the flaws of freehand require thinner edges to account for the rounding.

Does that make any sense?

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Re: What is the use of a convex edge
Posted by PhilipPasteur - 17 Jan 2013 20:07

It makes sense, but more so in a case where you are doing something that will make the knife steel fail at your chosen angle. If we are talking mostly about wear, there is more to look at, I think.

I tend to think that a convex edge, done right, is a stronger edge, but as Ken mentions, it really dulls faster. It is what I prefer for heavy duty cutting tools... Kuhkris, machetes, etc. It makes sense if you think about the geometry, a convex edge is thicker right behind the edge, as the edge wears or folds it gets

thicker faster too... hence more dull more quickly.

If anything, unless you are OK with a dull edge, you need to do more maintenance. When you do this, it is also more work to get it back than the V.

A more acute "V" will tend to be thinner right behind the edge. Unless you apply force that exceeds the steel's ability to take it, as the edge wears, it will be sharper longer.

Now this is all theory, I don't have micrographs to prove it, but it fits well with my experience. I convex the edges of all of the knives that I will use for chopping or heavy duty cutting of any kind. They definitely lose the original slicing ability quickly, but they take lots of abuse and edge integrity is maintined... and they stay good enough for chopping tasks. I wouldn't use them for making feather sticks... after a few cuts on something else.

I have done some kitchen knives on the belt grinder (lots of them for cutomers, they love them...not as picky as me) ..off platen, slack belt. This gives a nice convex edge which will push cut tomatos, but it doesn't stay that way long at all. The same knife at 17 degrees on the WEPS with a fine microbevel at 20 to 22 degrees (half dozen or so strokes with the 1200 ceramics) stays sharp considerably longer. It may not survive an encounter by a ham handed knife weilder with a hard bone as well as the convex edge... but I really try to avoid that

The V is also easier to touch up than the convex edge. Usually a few strokes on a bench strop with 3 micron paste for me brings it back nicely. The convex edge needs a second visit to the bench grinder...

To wrap it back to what you said Tom, I tend to think the results with a more obtuse angle will also lead to a more significant loss of sharpness more quickly than a more acute angle...if y we do not exceed the steels abilities... of course.

Phil

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Re: What is the use of a convex edge

Posted by RoccoSanello - 17 Jan 2013 20:36

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Ah very interesting, so I misunderstood then. So with that being the case, what about a single 5 degree

micro bevel...would that dull quicker than a V edge, like a convex does?

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Re: What is the use of a convex edge

Posted by PhilipPasteur - 17 Jan 2013 21:23

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Probably, but it is a mattter of how much microbevel is applied. My idea is to add a bit of "tooth", but not take much metal off of the edge. A few light strokes will not change the bevel geomtry very much.

But if you want to carry what I said to the final analysis.. of course you are right. The edge would lose that very fine edge faster...

I read about Clay doing something smilar for some knives that he has used for skinning. He liked the results. Lots of folks also like the tooth for food prep too. A very polished edge can be les effective for cutting fiberous material. I think that the small bit of roughness that is added at the edge seems to aid in cutting through the skin of vegetables. I guess Clay likes it for hide too, as he mentions skinning game with this method of sharpening.. So I tried it, and I like it too! I don't dotice a huge difference in edge retention, and the 3 micron bench strop easily adds a little bit of the tooth back..

I think you should see how the convex edge works for you in your application. This is really the key... fitting the edge to the steel, its use...and your cutting habits. The nice thing about having the WEPS is that ist is not that hard to try different things. You can easily put a V back on that knife and try that. Also, maintenance is lots simpler with the WEPS than trying to do it by hand. Much of the common wisdom about the "cost" of maintenance has to be reconsidered because of that.

The more you experiment, the faster you learn. I always try to listen to others and learn from them, but prove it for myself... on my knives and the way I used them.

Phil

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