

# Edge probing and assesment methods

Last updated on: 2009-09-08 02:34

- by David Polan -

## Introduction

I decided to make this article to teach people how I assess the edge quality at the most important step in the honing process, the bevel creation stage. If you learn to use these tests well and together, then I am confident that the quality of your edges will improve, and it will take you a lot less time and experimentation/guessing to get a great shaving razor. As far as I am concerned there are only two main types of tests: edge thickness (sharpness) test and edge uniformity tests. Both are equally important and have their own strengths; however, both have their weaknesses as well. Therefore, they must be used together to produce the highest quality and most consistent edges in the least amount of time.

## Edge Thickness (Sharpness) Tests

These are the tests that you probably hear a lot about: the thumbnail test (TNT), thumbpad test (TPT), and of course the famous hanging hair test (HHT) and its many variations (arm hair, badger hair, etc.). I will give a summary of how to perform each of the tests and then explain their strengths and limitations individually and as a whole (which are addressed with the edge uniformity tests).

The thumbnail test is performed by dragging the edge of the razor (from heal to toe) along your wet thumbnail. The feeling that you want is for the razor to have a smooth and even bite indicating that the bevel is sharp enough to cut into your nail. If the edge glides across your thumb nail easily without resistance then it means that the edge is too dull to bite into the nail and will need more work to get sharp. If you feel the edge bite in but it feels "rough" in certain areas then this indicates that there is roughness such as microchipping in that portion of the edge that will need to be worked out before moving on to the polishing grits. Do not longer perform this test once you have established a good bevel on a razor, because the test itself can be slightly detrimental to an already finely developed edge.

I perform the TPT by lightly pressing and dragging my wet thumb along (not across) a small portion of the edge. The feeling that I am looking for is a smooth sticky feeling caused by the edge slicing into the outer layer of the skin. I then lift my thumb off that portion of the edge and check the next portion in the same way going all the way from the heal to the toe. You will likely find that some areas are sharp and some others are not, indicating that blade will require more work to get uniform sharpness from heal to toe.

There are several different variations of the HHT. The standard test is to hold a hanging hair between your thumb and index finger and then bring it to your razor's edge. The hair should be easily and cleanly cut in two pieces (not peeled down the center). The HHT should be performed along the entire blade from heal to toe in order to make sure that the entire edge is sharp. Another variation of the test (which I do not like as much) is to bring the edge across your arm hair and assess how easily it pops the hairs. In my

opinion the major shortcoming of this test is the fact that it will not tell you which portions of the blade are actually very sharp and which are not because hairs will be popping all over; it gives you more of an idea of the average level of sharpness of your entire edge. If you are a perfectionist like me you will want the entire edge to be at its optimal level of sharpness. Another variation of this test is to pick one particular hair on your arm, and attempt to cut it with a particular portion of the edge. Different hairs can sometimes react somewhat differently in the HHT, and the general rule is the thinner the hair the sharper your edge will need to be to cut it cleanly.

## **Strengths:**

All of these tests are fundamentally testing the same thing: the thickness of the edge (not width of the bevel) which is more or less the same as the sharpness. Many people say that the only real test is the shave test; however, I have NEVER had a great shaving razor that did not at least pass these sharpness tests very well. In fact I would go so far as to say that passing these tests well is a pre-condition to having a high quality edge; if your razor will not pass the sharpness tests and you think that you are getting good shaves then all I can say is that you don't know what you are missing because you are getting a great shave in spite of the edge; not because of it. Take the time effort to learn what these tests should feel like and correlate the results to your shaves and the quality and consistency of your edges will improve and it will take you a lot less test shaving to get there. If you can run your thumb along the edge without it cutting in, run the edge across a wet thumbnail with no drag, and/or the blade will not pop hairs suspended above your skin then I can guarantee that your blade is not sharp enough at this point and that you have at least a fair amount of work left to do if you want to finish with a quality edge.

## **Limitations:**

These tests are more subjective than the Edge Uniformity Tests which I will explain in the next section; however there is definitely a proper way to perform the tests and a right and wrong way to interpret the results. The tests are not a pass fail thing, sharpness is more of a continuum or scale. What one person may perceive as a very sharp edge, another who is more experienced may perceive the same edge as dull based on the results and their experience using the tests. Personally, I think that I can get a lot more information about the thickness/sharpness of an edge by the results of the TPT or HHT than I can from the TNT; furthermore I think that there is a higher possibility for damaging an edge with a thumbnail so I stick with the thumbpad and HHT. It takes time and experimenting to interpret the information that these tests give, and someone with more experience will definitely be able to use these more effectively than someone just starting out; however, this does not mean that these tests should be ignored.

The main limitation with the sharpness tests is that they cannot detect a double bevel, a convex bevel, or a bevel previously honed at a steeper angle; the edge uniformity tests are needed to detect this. In my experience, the most common times when this common problem shows up are when you are honing a factory sharpened razor for the first time (at the factory razors are often sharpened with the spine lifted to avoid selling a razor with hone wear), or when you establish a bevel with tape on the razor to protect the spine from the dreaded hone wear during the early stages and then try to finish honing the razor with the tape off the spine. Basically a problem of double bevels arises when a sharp bevel was set at a steep angle and you are trying to refine that bevel at a shallower angle. When you perform the sharpness tests in such instances, you are measuring the keenness of the original (steeper) bevel, that might indeed be sharp at a basic level. The problem is that when you try to improve the razor with finer stones or methods, you will be doing absolutely nothing to the very edge, because quite simply, it never touched the hone's surface. A

new bevel is slowly growing from the thickest part of the bevel, but on slow and gentle hones used to get the best possible edge, it might take almost forever before the thinnest part of the edge is finally in contact with the stones. This means that the rough but fairly sharp factory edge will remain regardless of the amount of touch-ups or fine tuning that you do during the slow finishing stages, that aim for the ultimate keenness and smoothness. The razor will shave the same as before and you are absolutely wasting your time until you establish a uniform bevel. At this point I hope that you are asking yourself “how do I know when I have established a single uniform bevel?” Great question, the answer is that you assess this by using the Edge Uniformity Tests which are explained in the next section.

## Edge Uniformity Tests

The edge uniformity tests are just as important as the edge sharpness tests because they address the important issues that the sharpness tests do not; however, they are unfortunately overlooked many times leaving people with sub-par edges that will not get any better (or worse) with any touch ups or fine tuning. There are only a few edge uniformity tests that I am aware of, and I have found that the easiest and most effective are the permanent marker test and the microscope test. The microscope can also be used to assess other problems such as micro-chipping and crumbling edges; however, it is not really talked about much in terms of assessing edge uniformity as I am going to explain now. The permanent marker test is a very easy test to perform and interpret; it is a pass fail thing. All that I do is mark the edge of the bevel with dots that go to the very edge of the edge all the way from heel to toe (yes you can use a line too if you want). Then when you hone the razor the marker should be completely removed with a few passes indicating that bevel is completely uniform and the stone is contacting it everywhere and all the way to the edge. If your razor passes this test and also passed the sharpness tests very well then you can be confident that you are ready to move on to the polishing stages, and you will have a razor that shaves great when you are done. On the other hand, it is very likely that the dots will not be completely removed, and you will know that your edge is not uniform and will not be sharpened any further with the higher grit stones. If the dots or line is removed toward the back of the bevel but marker remains at the edge of the edge then you have the very common and significant problem of a double or convex bevel. You must hone on with a method and stone that is up to the task of removing significant amounts of steel. Only if the test completely removes the marker all the way to the very edge, you have positively identified a bevel ready for the final honing stages to work their magic on the cutting edge and give you a very sharp, smooth, and great shaving edge.

You can also perform a very similar test with the microscope as I learned from Mr. Randy Tuttle. You will be able to see a double or convex bevel in your edge that shows different shades and carries two different scratch patterns. The difference is because the light will reflect differently off the different angled parts of the bevel surface. The scratch patterns will be different because one comes from your current hone, while the untouched part carries the scratches of the original bevel. Once you have successfully established a fully developed bevel, its surface should only show one single shade and should have only one uniform scratch pattern from the stone that you are currently using that extends all the way to the very edge. You can also use these two edge uniformity tests together to ensure the best results.

### Strengths:

These tests allow you to see if the entire edge is contacting the hone, or if you have issues to be dealt with. If you attempt to use finishing stones when the edge of the edge is not contacting the hone as in the

case of a double or convexed bevel then you will be doing nothing but wasting your time. If you have just one even bevel with a single uniform angle as determined by these tests then at least you know that the stone is working on the most important part of the bevel; the edge.

## **Limitations:**

You cannot see the bevel thickness or sharpness with a microscope or the magic marker test, all you can see is how the side of the bevel is contacting the hone. You could have the prettiest, shiniest, and most even side of the bevel; however, that absolutely does not mean that the edge is sharp. You must use the sharpness tests to determine if the bevel actually meets at an edge.

## **Conclusion**

I hope that after reading this short guide you have a better understanding of both the strengths and weaknesses of the two main types of tests and how to use them to assess the edge of a razor, especially during the very important bevel creation stage. The TPT, TNT, and HHT will tell you if your bevel is sharp but not uniform, and the marker test and/or the microscope will let you see if you have an edge that is contacting the stone uniformly and hopefully all the way to the edge, but it will not tell you the thickness/sharpness of the bevel. Both tests have their strengths and weaknesses, so the results are best when they are used together. Unfortunately we cannot see everything that is happening at the microscopic level of our razors edge; however, by using these various tests together we can give ourselves a very good idea of what is going on at the edge level. After a quality bevel as indicated by the tests is both sharp AND even then you just need to polish it carefully with your method of choice, strop it up, shave, and then fine tune it a little if you feel that it is necessary. Hopefully these tests can take some of the guess work out of the honing process for you, because whiskers only grow so fast.