Understanding the Unsharp Mask in Photoshop

by Photographer Raymond Klass

Sharpening is perhaps one of the most misunderstood topics in the digital photography workflow. In this tutorial we'll explore some of the best uses of Photoshop's built in sharpening filter, the Unsharp mask. Along the way, some of the methodology and theory behind this filter will be uncovered.

First and foremost - and perhaps it goes without saying, but no amount of sharpening will create an in-focus image from an original that simply wasn't. The Unsharp mask cannot be used to compensate for poor focus or subject blur, but rather is intended to take an already sharp image, and give it the extra pizzazz that will help it "pop" off the page.

I know it might sound like the intention of the Unsharp mask would be to create a soft image, but it is actually one of Photoshop's built in filters to make your image sharper. This filter is really an optical trick that painters have been using for hundreds of years to create sharper looking edges. The filter looks through your image at the pixel level and tries to identify areas where one edge meets another. It then places a thin black line on the darker edge, and a thin white line on the lighter edge. The lines it places are so thin you never notice them when viewing the print, and they create a localized area of high-contrast that helps edges to appear crisper.

The Unsharp Mask has three basic controls:

The **Amount** slider tells the tool how dark to make the dark line, and how light to make the white line. By increasing or decreasing the intensity of these lines, one can control the apparent sharpness of

objects in your image. The goal here is to make the image appear as sharp as possible, while avoiding over-sharpening that can result in white and black halos around edges.

The **Radius** slider controls how wide the lines are. Wider lines will result in more apparent sharpness, but if the lines become too wide, they can result in the telltale halos of over-sharpening. Just like the Radius slider, there is a balance that needs to be achieved between adding contrast to the edges, and producing halos that detract from the image.

The final slider labeled **Threshold** controls which edges Photoshop will apply the Unsharp Mask filter to. The criteria Photoshop uses to determine what edges to sharpen can be controlled with the Threshold slider. Sliding it to the right will make the filter more "selective", meaning that it will only sharpen areas of increasingly greater initial contrast. This is useful because it allows us to avoid sharpening areas that shouldn't be sharpened, like a clear blue sky.

Step 1. Before sharpening your image, you will want to complete any other corrections that your photo may require. The amount that you sharpen will depend upon the final print or viewing size, and therefore should only be applied to files that have been sized. I also recommend flattening your image if there are any layers. To flatten the image, click on the Layer menu and select the Flatten Image option.

Step 2. After you've prepared your file you'll need

to bring up the Unsharp Mask. To do this, click on the Filter menu, then on the Sharpening option, and finally select the Unsharp Mask. This will bring up a new window that features the filter.

Step 3. Zoom your image to 100%, or actual pixels. You can easily do this by using the keyboard shortcut (Command + Option + zero for Mac) or (Control + Option + zero for PC). The image needs to be zoomed to 100% so that you can get an accurate view of the filter's effect. Without this view,

it really isn't possible to effectively and efficiently sharpen your images. To move the image within its window, you can use the hand tool. Moving your mouse over the image and holding down the spacebar can bring this tool up. (PC and Mac) With the hand tool showing, simply click on the image and drag it around to view different sections.

Before we begin using the filter, you'll want to determine the best method for sharpening the image based on the subject matter. The two basic methods that I will be outlining here are traditional sharpening and HI-RA-LO-AM (pronounced as a single word).

Traditional sharpening is best suited to images with fine details and hard edges that need to look tack sharp. It uses a small radius with a relatively high amount to bring high localized contrast to areas of detail.

HIRALOAM sharpening is tailored to images that have broader edges that need a general sharpening, but should retain some of their softness. It is also great for dealing with images where traditional sharpening would bring out an excessive amount of image noise – such as an exposure taken with a very high ISO. The term HI-RA-LO-AM literally stands for High-Radius, Low-Amount, and these are the basic settings that one uses to perform this type of sharpening. By setting the radius high and lowering the amount, you produce halos that add local contrast, but aren't targeted at sharpening only the very edge of the object.

Step 4. (Traditional Sharpening)   The first example I will work on relies on traditional sharpening to enhance the edges of the metal window grating and building. My intention here is to create a tack sharp looking building, and I chose traditional sharpening because the subject has sharp edges that need to look sharp, and fine detail that is relatively small in size.

I've zoomed into 100%, and focused my frame to
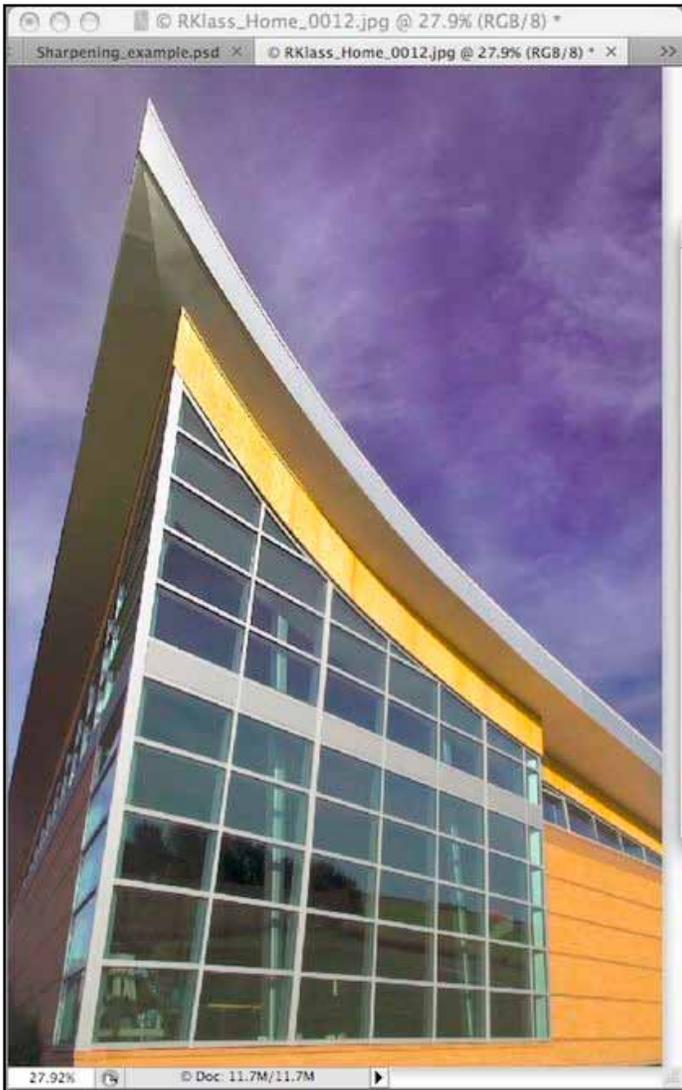
dealing with the sky. It is beginning to bring out some significant noise in the solid blue areas of the sky, where it has begun sharpening the color noise that was present in the original capture. The solution here is to slide the threshold slider until Photoshop stops sharpening the noise. This typically occurs after sliding it only a few levels – in this case just 4 makes the difference.

For this image, you're all done. Click OK to apply the filter to the image, and you're ready to save or print. As I said in the beginning, this tool can't help an out-of-focus original, but just a little bit can do wonders to add some "pop" to a well-captured photograph.

Now that we've gone through the steps of traditional sharpening, we'll repeat the sharpening process with an image well suited for HIRALOAM sharpening.
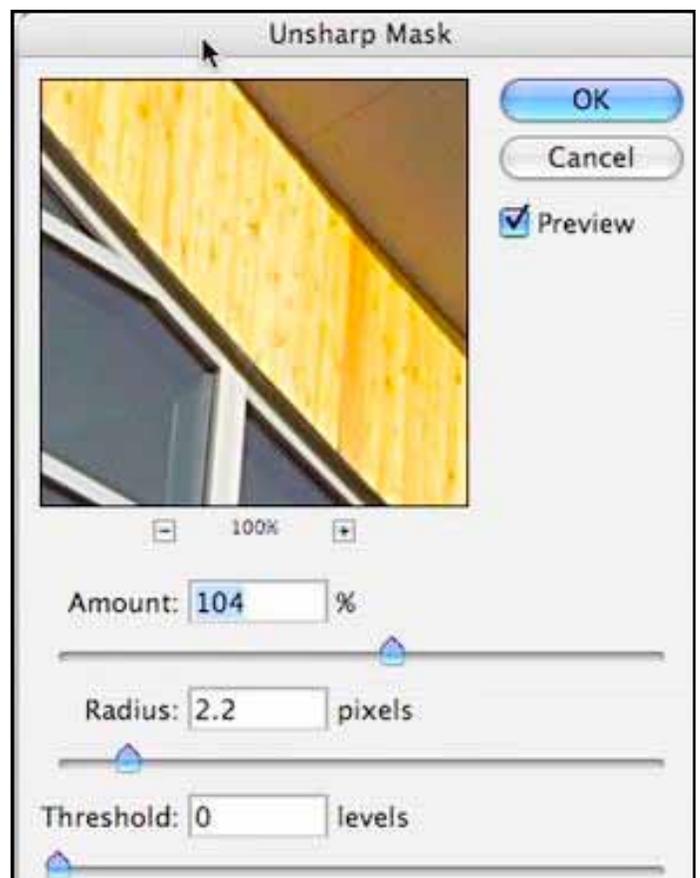
include a cross-section of the important areas in the image – the metal window, the edge of the building, and the sky. I begin by setting my radius at 1.0, which is a good starting place for traditional sharpening. From here, I set my amount around 150, and work my way up slowing, watching the image to see when I can start to see halos.

Once I find the point at which halos begin to appear, I generally step the slider back a bit. If you get to the end of the amount slider, and the image still doesn't look sharp enough, and halos haven't began appearing, I often step my radius up a few tenths, and repeat my sliding the amount slider.

In this image, traditional sharpening does a good job of working on the building, but a poor job of

Before beginning HIRALOAM sharpening, repeat the first 3 steps from above.

Step 4. (HIRALOAM Sharpening) This second image is suited well to HIRALOAM sharpening because the subject is soft, and trying to make the edges hard like those of the building would be inappropriate for the feel of the image. Hiraloam sharpening tends to add some generalized sharpness, but doesn't focus on specific edges the way that traditional sharpening does.
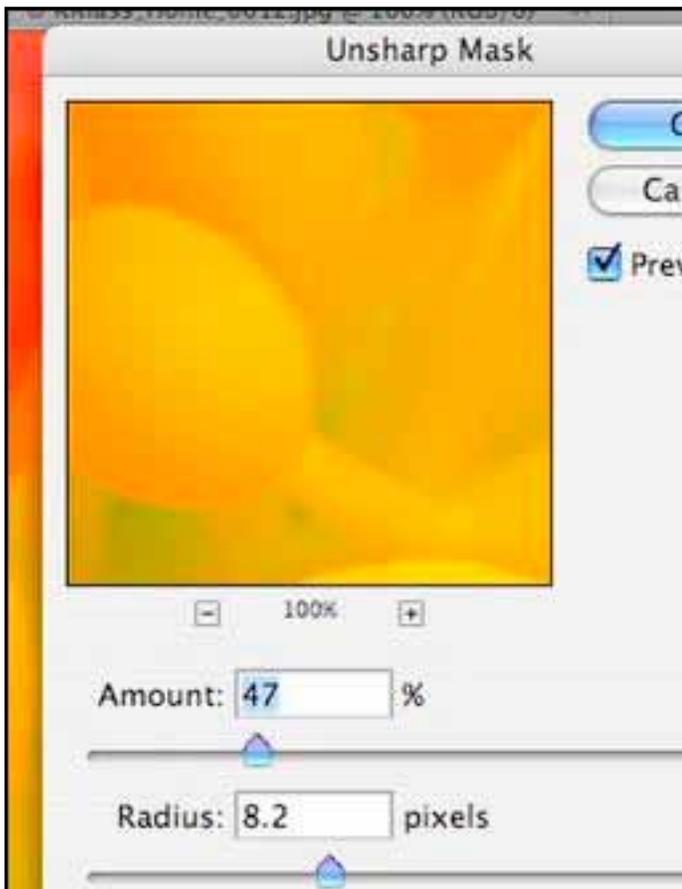
I begin by setting my radius much higher. Though there are no specific guidelines, I find that a radius in the 7-15 pixel range often work well. I also initially set the amount to a much lower setting – somewhere in the 35-75 typically works well. Your basically looking to add some localized contrast in the areas around the edges. In this image, you can see that with the HIRALOAM sharpening applied, the innards of the flower have more "pop", but don't begin to look like the metal edges of the first example. This helps to maintain the soft ethereal feel of the image.

It is important to watch that your amount doesn't go too high with hiraloam sharpening. Though there are no hard and fast rules, amount of more than 100 tend to show clear haloing, and should be avoided. I set the threshold to 0 when using this method of sharpening; because of the nature of using a large radius, noise doesn't tend to be increased, and so there's no need to avoid having this broad sharpening be applied to the whole image.

You're now finished with sharpening this image. Click OK to apply the filter's effect to the image. Then go ahead and save or print the image.

If you use proper techniques and high quality lenses when capturing your images, a little bit of sharpening can help your images pop of the page. Remember to chose the right method of sharpening based on the subject matter of your image, and use the suggestions printed here as just that – suggestions. There is no cut and dry, black and white, to sharpening, it is one of the Photoshop techniques where practice really pays off. In time you'll learn to better identify when an image could benefit from more sharpening, and when an image has been sharpened too much.