

INTRODUCTION TO GRAPHICS

Sharpening Images

Information
Sheet No.



Sharpening filters, found in every photo-editing program, can make slightly soft photos appear to be in sharper focus. Don't expect miracles from sharpening filters — even the most sophisticated ones can't rescue a totally blurry or even moderately blurry image, despite what you may have seen done on your favorite TV crime drama.

When you apply a sharpening filter, the photo editor doesn't really change the focus of the image. What it does is increase contrast along the edges of the image (an area where a color change occurs), which fools the eye into thinking that the picture is in sharper focus.

Easy does it

Although a modicum of sharpening can do wonders, too much sharpening can result in a grainy image and unnatural halos along the edges. The sharpened sand dollar in Figure 1 borders on being too sharp — but this picture should help you to easily see the sharpening halos.

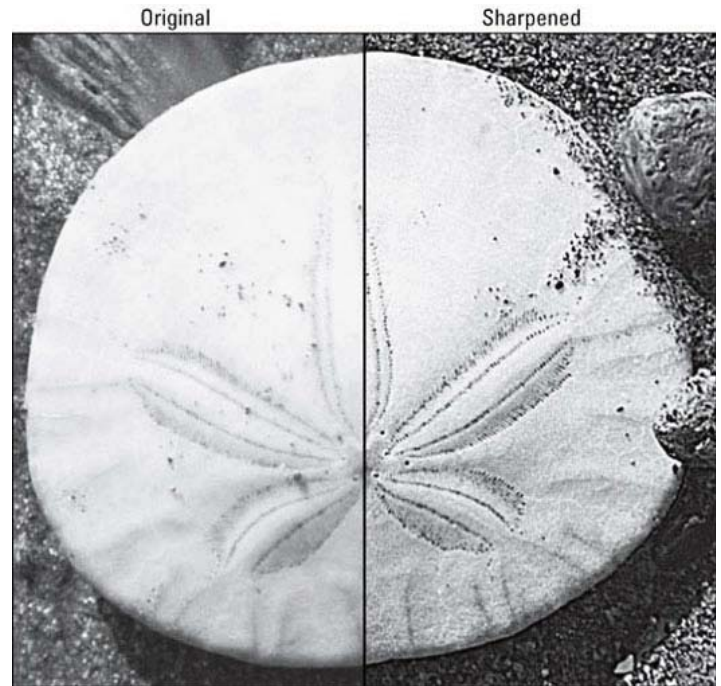


FIGURE 1: SHARPENING FILTERS ADD LIGHT AND DARK HALOS ALONG COLOR BOUNDARIES TO CREATE THE ILLUSION OF SHARPER FOCUS.

Always make sharpening the very last step in your retouching or restoration project. Changes in image size and resolution and certain other editing processes affect the amount of sharpening that's needed. If you sharpen before making those changes, you may find yourself with an oversharpened image that you can't rescue. The only change not to make before you sharpen is to apply a solid border around a picture. If you add a border and then sharpen, the sharpening destroys the clean edges of the border.

A trio of sharpeners

The upcoming steps walk you through the process of applying the Unsharp Mask filter. But first, check out the trio of sharpening options available in the Photoshop Elements rendition of Unsharp Mask: Amount,

Radius, and Threshold. (If you want a look at the filter dialog box, peek ahead at Figure 4.) If you're not using Elements, remember that these controls sometimes go by other names; check your software's manual for details about its version of Unsharp Mask.

- Amount: This one's easy; it controls the amount of sharpening. Raise the value to apply more sharpening. Nothing to see here, move along.

- Radius: Ah, here's where things get interesting. With this option, you can control the width of the sharpening halos — that is, how far the area of increased contrast extends from either side of an edge. A higher value spreads the effect over a wider distance. In Figure 2, for example, the left and right thirds of the image have been sharpened. In both cases, the Amount value is set to 200 and Threshold value to 0. But the Radius value has been set to 1.0 on the left side and 10.0 on the right side. Compare the width of the sharpening halos in the two sides to see how the Radius value alters the sharpening effect.

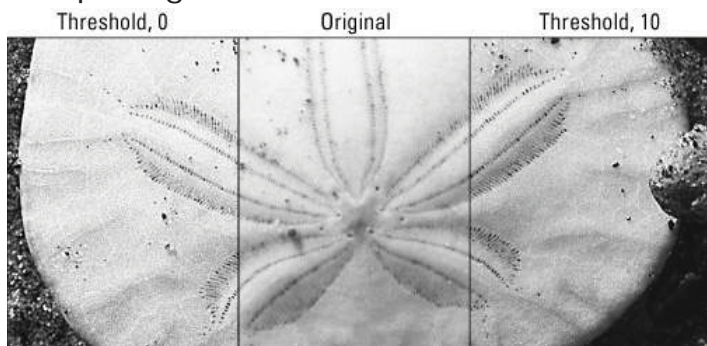


FIGURE 2: RAISE THE RADIUS VALUE TO CREATE BIGGER SHARPENING HALOS.

Typically, a Radius value from .5 to 1.0 works well for on-screen images, while a value in the 1.5 to 2.0 range is appropriate for printed images.

- Threshold: With this option, you can specify whether you want sharpening throughout your image or just along significant edges. (Again, remember that edges in this sense refers to areas of contrast.) If you set the Threshold value to 0, you get sharpening along all edges. By raising the value, you sharpen just areas where a large shift in

color occurs. The higher the Threshold value, the bigger the shift that's required before sharpening is applied.

Practically speaking, though, keeping the Threshold value under 15 usually produces the best results. Any higher than that, and you either don't get much sharpening at all or wind up with unnatural transitions between sharpened and unsharpened areas. Start out with the value at 0, and then bump it up slightly if you get too much sharpening in areas that should be smooth, such as the sky or the skin on a baby's face. You can see the difference between two Threshold value settings in Figure 3. In both examples, the Amount value has been set to 300 and the Radius value to 2.0. At the higher Threshold value, low-contrast areas of the sand dollar don't receive any sharpening.



FIGURE 3: RAISE THE THRESHOLD VALUE TO LIMIT SHARPENING TO SIGNIFICANT EDGES.

Every image requires a different set of Amount, Threshold, and Radius values. And you can create similar effects by using different combinations of the three values.

Applying sharpening filters

To try out the Unsharp Mask filter in Photoshop Elements, follow these steps:

1. Open the Layers palette by clicking its tab in the palette well or choosing Window --> Show Layers.
2. Select the area that you want to sharpen.

If you want to sharpen an entire layer, you don't need to create a selection outline. You can just click the name of the layer that you want to sharpen in the Layers palette. (If your image has just one layer, click that layer to sharpen the entire image.)

3. Put the selected pixels on a new layer.

You should always sharpen on a separate layer so that you don't permanently alter the image. If you drew a selection outline in Step 2, you can send the selected pixels to a new layer by pressing Ctrl+J (Command+J) or choosing Layer --> New --> Layer via Copy. If you want to sharpen an entire layer, you can use the same command or just drag the layer to the New Layer button at the bottom of the Layers palette.

4. Choose Filter --> Sharpen --> Unsharp Mask.

The Unsharp Mask dialog box appears, as shown in Figure 4.

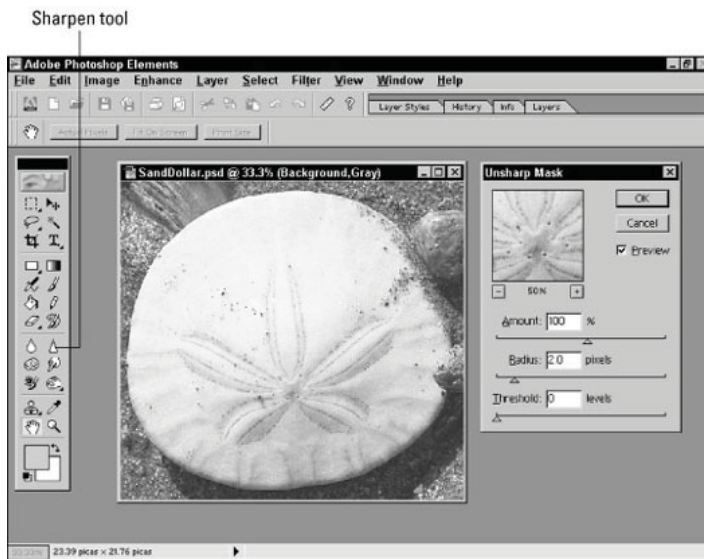


FIGURE 4: THE UNSHARP MASK FILTER OFFERS ADVANCED OPTIONS THAT DELIVER BETTER RESULTS THAN AUTOMATIC SHARPENING FILTERS.

5. Adjust the Amount, Radius, and Threshold values as needed.

Turn on the Preview check box in the dialog box so that you can see the results of your adjustments in the image window.

You can also monitor the effect in the thumbnail preview inside the dialog box. Click the plus sign under the thumbnail to zoom in for a closer look; click the minus sign to zoom out. Drag inside the thumbnail to scroll the display to another area of the image. Or just click in the image window on the area that you want to inspect; the program displays the area you click in the dialog box preview.

By displaying the image at a large size

in the image window and keeping the dialog box preview zoomed in, as shown in Figure 4, you can inspect the filter's impact on details and on the overall image at the same time.

6. Click OK or press Enter to apply the filter and close the dialog box.

After you sharpen, check to make sure that the sharpening you applied is the right amount for the picture's final output. In other words, print the image or view it on-screen at the size it will be displayed. If you need to sharpen more, just repeat Steps 4 through 6. If you sharpened too much, you can use the Undo features or just trash the sharpening layer by dragging it to the Trash button at the bottom of the Layers palette.