SHARPENING: The Arcane & Mystical Knowledge

Sharpening: What is it?

Enhancement of local contrast that produces the appearance of greater definition and clarity (accutance).

Where areas of different luminance values abut, sharpening lightens higher values (whites) and darkens lower values (grays).

Why do it?

Most digital pictures are somewhat soft and require sharpening.

Certain output formats may require different levels of sharpening.

Caveat – If you are shooting JPEGs, remember that your camera is automatically sharpening.

Considerations

Sharpening methods

Stage of workflow

Selective sharpening

Sharpening side-effects

Sharpening Methods

Unsharp Mask (USM)

High Radius USM

High Pass Filter

Manual

Single channel sharpening

LAB sharpening

Automated sharpening

***Unsharp* Mask (USM)**

I thought we wanted to sharpen not unsharpen!!!

A term brought over from film photography.

The back of a glass plate positive was contact copied to a film negative producing a blurred (unsharp) negative. Both the positive and negative were placed in an enlarger. The effect of this was to block out (mask) any blurred (unsharp) areas and to increase contrast at lines between higher and lower luminance (edges).

Digital USM operates on the same technique.

Instead of using a low contrast film negative, the picture editor generates a blurred version of the image.

It then compares the original and the blurred version and increases contrast at edges where the difference is greater than a specified amount (threshold).

3 Parameters

- Amount
- Radius
- Threshold

Amount

- The amount of contrast added to edges.
- Usually expressed as a percentage.

Radius

- The number of pixels from an edge that are affected.

Threshold

- Determines how much difference in luminance there has to be before sharpening is applied.
- Higher thresholds limit sharpening to edges of greater luminance differences.

What values do I use (in Photoshop)?

Depends on the size (# of pixels) of your file. The smaller the size, the greater the effect particularly from the radius adjustment.

Depends on your output format. Photos on the web require less sharpening than those to be printed.

For a full size 10+ megapixel photo try:

Amount – 150% to175%

Radius – 1.5 to 2.0

Threshold – 0 to 1

High Radius USM

A variant of USM.

Settings:

Radius – 12 to 20 pixels

Threshold – 2 to 5

Amount – 50% to 75% (but this really doesn't have much of an effect)

Tends to sharpen larger elements with lesser or no effect on smaller elements.

May help control noise.

High Pass Filter Sharpening

Uses the High Pass Filter to increase contrast.

Tends to work more on planes or surfaces than edges.

Acts like High Radius USM in separating objects from the background.

Steps:

Duplicate your layer as a new layer.

Apply the High Pass Filter.

Filter-Other-High Pass

Adjust the High Pass Filter.

Change the Blending Mode of the layer to Overlay.

Manual

Remember that any enhancement of contrast (particularly localized) will enhance apparent sharpness:

Global contrast adjustment

Black point adjustment

Dodging and Burning

Single Channel Sharpening

Useful when sharpening is making noise unacceptable.

In RGB, mode the photo is a composite of red, green and blue channels.

Often, noise may be worse in one channel than the others.

You can select one of the other channels and sharpen directly on that channel.

Example: You have a landscape shot with a blue sky. After you sharpen the noise in the sky makes it look blotchy. You check the individual channels and find that the noise is almost all in the Blue channel. You can select the Red and/or Green Channel and sharpen avoiding sharpening the noise in the Blue channel.

Steps

Select Channels

Examine the Red, Green & Blue Channels

Sharpen the Channel(s) with the least noise.

You can apply most sharpening techniques to an individual channel.

You can also apply many other adjustments to an individual channel.

LAB Sharpening

Takes advantage of the LAB Color Mode.

LAB is an alternative to RGB.

Instead of Red, Green & Blue Channels, it has L (Luminance) and two color channels (A & B)

Often, noise in the L channel.

Steps

Select LAB color mode.

Image – Mode – LAB

Select Channels

Apply Sharpening to the Lightness Channel

Automated Sharpening

There are several programs that perform sharpening for you.

Nik Software Sharpener Pro 3

Raw Presharpening

Output Sharpening based on output type, printer and paper.

When to sharpen

Distinguish 2 types of sharpening

Raw presharpening

Output sharpening

Raw Presharpening

Remember, a Raw file is unaltered data straight from the sensor.

Unlike a JPG, no sharpening, saturation or other enhancements have been applied.

Initial step in workflow.

Application of an unagressive amount of sharpening to give the image the intended appearance on your monitor.

Sharpening to taste.

Voluntary.

Output sharpening

Sharpening for your specific output format.

Dependent on:

Whether image is for web or print.

If print, your type of printer.

If print, the paper to be used

Desired appearance.

General hierarchy of sharpening, from least to most

Web – Prints on glossy paper – Prints on matte paper

Monochrome prints can generally take more sharpening than color.

Portraits require very careful sharpening.

Prime candidate for selective sharpening.

Remember, sharpening is largely a matter of artistic intent and personal taste.

Selective Sharpening

Sharpening is VERY important visual cue.

So it will have a very strong role in directing the viewer's attention.

You want to make sure that your sharpening is helping you direct viewer's attention where you want it.

Don't want it working against you.

Often, the solution is to sharpen only portions of the photo.

Methods

Sharpening tool

Erasing Technique

Masking Technique

Selective Sharpening

Sharpening tool

Quickest and easiest

Least ability to make adjustments

Erasing Technique

More complicated but adjustable

Masking Technique

More complicated but most flexibility

Because the sharpening is done on a separate layer, you can adjust the opacity of the layer or blending mode.

Opacity – allows you to be more aggressive in sharpening but reduce the effect by lowering opacity.

Blending mode – changing to Luminosity will prevent saturation and color shifts.

Almost infinite flexibility to go back and adjust the mask for the perfect amounts of sharpening in desired areas.

Sharpening Strategy for Portraits:

Want to sharpen what the viewers expect should be sharp.

Eyes

Lips

Jewelry

Maybe nostrils

Side Effects

Remember, sharpening involves a contrast enhancement.

Enhancing contrast generally results in an increase in saturation.

Sharpening generally enhances noise.

Oversharpening results in halos.

For this reason, effects of sharpening should always be evaluated at 100%.

Side Effects: Saturation

Can be a beneficial side effect providing pop to your photo.

BUT – What if you have your colors exactly how you want them but still need some sharpening.

Sharpening without saturation effects:

Apply sharpening, reduce saturation.

Sharpen on a new layer, change blending mode to Luminosity.

Sharpen on the Lightness channel in LAB color mode.

Side Effects: Noise

Strategies to avoid enhancing noise:

Review the Red, Green & Blue channels, sharpen on least noisy channel.

Sharpen on the Lightness channel in LAB mode.

Selectively sharpen, masking out effects in noisy areas.

Try High Radius USM or High Pass sharpening rather than USM.

Always examine your photo at 100% or more to check for sharpening artifacts.

Remember minimal to moderate artifacts at this size may not show up in most prints.

THE END?