Photoshop Handout
Unsharp Mask Filter

Although the name "unsharp mask" sounds strange, the term comes from a traditional photographic printing technique that enhances edge sharpness. The human visual system depends to a great degree on edges. Simply put, our eyes pass information to our brain where every detail is quickly broken down into ***edge*** or ***not edge***.

The Unsharp Mask filter works pixel by pixel comparing each pixel to its neighbor, looking for a certain amount of contrast between adjacent pixels- which it assumes is an edge. It then increases the contrast between those pixels according to the parameters you set. After sharpening an image, some pixels along the edges become darker and some lighter.

Unsharp mask terms:

Amount - Think of Amount as the volume control of Unsharp Masking. It adjusts the intensity of the sharpening halo.

- High numbers (500) produce very intense halos (with lots of pixels driven to pure white or solid black.
- Amount has no effect on the width of the halos, just on the amount of contrast they contain.

Radius - Is the first thing to consider when you're setting up sharpening; it sets the width of the halo that the filter creates around the edges.

- The wider the halo, the more obvious the sharpening effect.
    - Consider the content of the image,
    - the output method,
    - the intended size of the reproduction.
- Note that a Radius value of 1.0 does not mean a single-pixel radius. In fact, the halo is often between four and six pixels on each side of the tonal shift. However, it varies in width, depending on the content of the image.
- For a more subtle effect try 0.6, or stronger effects radius = 2.4.

Threshold - Unsharp Mask only evaluates contrast differences; it doesn't know whether those differences represent real edges you want to sharpen, or areas of texture (or even worse, scanner noise) that you don't want to sharpen.

- The Threshold control lets you specify how far apart two pixels' tonal values have to be (on a scale of 0 - 255) before the filter affects them.
- You can use Threshold to make the filter ignore the relatively slight differences between pixels in smooth, low-contrast areas while still creating a halo around details that have high-contrast edges.
- Low threshold values (1 - 4) result in a sharper-looking image overall (because fewer areas are excluded).
- Higher values (above 10) result in less sharpening.
- I typically begin with a low value somewhere between 0 - 4 and then increase as necessary.

Note: The Unsharp Mask will not bring an out-of focus or blurry original back into focus, but it is useful for restoring sharpness lost in image acquisition, editing or to compensate for the output process.