

Local Contrast Enhancement

Rob Dublin, Dec. 2007

Real world dynamic range, difference in brightness between darkest and lightest areas of an image, is much greater, around 8 f-stops, than can be handled by a typical print, about 5.5 f-stops. Compressing the image means sacrificing shadow detail, which if you try to re-capture, with say *Shadow/Highlight* adjustments, etc., results in lowering the contrast across the whole image. A typical *Curves* s-curve expands the mid-tones but compresses the shadows and highlights again.

Local contrast enhancement is a technique for increasing the contrast between small adjacent areas of the image, which the eye is very sensitive to, and which results in noticeable increases in the brightness range between the shadows and highlights.

- Increasing contrast is the same as sharpening, the difference being the size of the areas that are affected.
- The technique can be accomplished two ways, using the *High Pass* filter on an image copy layer; the other is to use *Unsharp Mask* with a large radius and a relatively small amount.

Traditional ways of improving contrast:

- *Brightness and Contrast*
- *Levels*, extend the range or set white/black points
- *Curves*, the traditional s-curve

Additional ways for increasing local contrast

- Blur and set mode to *Soft Light*
 - o Set amount of Gaussian Blur between 2-3 px
- *High Pass* filter
 - o Radius 30 – 50 pixels
 - o Blend mode Overlay or Soft Light
- *Unsharp Mask*
 - o Amount 5 – 30 %
 - o Radius 30 – 100 pixels
 - o Threshold usually 0; can be up to 3-4

All of these methods have side effects:

- Color and saturation shifts, which can be eliminated by performing on a separate layer and setting its blend mode to luminosity. You can also adjust opacity to modulate the effect. Alternatively you can apply the technique to the luminosity channel after converting to LAB color space.
- - Clipping of highlights and shadows. This can be eliminated by using the *Blend-If* sliders in *Layer Styles*.

References

Michael Reichman of “Luminous Landscape” published a report on the technique, which he learned from Thomas Knoll, the original author of Photoshop: <http://www.luminous-landscape.com/tutorials/contrast-enhancement.shtml>

Sean McHugh at <http://www.cambridgeincolour.com/tutorials/local-contrast-enhancement.htm> also provides a tutorial on this technique.