

The Next Step: Realistic HDR Techniques

by Photographer Raymond Klass

High Dynamic Range or HDR images, as they are often called, compensate for the limitations of camera sensors by merging differently exposed images into a final composite. The resulting image provides detail in areas that would otherwise be over or underexposed if a single image were to be taken.

For a basic explanation of the process involved please read my first article on the foundations of HDR photography located in the July 2009 newsletter at: <http://www.klassphoto.com/newsletter/200907>

This article builds upon the techniques discussed there, and dives deeper into creating realistic images using the Photomatix HDR software. In the previous article I introduced the basic controls. This article will look at putting those controls to use in creating a realistic interpretation of the image, revealing general guidelines to achieve our goal.

The scene I will be processing realistically is comprised of 5 individual exposures. The images were taken in one stop increments. The first image was taken at the camera's recommended exposure, then 2 images were taken on the underexposed side, 1 at 1 stop, 1 at 2 stops. Finally, 2 images were taken on the overexposed side, 1 at 1 stop, 1 at 2 stops. The process of taking images for a realistic HDR is exactly the same as described in the previous article. The goal is to record the information from light to dark for the computer to use later in its merging.

The next step is to use Photomatix to merge the images, this as well is done exactly as described in the previous article. We will pick up the process just after the computer has done its automatic computations, and "Tone Mapping" button is pressed.

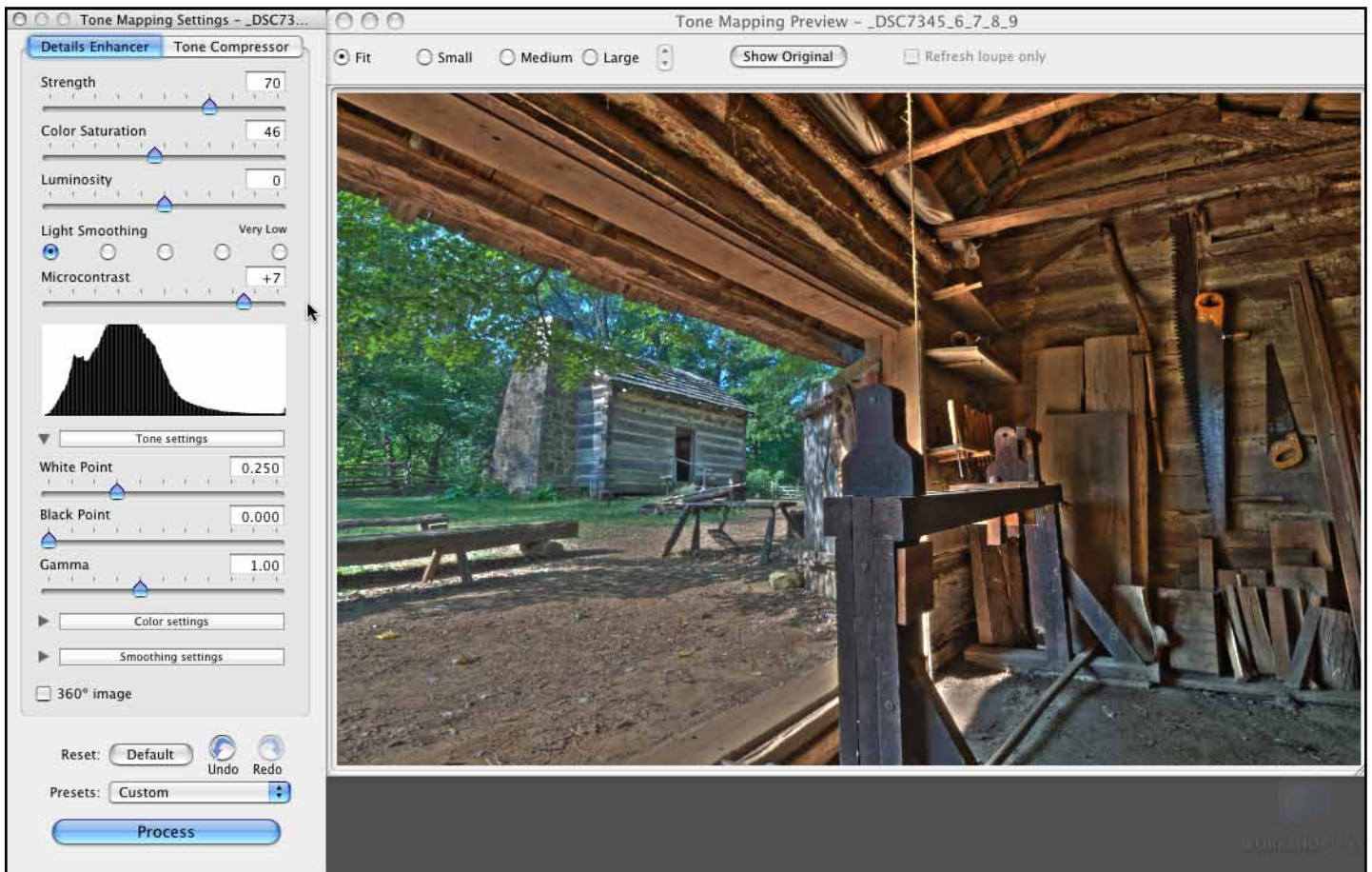
As you probably remember, there are two basic ways that Photomatix allows images to be processed. One is through their Details Enhancer method, and the other is through their Tone Compressor method. Both can be used to create a realistic HDR image, though they each give a different distinct feel to the final image.

The Details Enhancer method looks both at the overall tonal changes between areas throughout the image, and at the local tonal changes between an object and its surroundings. This is similar to the method that our brain uses to help distinguish objects from one another. The software then generally tries to keep areas that started out lighter as lighter in the image, while also giving a little localized contrast to "pop" objects out from their surroundings.

The Tone Compressor method tries to more accurately maintain the overall tonal relationship of objects throughout the image - a little bit of localized correction occurs here, but it tends to be much less pronounced than with the Details Enhancer method.

It may help at this point to describe what I mean by a “realistic” image. For me the difference lies in whether the image is intended to pass as a realistic description of the event, or as an interpretation well departed from what we would ordinarily see with our eyes. Realistic doesn’t have to mean that no “monkey-business” was done on the computer, but it does mean that after the image was put through the HDR process, your average, everyday observer wouldn’t see any reason the image would need to be processed in order for it to look this way.

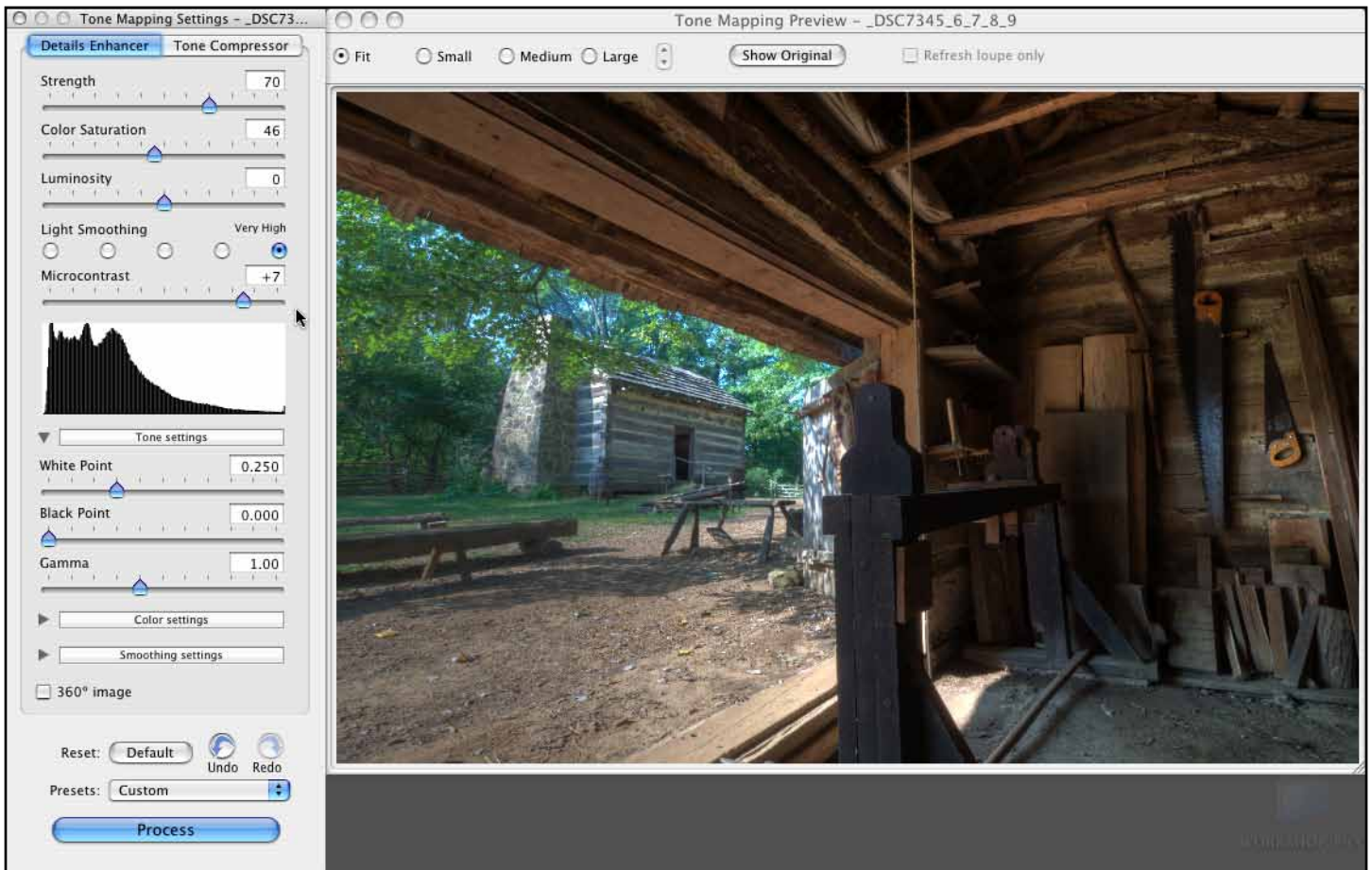
Descriptively, realistic HDR images tend to look natural, while other interpretations often look more illustrative or cartoon like. Both are valid artistic interpretations in their own right, the goal here is not to elevate one over the other, but rather to investigate techniques for producing realistic results, and in my sister article, how to produce the illustrative results.



First we will look at using the Details Enhancer method.

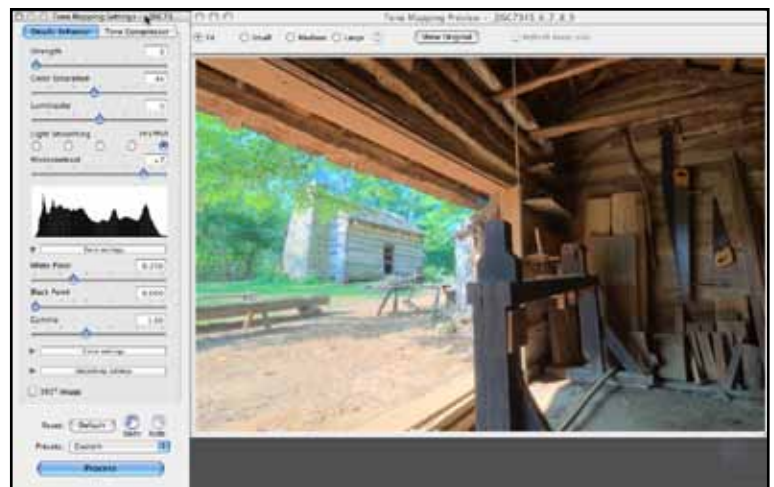
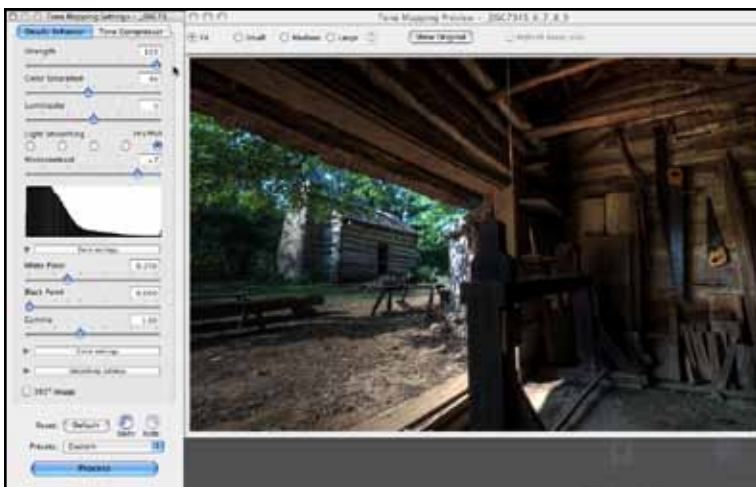
Though there are several sliders that control the look and feel of the final result, two in particular have more control over whether the resulting images will be realistic or not.

The first, and arguably most important control is the one labelled “Light Smoothing”. This determines how localized the individual highlighting is. If the control is set to the left, distinct highlights and shadows are created for each object, resulting in an unrealistic “glow” for most objects, as seen in the example above. You



may notice that the glow is so strong, the tools in the barn, in complete shadow, appear brighter than the cabin in the background, which was actually in direct sunlight.

In the above image, the Light Smoothing has been set to the other end of the spectrum, Very High. This implies that the software will do a lot of smoothing to hide its localized adjustments. The tools in the barn are still well highlighted, but now they no longer possess the distinct glow they once did.



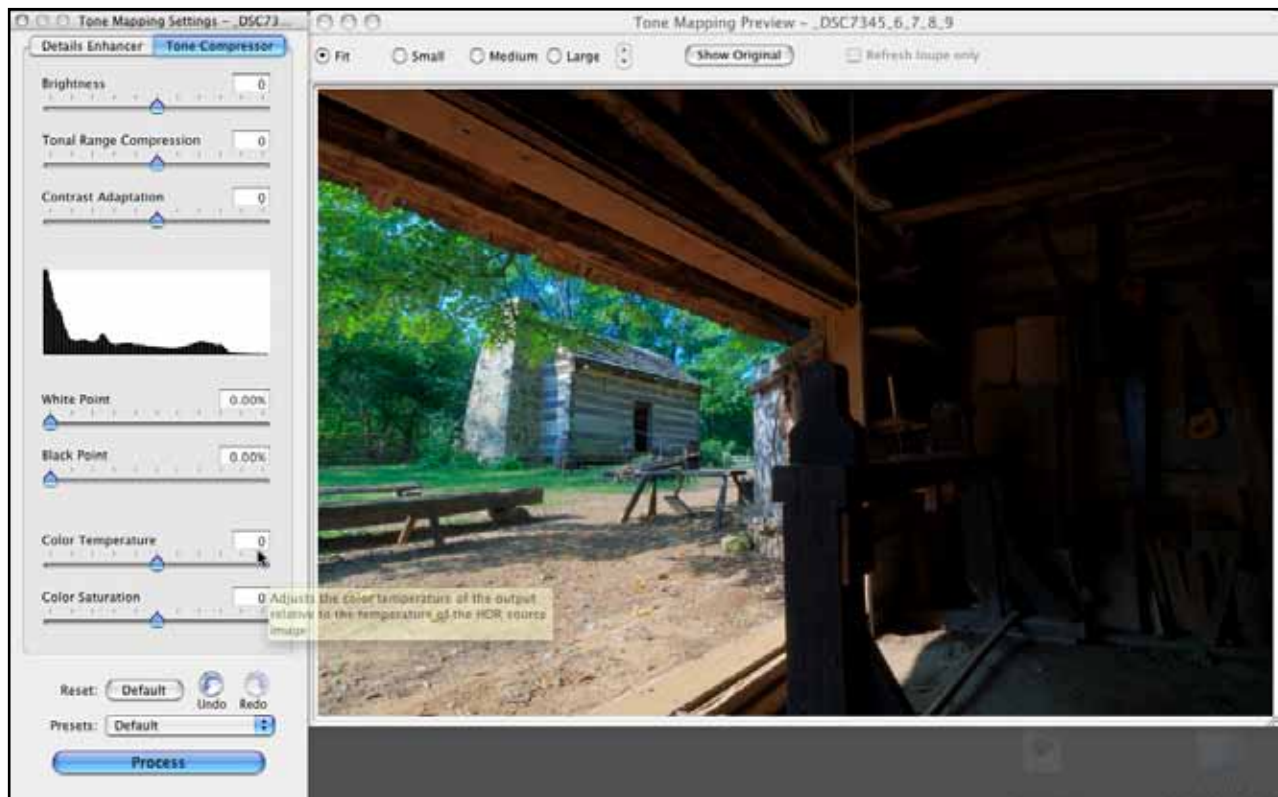
The second control that has a great affect on the overall impression of the image is the Strength slider. This controls how much the tones within the image are compressed. On the left, the amount slider was set to 100 %, or the right, 0%. Often the ideal setting lies between 50% and 70%.

To a lesser degree, the Micro-Contrast slider controls how much local contrast is applied. It determines the intensity of the "pop" for objects, and with a high degree of Light Smoothing has only subtle effects.

Both the Luminance and Saturation sliders I adjust by eye. You're looking for the Luminance slider to adjust the base level of brightness, much the same as moving the middle triangle for a levels adjustment in Photoshop. As for the Saturation slider, I tend to pull it back a bit, 50 is the default, and for a realistic image I typically use between 40 and 50, as the HDR process can lean towards adding to much saturation if left unchecked.

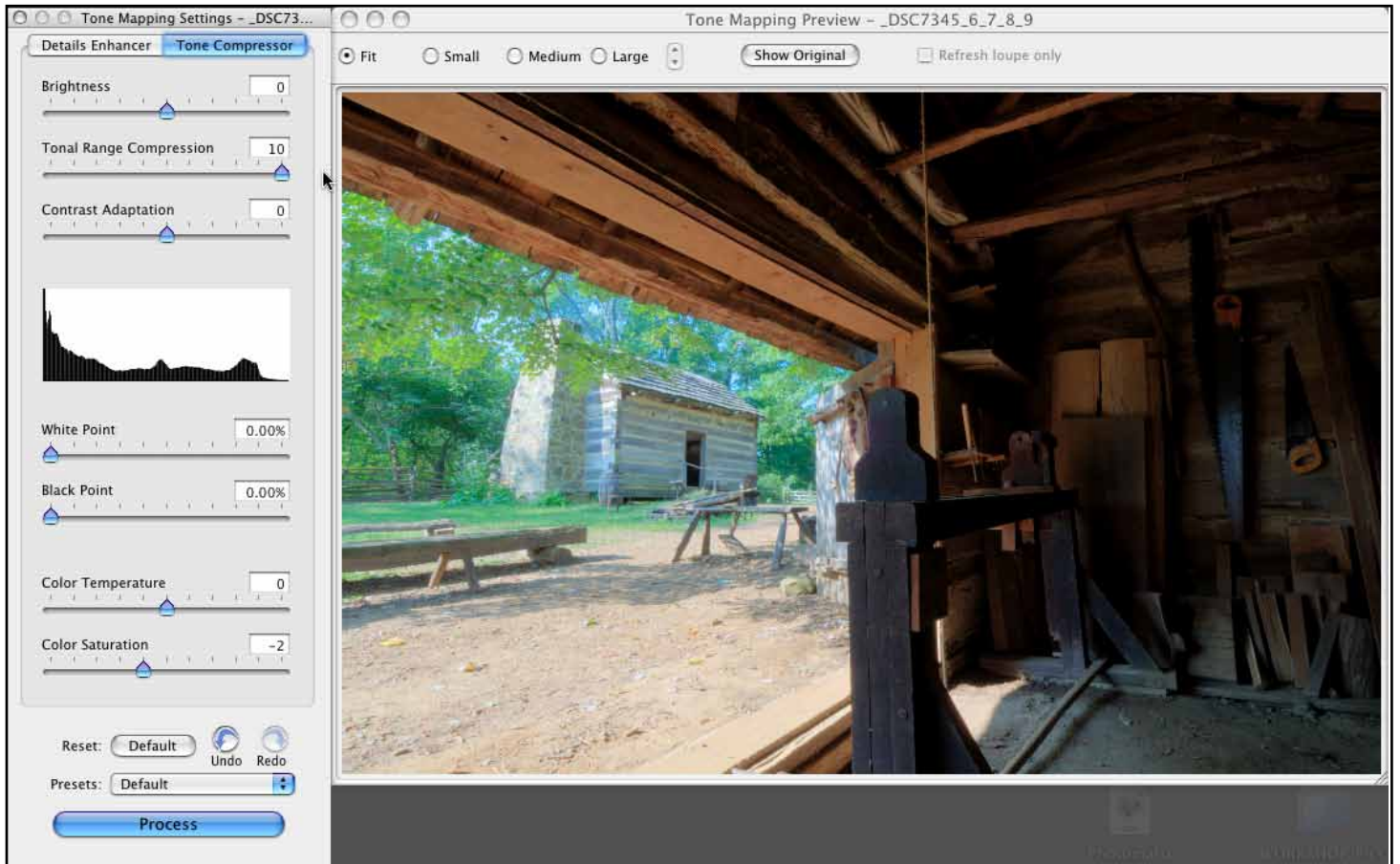
You can clearly see that this method produces an image with lots of detail, though if we were to think things through scientifically, the tonal range between the inside of the barn, and the fully lit cabin is not in proper proportion. The software has made an adjustment that our brains naturally make - to locally lighten the dark areas, and darken the overly bright areas.

For some people this localized adjustment is more manipulation than they are looking for, so Photomatix offers the Tone Compressor Method to minimize this effect.



The brightness controls the overall tonality of the image, while the Tonal Range Compression and Contrast Adaptation sliders control how Photomatix creates the larger tonal range of the image. These controls tell the software how pronounced the subtle details should be.

The Tone Compressor method, unlike the Details Enhancer, does not have any tendency to create surreal images. Don't worry about sliding some of the sliders all the way, as they won't produce the same pronounced effects typical of the Detail Enhancer.

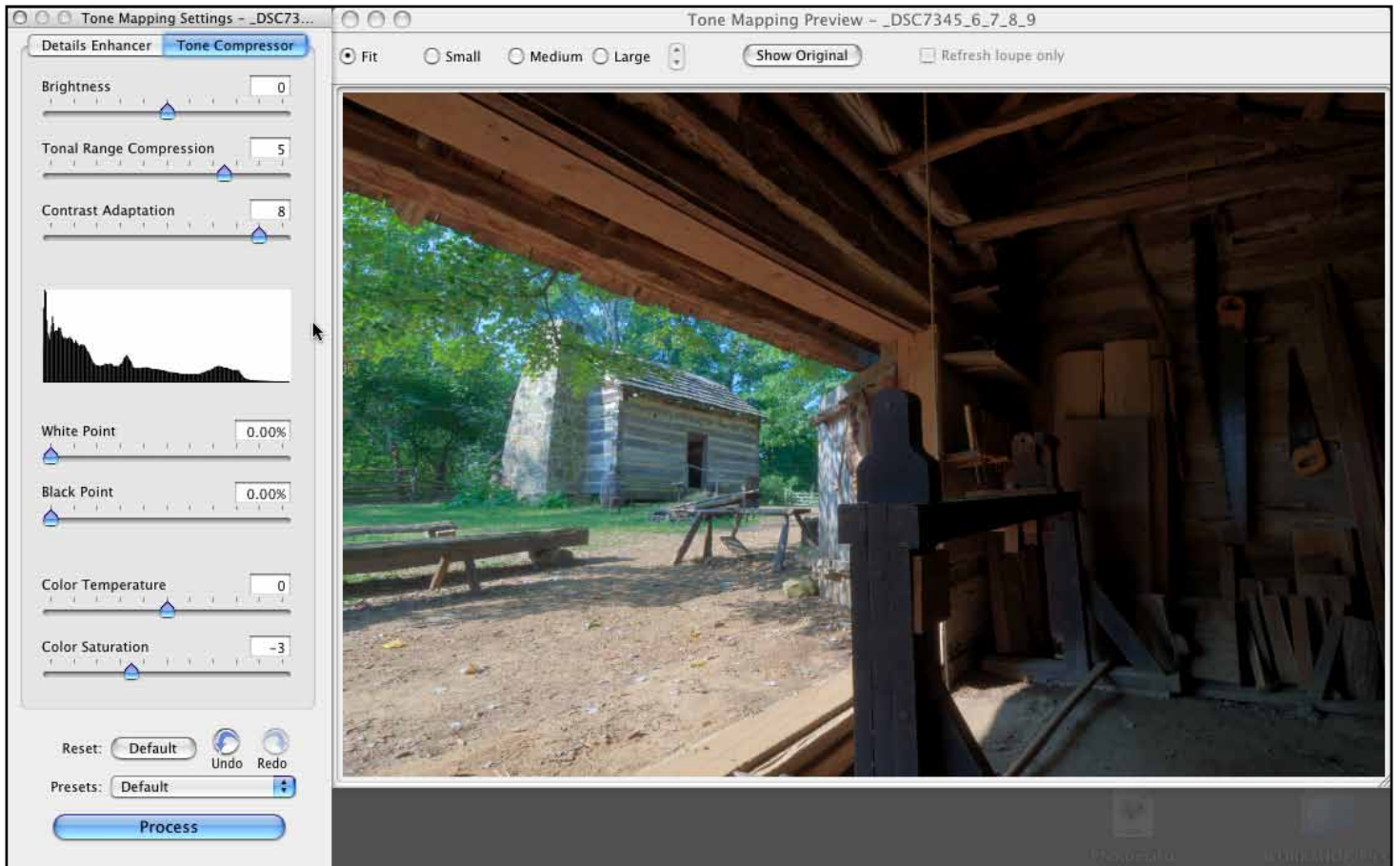


Comparing the graphic above to the first image on the previous page, we can see the effect of the Tonal Range Compression slider. Two things should be immediately evident. First, the entire image has gotten lighter. Secondly, the detail in areas like the dirt just outside the barn has lost some of its detail.

One might mistake this effect for just simple lightening, but it is far from it. The software has begun to compress the tones, making them closer to each other on the tonal scale. This has the effect of reducing the contrast or tonal variation between neighboring objects.

We've gained some important detail in the tools hanging on the wall, but we've also lost some of the detail of the dirt and trees outside. To get this back, we need to balance the Tonal Compression with our other slider, the Contrast Adaptation.

The Contrast Adaptation slider will help us get back the punch we had in areas like the light dirt that has lost its defining detail. While there are no hard and fast numbers for the two sliders, generally speaking the higher the Tonal Compression, the higher the Tonal Adaptation needs to be to compensate for that loss of "pop".



In the above image, I've balanced the Tonal Range Compression and the Contrast Adaptation to produce an image with a balance of detail and both light and dark areas. I also used the Color Saturation slider at the bottom of the window to dial back some of the saturation that came out in the other images. Typically for a realistic image, I end up dialing back the Saturation slider, somewhere around -2 to -5.

Comparing the result from the Tone Compressor to the Details Enhancer reveals the very different way both of these engines work. Both produce images that to the laymen would appear natural, though scientifically speaking, the tonal adjustments of the Tone Compressor keep tone much closer to their natural relationship.

It's important to know that these recommendation are just that, broad guidelines. It is vital for you to experiment for yourself and learn to manipulate this powerful software to create images that speak to you vision.