



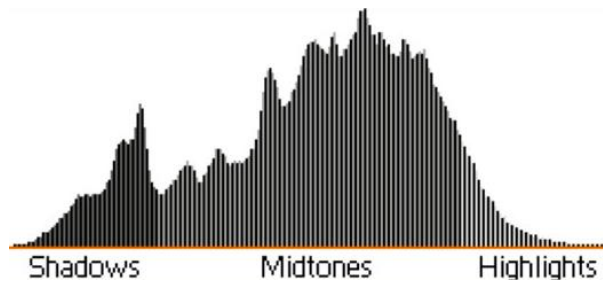
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The Histogram

Understanding how to use the histogram on your camera (and in post-processing software) is an important “next step” in photographic mastery. Like many technical aspects of the discipline, it can seem intimidating, but it doesn’t need to.

The Histogram is simply a bar graph of light and dark areas in your image. If there are more bars to the left, there are more dark areas in your image.



On the back of your camera (once you set your display to show it), it will look something like this;



Looking at the histogram after every shot sounds like a bit of extra work, but will save you trouble in the long run. It's impossible to accurately judge exposure by looking only at the image on the LCD screen on the back of your camera.

The trick is to expose the scene so that there is detail in both the bright and dark areas of the image. If it is too dark, for example, the dark areas will be solid black. Optimal exposure is not possible for all images, but for the sake of this discussion we'll assume it is. I'll talk a little more about this issue of "Dynamic Range" a little later.

Here's a helpful example from Luminous-Landscape.com. The image on the right, detail in the (light) sky is lost; it's overexposed. The data on the right side of the histogram is "bunched up." This indicates that you've lost detail in the highlights. Photographers call this "blown out highlights" and it's almost never a good thing.



When you've set your camera to create RAW files (which you should be doing most of the time), you'll employ what I call the "Blackjack" method of judging exposure. Your goal is to expose so your highlights are as close as possible to the right side of the histogram (as bright as possible) without going over. There's a good chance that you won't like the way this looks, but you're better off shooting this way and bringing down the exposure in post processing. The reason for this is beyond the scope of this PDF, but in short there's much more data contained in the lights (the right side of the histogram). If instead you underexposed the scene and lightened it up with software, you'd likely create ugly artifacts.

There's a lot of talk about what a histogram "should" look like. You can ignore all that. The shape of the graph means nothing; it simply reflects your image. It's not "bad" unless you've lost important detail in the highlights. These two examples, (again from Luminous-Landscape.com) show that low key (dark) and

high-key (light) images have very different histograms as seen after post processing. Still, both are well-crafted images.



By the way, you'll notice that your camera displays an overall (white) histogram, and three RGB (Red, Green, and Blue) graphs. I encourage you to look at the color information, because the single graph doesn't tell the whole story. The color which is the lightest (perhaps a blue sky, for example) is the one you want to avoid over-exposing (bunching up the histogram on the right)

Dynamic range

Dynamic range is a term which expresses the difference between the brightest and darkest parts of an image or scene. You can also refer to it as contrast. Our brains can perceive much more dynamic range than our cameras. For this reason, you may be able to see detail in the lightest and darkest parts of a high-contrast (or High Dynamic Range) scene like a very sunny day with deep shadows, but your camera can't.

There are a few work-arounds for this problem

1. Use a graduated neutral density filter, which darkens only part of the scene. These filters have been long used by landscape photographers. They work best if the horizon between dark and light is straight.

2. Use flash to lighten the foreground of your image, if it is close enough to the camera and is the only part which is dark.
3. Make several images at different exposures (called "exposure bracketing") and combine them digitally, either with specialized HDR (High Dynamic Range) software or by blending the exposures with layers in Photoshop.

Exercises

1. Exposure bracket a few scenes and notice how the histogram changes with different exposures.
2. Photograph a scene in which the bright tones are mostly composed of one color (bright blue sky or red rocks at sunset in the American Southwest). Compare the single ("luminosity") histogram and the three color graphs and notice how you might clip your highlights if you used just the single curve.
3. Deliberately over- and under-expose a few images and work on them in your post processing software. Look at the histogram there and see what happens, especially when you correct the exposure of a very dark image.