

Data from digital SLR Cameras helps us improve our photos

by Ric Szczepkowski

Welcome to the second and final installment of the discussion we began last month, about cameras' histogram displays, and how we can use their data to improve our photos.

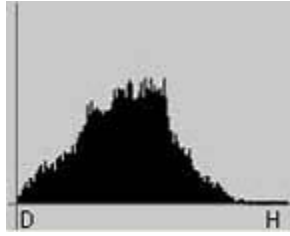
Balanced Exposure



Shutter Speed 1/60 sec., Aperture F2.8, ISO 50 with Flash

Above is an indoors shot using flash. Without flash, the picture would have been underexposed (i.e., "too dark" -- thanks, G). The areas reached by the flash are exposed

properly, but notice that the areas too far away for the flash to reach are dark. Look at the histogram produced:

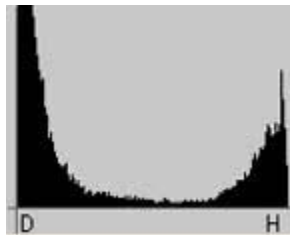


At a glance, we can tell that the picture has neither too dark nor too bright pixels with most of the pixels in the middle of the graph. There are a few pixels touching the dark edge, just as we expected.

Breaking The Rules



Shutter Speed 1/160 sec. Aperture F8, +1EV, ISO 200



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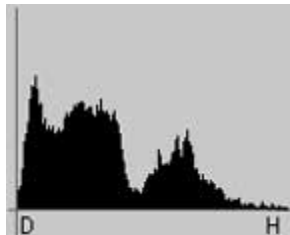
You might want to try dialing in a positive exposure compensation in this case to see if the histogram improves. For the above picture, we'll dial in +1/3EV and see if this shifts the histogram to the right slightly. Just be careful not to overexpose it

If you are aiming your camera at a landscape with dark shadows *and* very bright sky, you may have *both* dark shadows and blown highlights (histogram shows pixels touching both left and right sides). In this case, you may have to decide which is more important to

you. You are in control. In the picture of the Ferris wheel above, I even dialed in a +1EV exposure compensation to try to bring out some details in the shadows, but this simply caused the bright sky to become washed out. It would have been better to expose for the sky and allow the girders to go black completely.



Shutter Speed 1/100 sec., F2.8, ISO Auto



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For example, when we are taking a sunset, we usually do not really care about preserving details in the shadows. In fact, we *do* want the foreground to go completely dark. In this case, we expose for the bright area (the setting sun) and let the shadows go dark for a dramatic sunset picture. In fact, we may want to purposefully break the rules and take a couple more of that sunset by dialing in *negative* exposure compensation values. This is because sunsets usually look better (with deeper colors) with a slight underexposure. (A note of caution about sunsets: never look at the sun directly, whether with the naked eyes or through the lens of a camera. The image sensor of a digital camera may be damaged by the direct rays of the sun. When is it safe to point the camera at the sun for a sunset picture? When your eyes can look at the setting sun without requiring you to squint or block your eyes.)

If, on the other hand, you are more interested in preserving the details in the shadows, you would expose for the shadows and let the highlights be blown out. Again, you maintain control, not giving in to the histogram.

Picture Blending

An advanced technique you can use is to take two pictures, one exposed for the shadows and a second one exposed for the highlights (the use of a tripod is essential here). Then you would edit, erase the under and overexposed portions of each picture, and carefully merge the two pictures in an image editing software (such as Photoshop) to obtain a picture that is properly exposed in *both* shadows and highlights!

Of course, this technique may be extended to taking as many pictures as you feel necessary depending on how many difficult areas you have to deal with. You certainly need to be pretty good at Photoshop.

Be careful, though, because this blending of many pictures sometimes result in pictures that the brain innately recognizes as being "unnatural."

Summary

The histogram is a handy graph that alerts you to the two extreme cases of underexposure and overexposure in your pictures.

In severely underexposed pictures, you lose details in the shadows. In severely overexposed pictures that result in blown highlights, you lose details in the highlights.

If the image is too dark (histogram touches the left side), dial in a positive exposure compensation value in $+1/3EV$ steps, and see if the histogram shifts to the right. Some



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pictures might require up to a +1EV exposure compensation to preserve details in the shadows.

If the image is too bright (histogram touches the right side), dial in a negative exposure compensation value in -1/3EV steps, and see if the histogram shifts to the left. Some

pictures might require up to a -1EV exposure compensation to preserve details in the highlights.

Most digital cameras allow you to dial in an exposure compensation between -2EV to +2EV, in 1/3EV steps.

We have also seen that there are no good or bad histograms. A histogram simply tells us how our picture is exposed and we retain the control to decide whether, and how, to adjust the exposure. We might decide to compensate for the under or overexposure, or we might even force an underexposure if that is the effect we are after.



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