

Digital ...

A monthly column by Harry

This month is about exposure and is for intermediate photographers. Illustrations are [here](#). Please check them out and add your comments to the discussion thread. Send questions for future columns to harry.iris@usa.net.

Why “expose to the right”?

Getting the correct exposure in the camera is critical to achieving a high-quality final image. You can adjust the exposure later with programs like Photoshop Elements. However, these adjustments may decrease the quality of the image.

What is the correct exposure? Technically, it is optimum use of the light detector’s ability to record the light that falls on it. *Over-exposure* means that too much light has fallen on some areas of the detector and saturated it, giving pure white with no detail, called “clipped” or “blown out”. *Under-exposure* means that some parts of the image have received very little light, giving pure black, also called “clipped”, with no detail.

Film and electronic detectors behave quite differently in the way they respond to light and experience with exposure of film is unlikely to be applicable to exposing digital images. *A digital camera records more detail and less noise (relatively) when the exposure is high, but not clipped.*¹

How do we recognize correct exposure? Look for a bright image without clipped areas. (You can set your camera’s view mode to blink where clipping occurs.) Bright images may look a bit “washed out” but this is easily corrected later. On the other hand, if you use a darker, more saturated, image and then brighten it you will get more noise and less detail.

It is much easier, and more accurate, to judge exposure with the histogram. You can set your camera’s view mode to show both the recorded image and the histogram side-by-side in the display.

The histogram is a graph of exposure. The horizontal axis is light intensity, from pure black at the left to pure white at the right. The vertical axis shows how much of each given light intensity is present in the image. So, a bright image will be skewed to the right and a dark image to the left. Clipped whites are at the far right and clipped blacks are at the far left.

After taking a photograph, check the histogram. *The ideal is skewed to the right but without significant clipping.* It may need some adjustment later but it has the best detail. If the histogram is skewed to the left, you should retake the photograph with an increased exposure. If there are significant clipped whites you should retake the photograph with a reduced exposure. If the histogram is not skewed it is probably OK but you might try again with a half stop or so more exposure.

If you are shooting in RAW, highly skewed, unclipped, histograms are fine but if you are using only JPEG then stick to slightly skewed histograms.

Some scenes have too much contrast and have both clipped whites and clipped blacks. Fix this with reflectors, diffusers or flashes, if possible; otherwise use exposure bracketing and “HDR” which I plan to discuss in a future column.

1 Human eyes respond to light in a fundamentally different way than electronic detectors do. Eyes have a tremendous ability to see a wide range of light intensities because they are non-linear. In other words, in dim light our eyes are responsive to small changes in light intensity while in bright light we only perceive large changes in intensity. If you like, the scale is compressed as the light gets brighter.

Electronic detectors used in digital cameras are linear and their raw data is converted to the compressed scale that our eyes use before we view the image. The important effect of this is that there is much more detail in the bright areas of a digital image than in the darker areas.

Electronic detectors are also subject to “noise” which is due to low-level accidental activation of the sensor. Electronic noise is the same, however much light (the “signal”) is reaching the sensor. This means that at high light levels, the signal to noise ratio is high and the noise is imperceptible. The opposite is true at low light levels.