Understanding RAW, JPEG, and TIFF

It's important to understand the differences between image file types. RAW, JPEG, and TIFF file types are described below.

RAW

A camera's RAW file is an uninterpreted, bit-for-bit digital image recorded by the camera when the image is captured. Along with the pixels in the image, the RAW file also contains data about how the image was shot, such as the time of day, the exposure settings, and the camera and lens type. This information is also known as *metadata*. RAW refers to the state of the image file before it has been converted to a common format, such as JPEG or TIFF. Because most photography applications previously could not process RAW files, RAW files had to be converted before they could be used in image processing software.

Why Shoot RAW Files?

There are many reasons to capture images as RAW files rather than JPEG files. However, it's important to note that RAW image files require additional work to achieve the color balance you're looking for, whereas JPEG files are color-balanced by the camera for you. JPEG files are also smaller than RAW image files, requiring less storage space.

The advantages to shooting RAW files are:

• Increased bit depth allows for more color-correction "head room. The JPEG format is limited to 8 bits per color channel. RAW images store 16 bits per channel, with 12 to 14 bits per channel of color information. Although it may sound confusing, this means you can do significantly more color correction without degrading the image or introducing color noise. (For more information about bit depth, see "Learning About Bit Depth" on page 38.)

After the RAW file is decoded, you work with the most accurate and basic data about an image.

You control the white balance, color interpolation, and gamma correction aspects of the image during post-production rather than when shooting.

The image file isn't compressed, as JPEG files are, which means that no image data is lost.

Most cameras are capable of and do shoot color outside the gamut range of JPEG (both Adobe RGB 1998 and sRGB), which means color clipping occurs when you shoot JPEG files. RAW files preserve the camera's original image gamut, allowing Aperture to make image adjustments that take advantage of the full range of captured colors.

RAW files give you control of noise reduction (luminance and color separation) and sharpening after capture. JPEG noise reduction and sharpening are permanently applied to the image according to the settings on the camera.

JPEG

JPEG (Joint Photographic Experts Group) is a popular image file format that lets you create highly compressed image files. The amount of compression used can be varied. Less compression results in a higher-quality image. When you shoot JPEG images, your camera

converts the RAW image file into an 8-bit JPEG file (with 8 bits per color channel) prior to saving it to the memory card. In order to accomplish this, the camera has to compress the image, losing image data in the process. JPEG images are commonly used for online viewing.

TIFF
TIFF (Tag Image File Format) is a widely used bitmapped graphics file format capable of storing 8 or 16 bits per color channel. Like JPEG files, TIFF files are converted from RAW files. If your camera does not have an option to shoot TIFF files, you can shoot RAW files and then convert them to TIFF files using software.TIFF files can have greater bit depths than JPEG files, allowing them to retain more color information. In addition, TIFF files can use lossless compression, meaning that although the file gets a little smaller, no information is lost. The end result is greater image quality. For these reasons, printing is commonly done from TIFF files.