

RAW v. JPG

Even if you are new to photography, it doesn't take much time to realize photographers are passionate about the tools and methods they use to create images. This dedication often leads to an endless debate about these very tools. If you haven't entered a dark sided conversation about digital v. film, Canon v. Nikon or Mac v. PC, consider yourself fortunate.

Among digital photographers, the RAW v. JPG debate can lead to equally heated discussions. Beyond proving the sometimes high *nerd* level of photography, these discussions are most often fruitless. There are times using each format proves ideal. Understanding the difference and knowing which one works best for each given situation and your style of shooting is what is important.

In the end, the only thing that is important is the success of your image. This discussion will explain the differences of each format and the benefits and disadvantages of each.

JPG (TIFF) Defined

When we take an image with a digital camera, the shutter opens allowing light to pass through the lens and strike the sensor of our camera. Each individual pixel records its own unique value of color and tone. When we combine all the pixels together, it creates our scene. However, when the light hits the sensor, the image is not ready to use.

The values need to be combined with the camera settings and processed into a usable format. JPG is the most likely candidate. Your camera uses your white balance, contrast, sharpness, compression and any additional settings to process the image into a format that can be downloaded and ready to use.

An important side note, JPG uses compression. What this means is it tries to make the image as small as possible by recording like tones as common values. Let's look at an example. If you take a picture that contains lots of blue sky and much of the blue sky is an identical tone, jpg will assign one unique value to all those tones. By doing this the file size is significantly reduced.

A TIFF format does not do this. It records each individual pixel value and will not compress like values. Proponents of TIFF don't like JPG because there is rounding involved in any type of compression. The simple fact is in an actual print, it is not noticeable at all. The key to using JPG is to set your compression settings as high as possible (10 or above.) Lower values may result in loss of image quality.

TIFF is also not used by many photographers as a capture format due to its file size. An eight mega-pixel image would result in about a 1-2 megabyte JPG or 24 megabyte TIFF. The same RAW file would be around 7 megabytes and hold much more image data. RAW capture has replaced TIFF capture by most photographers.

RAW Defined

Now that we understand JPG, RAW becomes easy to define. RAW stops when the image is captured and doesn't process the image into a usable format such as JPG or TIFF. By definition, RAW is the "raw" data captured by your camera.

When the image is loaded into your computer, it is not in a usable format. One must use a RAW converter to apply color, contrast, sharpness, saturation and file output settings to the image. Your camera doesn't apply these settings.

Benefits and Disadvantages of RAW

RAW is best used when shooting variables are not consistent or you need very precise control over an image's variables.

1. RAW allows you to set all of your camera settings after you shoot an image. Perhaps the most important of these are color balance and contrast.
2. RAW captures much more image data. RAW works in a 12 bit color depth v. 8bit. OK, what does that mean? Instead of recording 256 different tones of a color it can record 4,096.
 - a. Ok what does this mean? Our eye is capable of only seeing 256 different tones in a given color. By having more than 256, we can make major edits and throw large chunks of data away without degrading what we can see in the image.
 - b. RAW allows for a greater margin of error. Specifically, it is very tolerant to slight underexposure or major image edits such as dodging and burning.

While these two benefits are major, they come with a few trade offs.

1. The biggest disadvantage of RAW is the time it takes to convert the files. If you have a large number of images that are shot in different situations, it will take significant time to adjust settings and convert the images
2. RAW requires much more storage space. On average, they require 5x more space than JPG.
3. If your computer is a little dated, you may want to consider updating before taking the plunge. RAW conversion takes a little time to process images. RAM and a fast processor helps move this along.

Benefits and Disadvantages of JPG

JPG works wonderful when you are working under consistent conditions. JPG's major benefits are:

1. Speed!!! JPGs are ready to use. All you have to do is load them into your computer and go.
2. They are small in file size. Thousands of images can be saved on a single disk.

If you are off with your camera settings or exposure, JPG's limitations become brutally obvious.

1. JPG images do not have the tolerance for underexposure that RAW image do. JPG is like shooting with transparency film; you want to be on with your exposure. (Neither RAW or JPG like over exposure. RAW only does slightly better than JPG with over exposure.)
2. Color balance is unique to digital photography in that it can be adjusted inside the camera. When shooting JPG, it is important to set the white balance according to your shooting situation. Otherwise, getting accurate color may be virtually impossible.

Not necessarily a weakness, but important to know. It is always best to set your sharpening, saturation and contrast setting to zero in your camera. Photoshop almost always does a better job with these settings. Also, applying them afterwards allows you to apply them to taste without going too far. These are setting that cannot be undone.

THE START OF OUR DISCUSSION

Above is a little background on the JPG and RAW file formats. We will not discuss the above material at any length. This is where our discussion for the mini lecture starts – RAW conversion.

RAW Converters

From my experience, many don't explore RAW because of the mysteries of how RAW conversion works. Most confusion with RAW starts with the software needed to convert RAW files into a usable format. The process is simple is quite simple once demonstrated.

There are many different converters. Some are free and some require a significant investment. They all share one key feature, to apply adjustment settings and convert the files to a usable format. All converters allow the user to adjust:

- Brightness
- Contrast
- Sharpness
- Contrast
- Saturation
- Color

The Software

If you own Adobe Photoshop or Photoshop Elements, there is a RAW converter built in. (While it appears to be part of Photoshop or Bridge, it is actually a separate program known as ARC – Adobe Raw Converter.) It functions very well. If you don't own either program or are looking for a converter with more options you may consider:

- Bibble Labs - www.bibblelabs.com - \$69.00 lite or \$129.00 pro
- Digital Photo Professional - www.usa.canon.com - free, only supports Canon
- Capture NX - www.nikonusa.com - free while in beta, only supports Nikon
- Adobe Lightroom – www.labs.adobe.com/technologies/lightroom - free in beta - now available in windows in addition to mac
- Capture One - www.phaseone.com - \$499.00
- Aperture - www.apple.com/aperture/ - \$299.00
- Breeze Browser - www.breezesys.com - PC Only - \$89.99
- Raw Developer - www.iridientdigital.com - Mac Only - \$99.00

The bulk of our time will be spent looking at the power of RAW in a real-life shooting situation with mixed light.