To Shoot in RAW or in JPEG?

Overview

Shooting RAW vs JPEG is a question that every photographer faces at some point. There are many articles out there that cover the topic from the basics of size and quality, to all of the advanced technical details regarding color bits per channel, compression, firmware DCT processing, etc.

So, here is the disclaimer, if you want the technical details regarding RAW vs JPEGs, Digital Photography School has a great technical primer discussing the basic technical differences, a brief Google search will also unearth loads of additional more in depth technical resources as well.

This article is designed to teach you the differences between RAW and JPEG (JPG) from a pragmatic real world point of view. I am going to leave out most of the technical mumbo jumbo that won't really help you beyond being exceptionally proficient at speaking "nerd." Keep in mind that, while you may be shooting on a different camera, be it a DSLR or an advanced point-and-shoot with RAW capability; the principles discussed here apply to all cameras although the differences may vary slightly from model to model.

General Details Regarding RAW and JPEG

JPEG – JPEG files are processed right within the camera. How exactly they are processed varies from model to model. While color temperature and exposure are set based on your camera settings when the image is shot, the camera will also process the image to add blacks, contrast, brightness, noise reduction, sharpening and then render the file to a compressed JPEG. These files are finished and can be viewed and printed immediately after shot. Remember, because the image is compressed and saved to JPEG which is a "loss" file format, much of the initial image information and detail is discarded and cannot be recovered. You may hear the term "Dynamic Range" used a lot when discussing RAW files vs JPEG. Dynamic Range is simply the amount of tonal range detail from the darkest shadows to the brightest highlights. Dynamic Range detail in JPEG files is significantly reduced as compared to RAW.

RAW – RAW files are uncompressed and unprocessed snapshots of all of the detail available to the camera sensor. Because RAW files are unprocessed, they come out looking flat and dark. RAW images need to be viewed and processed using your camera's software or in more robust commonly used software like Adobe Photoshop, Lightroom, Aperture, etc prior to being ready for display or print.

When Do I Use RAW vs JPEG?

Is each format useful, but, is there clearly one format that is superior? Absolutely. Don't let anyone tell you that JPEGs are just as good as RAWs because the bottom line is that they are not! There is a vast difference in the amount of information retained in a RAW file compared to a JPEG as you will soon come to see.

Being that RAW is a clearly superior file format, does that mean that you should always be shooting in RAW? Absolutely not. Both formats have their uses, and we use both formats frequently. So, here are some guidelines of when you would want to shoot RAW versus when you would want to shoot JPEG:

1) Journalistic shooting (RAW) – If you are shooting journalistically, meaning you are shooting in fast moving situations that are constantly changing in terms of lighting, scenes, backgrounds, subjects, etc then you need to be shooting RAW because nobody has the ability to shoot the "perfect exposure" every time. You can't stop a person from shedding a tear, smiling, laughing, just so you can dial in just the right amount of exposure compensation, or manually set your settings. Shooting RAW allows you to quickly shoot while having enough information to fix possible exposure issues in post. If you are a journalist, a wedding photographer, event photographer, then you need to be shooting RAW.

2) Need additional range and tonal detail (RAW) – If you are shooting landscapes, nature, or virtually any scene that has a high Dynamic Range, then you want to be shooting in RAW to allow you to have additional post production flexibility to darken (burn) the highlights, while raising (dodging) the shadows, and properly tone-map an image.

3) Shooting for immediate display (JPEG or RAW+JPEG) – If you need the images for immediate display, say you need to display a same-day slideshow for a client, or you want to have them available for immediate proofing, then you want to be shooting JPEG. If you need post production flexibility and the ability to immediately use the files, then switch to RAW+JPEG so you have both. But, make sure you have extra memory cards present, because you are going to burn through those cards in a big hurry.

4) Shooting for web or lower quality uses (JPEG) – Often times when I am shooting images for the web, I don't need perfect images. I don't need to have the post production flexibility of a RAW file. After all, is a small 500 pixel image selling a car on Craig's List going to do a better job if it were a RAW file? Most likely not. Understand your audience, and if appropriate save time and shoot these types of images in JPEG format making sure that you properly set exposure and temperature while shooting.

5) Restricted space (JPEG) – OK, with the price of storage being so cheap, this definitely should not be a heavy factor in your reason for shooting JPEG over RAW. But, there may come a situation when say you are on a trip and you left your CF cards back at the hotel while you are out on a 8 hour travel excursion with only a 4GB card in your camera. In this situation, by all means, switch to JPEG. If you don't, you are going to run out of space just as you walk into the Sistine Chapel (which by the way wouldn't matter as they don't allow photos inside, how lame eh?).

6) Personal use (JPEG and or RAW) – I am a professional photographer. But, I don't need to have crazy tonal range and post production flexibility for every event in my personal life that I shoot. So, in more casual situations such as a small BBQ party, I shoot JPEG. When I am out vacationing in the mountains or Europe shooting landscapes, cityscapes, people, etc, I shoot RAW. The rule here is that you don't want to be spending crazy amounts of time processing images when the differences are going to be negligible and go unnoticed. Know your audience, know your situation, know your use for the images, and select appropriately.

7) Rapid succession burst shooting (JPEG) If you are shooting live action sports and are shooting burst sequences in rapid succession, your buffer will fill up very quickly if you are shooting RAW. This means that your camera will stop to process the buffered images, thus making you unable to continue shooting while the camera is transferring those images from the buffer to your memory card. Shooting JPEG will allow you to shoot a lot more shots prior to filling the buffer. So, in this situation it is best to switch to JPEG, dial in all of your exposure and temperature settings in camera and fire away.