

Intro to RAW Photography

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Discuss Photographic Aspirations: Why are you attending this presentation? What have you heard of RAW?

Activity: “Dinner in a Can vs. Freshly Prepared”

Pixels can be either Red, Green or Blue. Each a “colour channel” grouped together to make up a “Colour Space”.

Different Colour Spaces have different amounts of available colour DATA. JPEG = sRGB, RAW = AdobeRGB (98)

Bit Depth: Bit Depth is responsible for determining how many tones each colour channel can record. JPEG’s are typically 8-bit images, and most consumer grade DSLR RAW files are 12-bit images (often described as being 16-bit).

JPEG = 8-bit = $2^8 = 256$ tones per colour channel, shown as: 256 red x 256 green x 256 blue = **16.7 million colours**.

RAW = 12-bit = $2^{12} = 4096$ tones per colour channel, 4096 x 4096 x 4096 or **68.7 Billion colours**.

RAW photos are usually five times larger than jpegs, **resulting in the need for much more storage capacity**, both on your memory cards and computer hard drive.

RAW is not a format!

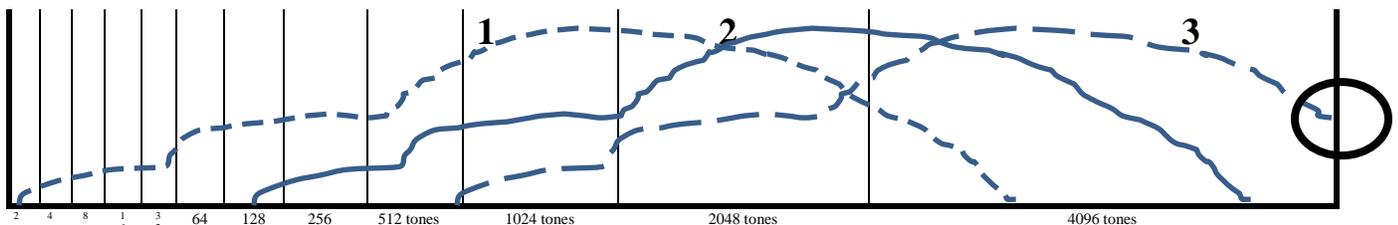
- There are no industry standards for RAW data, unlike the JPEG specifications that were put forward by the Joint Photographic Experts Group (i.e. JPEG)
- RAW is **unprocessed** data from the sensor, and each company has their own unique way of collecting image data from the sensor.

Activity: Setting the camera to shoot “jpeg + RAW” and have it use the “Adobe RGB (98)” colourspace.

Histograms:

A histogram is basically a bar chart that represents the amount of tones that have been captured by the pixels on the camera sensor. “Clipping” (Under or Over exposure) has occurred when the histogram touches the side of the graph.

The following is a graph that shows the distribution of tones in 3 Digital RAW Photographs



In the above illustration the Histogram shows the two images on the left (#1 and #2) as being completely captured (no clipping). The Histogram on the right (#3) touches the side (circled), indicating Overexposure clipping.

Because most tones are on the Right side of the Histogram, in the Highlights of the image, a good saying to remember is “Shoot Right, Process Left”. Keep your histogram as close to the right as possible, but NOT clipping!

What kind of RAW processing Converter should be used? The one provided with the camera? The one you buy?

Demo: Datacolor Spyder 4 Pro colorimeter. Calibrate your monitor to edit your images using consistent colour.

Demo: RAW Workflow (basic form) Using Adobe Photoshop Elements 14 & Adobe Camera RAW

Resources:

- Digital Negative Converter – “[DNG Converter for Windows](#)” and select Windows or Mac version.
- Alternative RAW Editing Software: [On1 Photo RAW](#) and [DxO Optics Pro 11](#) or [Adobe Lightroom CC](#)

Shooting RAW files – Tips and Observations

Advantages of RAW:

- Editing in RAW is “Non-Destructive”. Pixel data is not changed. Not true of jpeg editing.
- More Colour Control, More Exposure Control, White Balance Control
- Digital requires us to protect the highlight areas in exposures. i.e. “Shoot Right, Process Left”
- Good RAW exposures trump good editing every time! (Composition, Colour, Exposure & Focus)

Laptops are notoriously poor editing choices, as the change in angle of the display changes the contrast.

RAW Converter? Camera provided software (FREE) or bought (\$\$\$) from a Software Company?

Image Properties

- Which is preferred? Colour? Contrast?
- What is the significant part of the image?
- What is the lightest “Significant” part of the image? (This speaks to adjusting Exposure)
- What are the significant black, shadow, midtone, highlight & whites values?
- Where do we set the dark point in the image? This is called “setting the black point”.

NOTE:

- Darkened edges help to keep the eye in the photo (referred to as “vignetting”);
- Selective Lightening and Darkening helps “keep the eyes from wandering” in the photo;
- Balance the subject with their tones. Are colours distracting in relation to the subject?
- Your camera must be properly set up, via the menu, to shoot in RAW. (Adobe RGB 98)

Use the objective power of the Info Tool so as not to be fooled by the eye when judging colour. This is great for finding “neutral colours” (colours with equal RGB values)

Use Adobe’s “Digital Negative Converter” to archive your RAW files, by creating a DNG file which has your original RAW file embedded within it.

NOTE: Regarding the quality of the finished work.

In the end, it is the person creating or buying the edited work that is the final arbiter of the piece. Not a machine with a complex algorithm.

TIPS: Calibrate your monitor! Use a Medium Gray Desktop. Work in consistent lighting.

Intro to Digital RAW Photography

Activity: Talking about Digital RAW is like talking about making Supper!

Instructions: Fill in the blanks for as many of the “pro’s” and “con’s” for each column as you can.

<i>Frozen Spaghetti dinner</i>		<i>Home Made Spaghetti dinner</i>	
Pro's	Con's	Pro's	Con's

RAW Capture and Processing Significance



Figure 1. Printed directly from camera RAW capture – NO processing, saved as tiff
(Only the composition and the exposure, via the histogram, can be judged on the LCD of the camera.)



Figure 2. Processed to taste in RAW processing software and saved as tiff
(A RAW file needs to be processed before it can be fully judged as a keeper or not!)