USING CAMERA RAW

By Ben Funnekotter
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1. What is Camera RAW and what does it do?

Using Raw is a relatively new technique that is hot. All digital SLR's have this image-capture technique and now more and more 'point and shoots' offer the same function.

In a nutshell, RAW hands back to photographers an unprecedented degree of control over their images. They can manipulate the data captured and present an image in a very personalized and unique way.

Rather than clever camera processes taking several steps and decisions, the photographer has access to image-data very early on in the image process workflow. Depending on the settings the camera is

making 'decisions' on which and how many pixels to clip. I'll come back to this topic later in the talk.

2. Why can't you see a RAW file?

When you capture a scene in RAW you get to see an image on the LCD screen on the back of your camera. However, when you save this image from your memory card onto your computer you don't see a little tile with a miniature picture of the scene you've just taken. What you will see is an icon with NEF (if you own a Nikon), PEF (if you own a Pentax), CRW (if you own a Canon), MRW (if you own a Minolta).

What happened? There was a RAW image on the LCD screen, right? ……Wrong.When you shoot in RAW, the camera makes a rough JPEG conversion and sticks this on the LCD screen so that the photographer can check his/her composition, exposure, histogram, etc. but that is all it is for. When you save your image, unless you have set your camera to RAW plus JPEG, only the RAW file is saved.

To view this RAW file and edit it, it first needs to be converted into a usable form such as a JPEG or a TIFF file.

So here we go again…….more decisions to be made. Which software should I use as a RAW converter? Does it really matter?

The major camera manufacturers have their own software for RAW conversions and I know you'll be

shattered to hear this…….you can't use Canon software to convert a Nikon image or vise versa..

There are a host of independent RAW converters on the market and without doubt, some are far better than others. Photoshop has a RAW converter bundled into it and up to CS2 the converter was okay, but it stopped there. In CS3 , however, the new RAW converter is fantastic and we'll be taking a look at this version. Adobe Lightroom is a very popular RAW converter and I know many pro's use this.

3.Why are RAW files so large?

Let's start at the beginning. Digital cameras have a sensor jam-packed with little sites called pixels. These sites only record how much light falls on them, from none (pure black) to heaps (white) and everything in between. Yes, it is basically a monochrome sensor.

To create colour, those clever engineers have laid red, green and blue sensors over each site. Now the sensors pick up the intensity of the light and it's colour.

Special algorithms are used to change this patterned data into a format called RGB. Sometimes data from a neighbouring site is used to generate the correct shade of red, etc. This process is known as 'Interpolation'.

When you set your camera to capture in JPEG or TIFF, this interpolation is done in a blinding flash by the

camera in the time that it takes you to press the shutter. Gene rally the camera does an excellent job.

When you shoot in RAW the camera stops interpolating the data and simply saves everything to the memory card. In layman's terms ……What the camera sees is what is recorded; no data is clipped or discarded.

That's why I said earlier, RAW files give the photographer unprecedented control over how the final image should look, and why they are so large.

4.Why bother? Just use the bloody JPEG!
I know that's what at least 50% of you are thinking. Hopefully after tonight, you remaining skeptics will be converts to using camera RAW.

Okay……if you're one of those people who snap 3000 images of your cute grandchildren or 200 images at the Christmas lunch , then JPEGs are just fine.

If ,however, you find yourself at a place where you think 'Wow! This is magic!" then it's time to turn your camera on to RAW. Perhaps you are at the coast with a great sunrise/sunset or incredible blues…… use RAW. If you have just paid for your trip to Nepal or Budapest or Antarctica……..use RAW. If you are specifically shooting for a competition, use RAW.

Perhaps you are a beginner in photography and think that using Raw is way above your smoke-stack level. That may be so, but in a year or two, when your

Photoshop skills are much better, you will look at those JPEGs and wish that you had those images in RAW.

The single most important reason to have the image in RAW, is the fact that any changes you make to the RAW file can be undone at a later date without pixel destruction.

This means that you can open a file in RAW, change I as much as you want, save it as a JPEG but your raw stays intact. You can re-open the same image again and change it yet again as many times as you want and the RAW file will not degrade.

If you only shoot JPEGs you will face pixel destruction every time you open and close the file, let alone manipulate it. This is because JPEG files are compressed to save space and uncompressed when you open them. Every time you do this, that compression and expansion causes pixel destruction.

6.Advanced RAW techniques

I'll be talking in this section from a Photoshop perspective. The topic is massive but I will start with the basics and go as far as I can or until you all fall asleep.

Please remember I have not yet reached 'guru' status with my Photoshop skills and there are others here tonight that should really be doing the presentation. When we get to the practical demonstration, I encourage those in the audience that can contribute a

handy tip relevant to the point under discussion to do so.

Basically if I can inspire you to use RAW and lift your game, then I have achieved what I intended to do tonight. If you like what you see and hear, you can go as far as you want. I encourage you to buy books and magazines, go on Photoshop courses, talk to the real gurus and most of all, PRACTISE!

Let's get down to the computer section.

A) Using Bridge

It is not my intention to get bogged down in the Bridge. However, I find the Bridge a very useful tool epecially when I am processing RAW images, so here comes a whirlwind tour.

- Finding the icon in CS2 and CS3
- Finding a workspace that suits you
- Giving your pictures a star rating
- Sorting your pictures in Bridge
- Opening a single image in RAW
- Opening multiple images in RAW

B) Using Adobe Camera RAW :opening single and multiple images

One of the great advantages of camera RAW is that you can adjust a single image or open a whole series of RAW photos that need the same corrections and treat them as a batch. This is a great time saver.

- In Bridge, hold down the Control key and click on the images you want to open as a batch. Now double-click one of these highlighted images and they open up in Camera RAW.
- Click the 'Select All' tab in the top left-hand corner. Now the changes you make to one image will be applied to all the others.

C) The White Balance and Temperature Slider

Have you ever forgotten to change the White Balance selector on our camera when you have been shooting JPEGs? You can end up with a whole batch of pictures that have an ugly colour cast and a whole lot of work lies ahead to fix it.

When you shoot in RAW, it is irrelevant what you set the White Balance to (I leave mine on Auto.) You can either choose White Balance pre-sets from the drop down menu, or you can customize the White Balance by using the slider. Sliding it to the left brings out the cooler colour casts and pushing it to the right makes the colours warmer.

There is another way to do White Balance and this done by clicking on the white Balance Eye-Dropper tool (Top tool bar, top left-hand corner). Click on an area of the photo that is meant to be neutral grey and the Auto White Balance will set itself. Personally, I prefer the sliders.

Play as much as you want. You can always set the White Balance to 'As shot' from the drop-down menu. No pixel destruction is going on while you move the sliders.

D) The Histogram

The RAW converter histogram is a very useful tool. It sits on the top right-hand corner of your screen. The histogram shows what effect your manipulation has on the red, green and blue channels. The less clipping that occurs on the left and the right of the histogram, the more detail you are preserving in your image.

E) The Exposure Slider and Clipping Warnings

Photoshop has incorporated some very handy tools to assist you to know when clipping is occurring. In CS2, there are 2 boxes in the top tool bar on the right; one is named 'Shadows' and the other, 'Highlights'.

Tick the boxes to activate the tool and untick them if the tool annoys you. Once ticked, clipping in shadows is indicated by blue tinting, whereas clipping in the highlights is shown by red tinting.

Likewise in CS3, these functions exist but activate differently. Take a look at the histogram- in the top left hand corner (the shadow side) is an arrow. If you click it, the shadow clipping area is activated. Likewise, on the top right-hand side is the highlight arrow.

Handy tip

If you press and hold the Alt key whilst you move the exposure slider, your preview area turns totally black….

Except for the channel that is clipping (red, green or blue). If you see any white, the bad news is that all three colours are clipping.

With all versions of Photoshop, up to and including CS2, there was not a lot you could do if you moved the Exposure Slider until the main subject of your photo looked well exposed, but elsewhere in your picture, the red/blue clipping warnings were flashing.

Thank fully Cs3 has added extra sliders to the RAW converter. These are called the Recovery, Fill Light and Blacks Sliders.

Click and drag the Recovery Slider to the right and the clipped highlights are greatly reduced. (Remember you can press and hold the Alt key if you want to use the Black Preview method.)

Shadow areas can be adjusted to darken/lighten by sliding the Blacks slider

Someone may ask how do I remember which way to slide the slider, it's easy, the slider bar has a graduated colour in it to assist you.

Handy tip

Pressing and holding the Alt key makes the preview go white. Clipped colours are shown and where total clipping occurs the area will show up as black.

F) The Clarity and Vibrance Sliders

These are only available in CS3. The ob of the Clarity slider is to increase the mid-tone contrast of your image. This gives your image more 'punch and snap' and overall impact.

I guess you could say, it's like using Curves for idiots.

Slide the Clarity Slider to the right until you start getting those edge halos (like you get when you over-sharpen) then slide it back a little.

Handy tip
Zoom to 100% from the pop-up menu (bottom tool bar on the left). This makes it easier to see the halo's developing.

The Vibrance Slider is another very handy tool. The name is very apt, it's a bit like using a more subtle saturation slider without getting that' I want to vomit!' feeling.

G) The Saturation Slider
My advice to you is to use this slider sparingly. It's okay to use it just a touch as photos taken in RAW tend to be a touch under-saturated, but don't over-cook your picture. Rather use the Sponge Tool in Photoshop to selectively brush over areas that need a little more zip.

H) A Technical Bone (Don't choke on this!) Colour Space, Resolution, Bit Depth, Image Size.

Right at the bottom of the Camera RAW front page is what looks like a link to a website. This is actually a link to your current workflow settings.

Pay attention, re-read these notes on the WCC website, set your workflow up once, It's not something you have to do every day.

I'm going to give it to you as steps. Remember I'm catering for photographers who mainly want to print their own work. I'm not catering for web-page designers or graphic artists or commercial colour labs.

Step 1: click on the blue workflow link.
Step2: click on the 'Space' drop-down menu.
Tick the Adobe 1998 (the same as your camera and printer should be set to).
Step3: click on 'Depth' drop-down menu. Click the 8 bit channel depth

* Why does 16 bit/channel even exist?
16 bits exists to cater for photos that need massive manipulation in curves.

Have you ever manipulated a photo (especially a sky with a gentle colour gradient?) and as you change the curves, you get banding stripes like a rainbow? That's called 'posterisation'……no you can't sterilize milk with it!

If you get posterisation, using 16 bits/ channel will usually fix it.

So why not just leave the settings on 16 bits/channel?

- 16 bit files are twice as large as 8 bit files
- Storage limitations on your hard-drive
- Photoshop runs slower
- Some Photoshop functions only work on 8 bits/channel.

Step 4: click on the 'Size' drop-down menu. You will see how many mega-pixels each size gives you. If the mega-pixel bracket has a minus sign next to it, it means if you click on that size, the image you create will be smaller than the original camera shot.

Likewise, a plus sign means the image you create will be larger than the original.

Handy Tip
Never create an image larger than 1 step up from the original, it stands a good chance of becoming pixilated.

#Handy Tip
Scale down in size as much as you want, the quality will not degrade.

Step 5: Resolution in a nutshell

- Select 300 DPI or higher if you don't mind wasting ink
- Select 240 – 280 DPI for A4 and A3 competition prints.

Step 6: click OK and your new default settings are now set.

I) Cropping and Straightening

Never forget that if you crop an image in Photoshop, JPEG and TIFF, the crop is permanent. In Camera RAW, you can always return to the original image by clicking on 'clear crop'.

Click on the well-known Crop tool, if you click and hold the tool, a number of predetermined cropping ratios appear.

The normal click-and-drag crop tool that you get in Photoshop is also available. Once you want to save your RAW image as a JPEG or whatever, click 'Save' on the RAW Converter, when the save options box appears, click and mark 'Preserve Cropped pixels'.

When you next open the photograph in CS3 you will only se the cropped image but the cropped area is preserved on a separate layer. This means you can bring the cropped area back by clicking and dragging the Bounding Box on your photo.

At the top of the RAW Converter, next to the Crop tool on the right, is the Straighten Tool.

This is another useful tool…… anchor one point of the horizon line you want to straighten, then drag it to the other end of the horizon and let the mouse button go.

Your photo will now be rotated by the exact amount needed to straighten the photo.

If you make a mistake, just hit the 'Escape' key and you'll be back to where you started.

Remember, when you work in RAW, changes are not permanent and can always be reversed.

J) Red Eye Reduction

This icon sits next to the Straighten Tool and is very easy to use. Enlarge the eyes, set the brush to the size of the red pupil and click. The 'red eye' disappears.

Red Eye Reduction in Camera RAW can be a little 'hit and miss'. You may prefer to use Red Eye Reduction in Photoshop proper.

K) Sharpening in Camera RAW (CS3 version 4.3)

This topic can be a little controversial, most people will tell you that you shouldn't sharpen your image until the very end of your workflow i.e. in your JPEG. Others will tell you that it is better to sharpen your image in RAW, when the algorithms have more data to work with and are therefore, less inclined to create edge-halos which happen so easily in 'Unsharp Mask'.

I think a measure of common sense must prevail. In my opinion, if you are only intending to do minimal post-

processing, such as cropping and burning, sharpen in Camera RAW.

If you are going to really work those JPEGs to death, convert the image to 16 bit depth and sharpen at the end of your workflow with Unsharp Mask or Smart Sharpen.

#Handy Tip (for bored people)
If you don't want to apply sharpening but want to see what it would look like on the photo, press ctrl K on your keyboard. Camera RAW preferences will pop up. Under 'General' click on the drop-down box for ' Apply sharpening to' and select ' Preview images only'.

#Handy Tip
If you want to se the effects of sharpening in Camera RAW, zoom in to 100% or you'll think that sharpening doesn't work.

#Handy Tip
In Camera RAW, use a sharpening radius of about 1 – 1.2 pixels. If you go higher than that your image goes from looking sharp to looking sharpened.

The 'Detail Slider' does exactly what the name says it does. Beware of using this too much.

The 'Masking Slider' is a fantastic tool. It reduces the amount of sharpening in the non-edge parts of the picture.

Hold down the 'alt' key whilst using this Masking Slider and you will see the picture turns into grey scale. When the slider is set to zero, everything is white (in other words, everything is being sharpened evenly). As you drag the slider to the right, only the bits in white are sharpened.

L) Noise Reduction in Camera RAW

The icon for Noise Reduction is third from the left on the main panel with two triangles in it. Photographers deal with two types of noise.

1. High ISO noise, surprise, surprise, from shooting at high ISO settings.
2. Colour noise, can happen in any situation and is worse with some camera makes than others.

By dragging the sliders to the right, the amount of noise decreases, but the disadvantage is the photo becomes de-saturated and a little soft.

#Handy Tip

You may want to think about using Photoshop plug-ins for Noise Reduction, such as Noiseware Professional or Noise Ninja.

In conclusion, I want to end with a demo of "Capture the uncapturable, to hell with exposure bracketing." I'm going to use an example of Cicerello's in Freo.

Step 1: open the image, make sure the sliders, etc are used to give great exposure to the background (the sky). Click 'open image' and it will do so in Photoshop.

Step 2: go back to the same RAW image in the Bridge and open it up in RAW again. This time move the sliders to expose for the foreground and don't worry about burning out the background. Click 'open'. Now both images will be open in Photoshop. Arrange the images so that you can see both the images on the screen.

Step 3: set the light version as your background copy. Grab the 'move' tool from the tools menu bar on the Left.
Press and hold the 'shift' key down.
Drag and drop the dark image on to the light image. The two images should align exactly (they are pin registered).
Close down the shadow document without saving it.

Step 4: select the 'eraser' tool in the Tools Menu Palette. Change the opacity to approximately 40% when you get to the edges where the two exposures run into each other, otherwise for increased working speed, use 100% opacity and flow. Feather the brush and erase the part of the mask to reveal the properly exposed sky.

Pretty neat trick, don't you think!

8. The pros and cons of shooting RAW

Pros

- You have more creative control over how your image should look.
- Changes are non-destructive and non-permanent.
- You always have a detailed original to use again and again as your Photoshop skills improve.
- White balance control is still available after shooting.
- Batch processing of pictures is possible.
- Your photographs can cater for a higher exposure range.
- Sharpness, saturation and contrast settings are not necessary in camera. These can all be selected later.
- Images can be produced in 16 bits/channel rather than 8 bits/channel.
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Cons

- Time spent at the computer to convert RAW to some other format.
- File size – RAW typically takes up 2 – 3 times the space of a JPEG so you need bigger memory cards and these cost more.
- Write times. RAW files take longer to write to the memory card. This can limit your continuous shooting capabilities.

What RAW can't do

- RAW cannot fix focusing errors.
- Depth of field and F-stop –the image formed on the CCD at the moment of exposure is the one you are stuck with.

- Change of shutter speed –subject movement or stillness is a characteristic of the recorded image and can't be altered.
- ISO – the value you set the ISO in camera governs the extent to which the brightness values at each pixel on the sensor are amplified. This cannot be changed in RAW.
- Gross exposure errors – nothing can be done if the pixels on the sensor are grossly overloaded with too much light or the light levels were too low to be recorded. RAW can help you recover some lost detail but it can't perform miracles.

NEWS-FLASH

You can now open your Jpegs with camera RAW, and make changes using the non destructive layering system that RAW uses. In some situations you will be very pleased with the results, mainly because lost detail recovery is so easy, but nothing is better than shooting in RAW in the first place.

Use CS3 to make use of this feature.

References

1)" The Adobe Photoshop CS3 Book for Digital Photographers" by Scott Kelby… This is a brilliant book, easy to understand, simple to use and very interesting. You probably won't ever need another Photoshop book again.

2)" Raw Masterclass" by Rod Lawton Digital Camera World.
3)"After the Shot" by Tim Shelbourne, Digital Camera World".
4)" Unleash the Power of RAW" by Philip Andrews, Better Photoshop Techniques.