The Raw Edge

Imagine shooting transparency film with no grain, a greater dynamic range than colour negative and +/- 1 stop exposure correction. For good measure, let's throw in the ability to change the colour temperature, contrast and saturation after shooting.

This is not some future fantasy, but what can be achieved now by shooting RAW with any of Canon's current Digital SLRs.

When it first appeared RAW was slow, clunky and despite the potential advantages offered, not really worth the trouble. With the advent of improved software and now, a workflow that is arguably faster than film, I haven't shot a jpeg for two years and can see no reason to do so again.

RAW provides the best output quality that the camera is capable of and most usefully of all, it provides what is best described as a "Digital Negative"; a file that can be output a many times as required without changing the original, similar in essence to a film negative. Also akin to to a negative, it is possible to produce differing renditions of an image from the same file, depending on the colour temperature and other settings chosen. By contrast, a JPEG is processed in the camera and the colour balance is fixed when it is shot. Every time the file is modified and re-saved, it loses quality.

Fine tuning of contrast to give the desired effect

How it works

To understand this fully, it is necessary to think of digital files not as pictures, but as data files containing millions of pieces of information. Taking a properly exposed image as 100% of the data. To download or store it, a JPEG is often squashed down to 10% of its size. When it is re-opened it will spring back to around 90% as some information is lost during compression. After doing a slight tweak of colour balance it may drop down to say 75% and a touch of contrast adjustment may then

reduce this to 60%. Saving this as a quality 10 jpeg for transmission may reduce it further to 45% of the original file data. You get the idea.

By contrast, a RAW file contains all the data output from the camera's sensor and the processing is done in software, on the computer. To be utilised by a normal imaging programme, the RAW data has to be converted to a standard file format by dedicated conversion software such as Capture One (C1), Canon's File Viewer utility (FVU) or Adobe's Raw Image Converter (ARC).

The conversion software is where the magic takes place. User selected colour balance, contrast, saturation, sharpening and noise reduction information are applied to the RAW file in a colour managed environment. The data is then output as a TIFF (or JPEG) file. By this means, the changes to the colour balance and contrast that did so much damage to the jpeg file discussed above are done losslessly, delivering an output file that still contains 100% of the dataand can now be saved as a lossless TIFF file. The file can be transmitted at a size of 45%, yet will still contain 100% of data when re-opened. Even if the file is saved as a JPEG after the RAW conversion for a smaller transmission size, it will still contain 90% of the information when opened by the printer.

The original RAW file, the digital negative, is unchanged by the conversion process.

Colour balance and contrast can be fine tuned without damage to the original file

Why the importance of preserving 'the numbers' in the image file? Quite simply the more information that is lost during the conversion process, the less colour information there is left in the final file, resulting in a lack of saturation and a decreased dynamic range in the printed image.

Is this complex to implement?

Shooting RAW is no different to shooting jpeg or any other format. In many ways it is actually easier as it is not necessary to worry about camera colour balance or colour matrix settings. RAW is selected in the quality settings on the back of the camera in place of JPEG. With most of the recent Canon cameras, it is possible to shoot a RAW file and a JPEG simultaneously if required

Processing

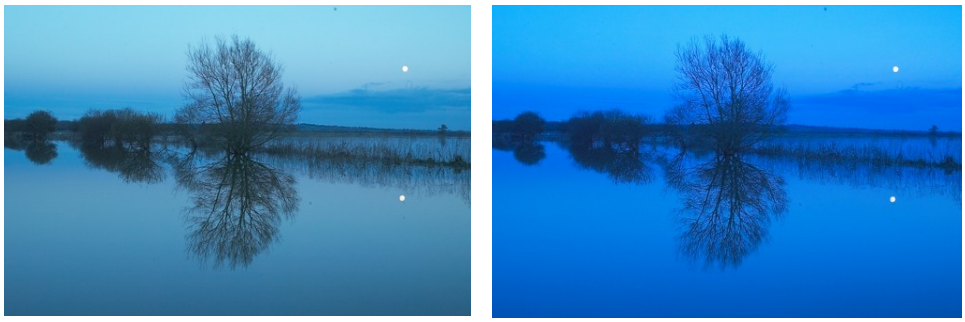
Once the file has been captured, transferred to the computer and archived, conversion is a straightforward matter of working through a sequence of options for each image. When I started shooting RAW two years ago, it would often take a whole day to process the images from a one day shoot. Now with software available that offers real-time preview of changes made and multiple options for output, it is quite possible to do the job in an hour.

Colour management

Next to the camera itself, the most critical element in any digital workflow is a calibrated monitor. The screen becomes a soft proof for all the files that you change and output, so accuracy is essential. Utilities like Adobe Gamma are no longer good enough. In recent months, the price of hardware calibrators by companies such as Gretag Macbeth and Pantone has fallen dramatically to around EU350, so they no longer break the bank.

Even if after reading this you decide to continue shooting JPEG, do yourself and your clients a favour and calibrate your monitor.

The colour management itself it is very straightforward. The recent EOS models all have the facility to shoot in standard colour spaces, either Adobe RGB or sRGB. By setting up the RAW software to use these spaces, the output files are also tagged so that they are recognized and colour managed by applications such as Photoshop. Phase One's Capture One goes one step further by identifying the source file automatically and giving the user the choice of output space depending on whether it is going to be used in print or on screen.



Outputting with an 'incorrect' colour balance can give some interesting effects; on the left the original and on the right, the same image with a tungsten balance applied

The choice of software is now as important as the choice of camera and the key to maximising quality. The difference between software can mean savings hours of processing time a week.

How many photographers want to sit in front of a computer all day when they can be out shooting pictures?

Theory is helpful, but the reality is that RAW has enabled me to achieve images that were hard or nigh on impossible in the past. Much of my work is editorial and advertising based. Deadlines are frequently tight and quality is paramount.

By choice, I use Capture One for all my RAW image processing. It saves me a day a week on processing when I am busy and gives me total flexibility with my shooting. The ability to archive settings with my RAW files means that I no longer have to store multiple large files. Re-output is simple a matter of opening the RAW and its associated setting and outputting at the desired size.

Shot for Land Rover on a December afternoon, the original has neutral colours and excellent shadow detail under the vehicle.

Subtle changes of colour balance and contrast gave me exactly the effect I was after.

Nick Wilcox-Brown is an editorial and advertising photographer based in the South West of the UK. He has been shooting with EOS for 12 years and now uses 1D / 1Ds for all work.