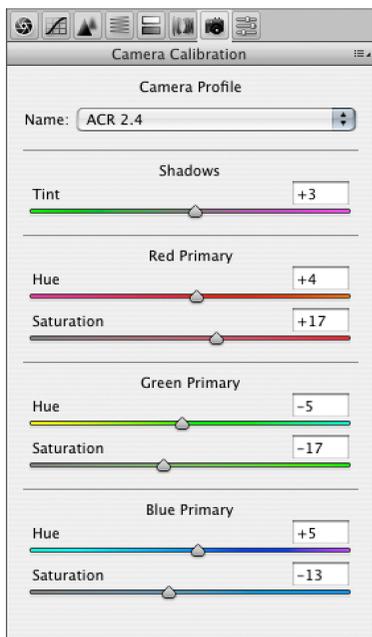**Movie 3**

Camera Raw
Camera Calibration

Figure 1 The Camera Raw Calibrate panel controls are used to fine-tune the Camera Raw color interpretation. The Camera Profile setting at the top can offer a choice of camera profile settings. The reason for this is that some of the original Camera Raw profiles that came with Camera Raw did not necessarily reflect the best average chip performance of the supported cameras. So some camera profiles have been updated and made available as ACR 3.0 profiles. These profiles will be better than the ACR 2.4 setting, but the older profile is still there so as to not cause conflict for those users who wish to continue using this profile with their pre-saved calibrations.

ACR compatible cameras

The list of cameras compatible with the latest version of Camera Raw can be found at the Adobe website by following this link: www.adobe.com/products/photoshop/cameraraw.html.

Camera Calibration panel

Camera Raw is the product of much camera testing and raw file analysis that was carried out by Thomas Knoll at Adobe. Test cameras were used to build a two part profile of each camera sensor's spectral response under standardized tungsten and daylight balanced lighting conditions. And from this, the Camera Raw processor is able to calculate a pretty good color interpretation under these lighting conditions, and beyond, across a wide range of color temperatures. This method may not be as accurate as having a proper profile built for your camera, but to be honest, profiling a camera is something that can only really be done where the light source conditions are always the same, because you would otherwise need to re-profile the camera every time the lighting was changed.

The Calibrate panel controls provide a mechanism for fine-tuning the color adjustments in Camera Raw so that you can address any slight differences between your camera and the ones Thomas used to test with, and customize the Camera Raw output to produce a custom calibration for each individual camera. This system of calibration does require a little extra effort to set up, but it is worth doing if you want to fine-tune the color calibration for each individual camera that you shoot with.

You also have to bear in mind that many of the default Camera Raw settings were achieved through testing a limited number of cameras. And it has been reported by some that there can be a discernible variation in color response between individual cameras. It was as a result of testing a wider pool of cameras that Thomas Knoll decided to update the default settings for certain camera makes and provided a new v 3.0 default camera profile (in addition to keeping the legacy profile available for use).

In the early days of Camera Raw I used to shoot a Gretag Macbeth ColorChecker chart and use a visual color comparison technique with a synthetic ColorChecker chart to adjust the Calibrate settings. It was all very complex! But fortunately there is now an easier way to calibrate your camera equipment.
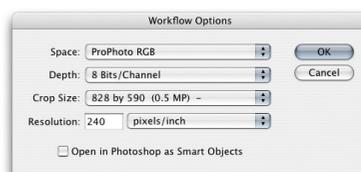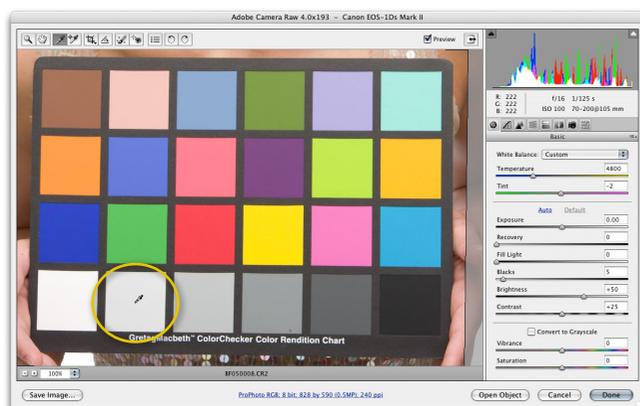
The ACR Calibrator script

If you are interested in achieving consistent color within a studio environment, then Camera Raw calibration is well worth doing. The easiest solution is to shoot a Gretag Macbeth ColorChecker chart under standard lighting conditions and then run the ACR Calibrator script that was created by Tom Fors (which I describe in the following steps). This will automatically measure the patches and generate a report with the calibration figures you need to enter into the Camera Calibration panel.

The ACR calibrator script will work for Mac or PC with Photoshop CS, CS2 or CS3 and can be downloaded from the Chromoholics website at: http://fors.net/chromoholics/ The website also contains two short movies. There is one that shows you first how to install the ACR calibrator script: http://fors.net/chromoholics/install/ and another with full instructions on how to use the ACR calibrator script: http://fors.net/chromoholics/using/.
Once installed, the ACR Calibrator script will be available for use from the File ⇨ Scripts menu in Photoshop.

The ACR Calibrator process

The script will run through a series of steps, in which the raw image containing the color checker chart will be opened many times using different settings and measure the results. This process can take a very long time to complete, which is why it is important to keep the bit depth at 8-bits per channel and the image size small. It will also help if you hide all the palettes first before you run the script.


1 To use the ACR Calibrator script, you will need to photograph a Gretag Macbeth ColorChecker chart and open the raw file via the Adobe Camera Raw dialog in Photoshop. Use the white balance tool to measure the circled patch (next to the white patch). Next, crop the image tightly around the ColorChecker chart, go to the Workflow options and set the crop size to the smallest resolution possible and set the bit depth to 8-bits per channel. Now click Open to open the image in Photoshop.
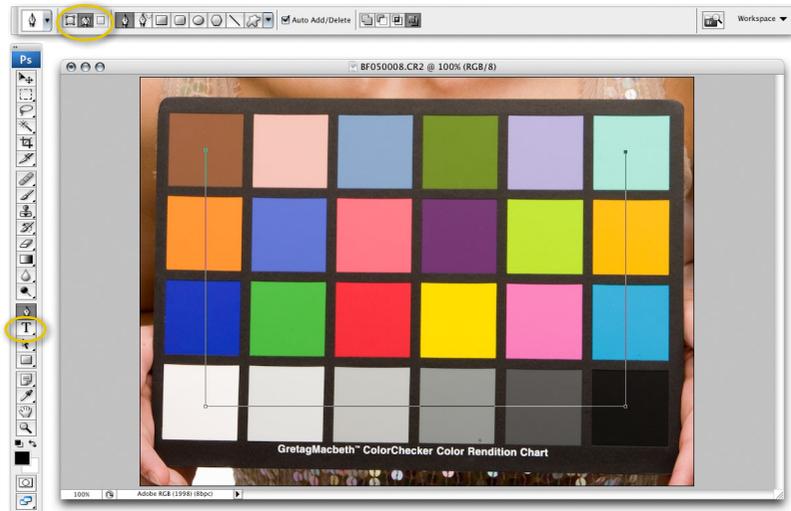
2 With the image open in Photoshop, select the pen tool with the Paths mode option selected in the Options palette. Click with the pen tool on the brown patch followed by the white patch, the black patch and lastly the blue-green patch. Now go to the File ⇨ Scripts menu and select the ACR Calibrator script. The script will automatically open the raw file many times over and gradually build a Calibrator status report in a new Photoshop document.

Special Camera Raw settings

Apart from setting the bit-depth to 8-bit and the pixel dimensions to the smallest output size, there are no other settings you need concern yourself with. It does not matter if the auto settings are on in Photoshop CS3 or not and it does not matter which RGB output color space is selected.
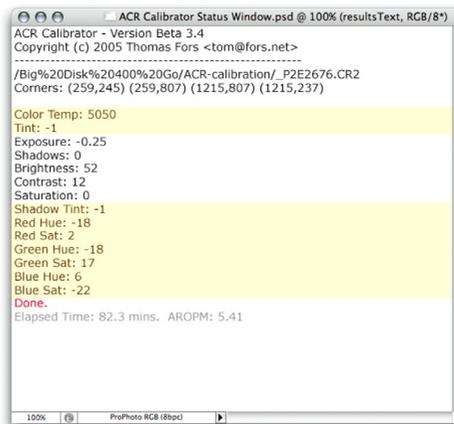
3 Here is the ACR Calibrator Status Window after the script has run its full course. I have highlighted the calibration settings in yellow. You need to note these figures down, enter these in the Calibration panel in the Camera Raw dialog and save this as a custom calibration setting for your camera. You may also want to make a note of the Color temperature white balance and Tint settings and save these too as part of your custom calibration setting.

Using Camera Calibration to distort colors

The Camera Calibration panel is really intended for fine-tuning the color calibration of a camera and get the Camera Raw processed colors to match as closely as possible to the colors in the original scene. But one of the interesting things you can also do with the Calibrate panel is to deliberately mess up the colors in an image to create unusual color effects.

To achieve the results you see here I mostly adjusted the color Hue and Saturation sliders in the Calibrate panel, taking the sliders to their extremes and linking these adjustments with modifications to the White Balance Temperature and Tint sliders. If you check the panel settings you can see which values were used in the Calibrate panel. If you find a calibrate setting that you like and would like to reuse on other images, then it would be a good idea to follow the instructions coming up in the section on Camera Raw presets and save these as custom settings.
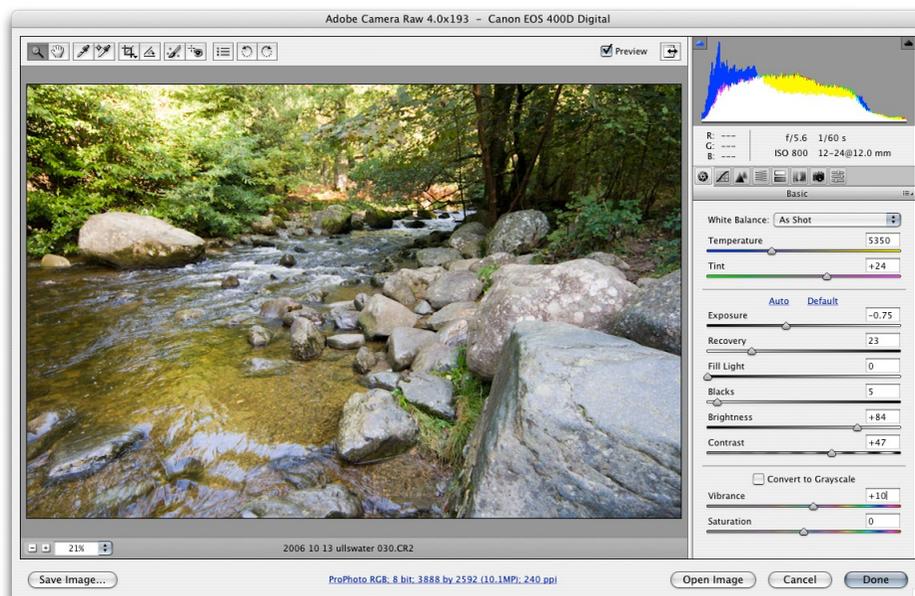

Figure 2 This shows the normal version of the image using the as shot settings before I played around with the Calibrate settings.
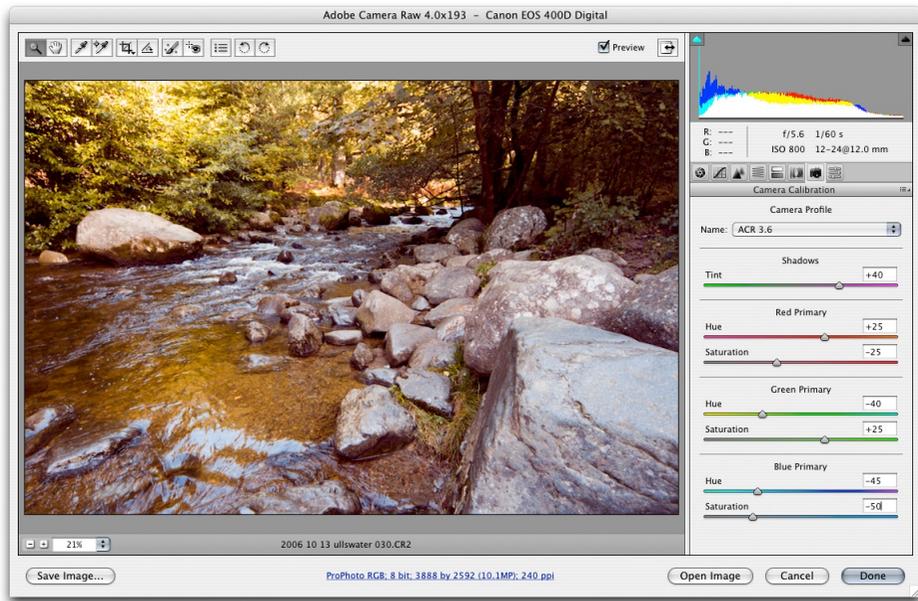
Figure 3 This shows a version with the Calibrate settings used to produce a cross processed type effect.
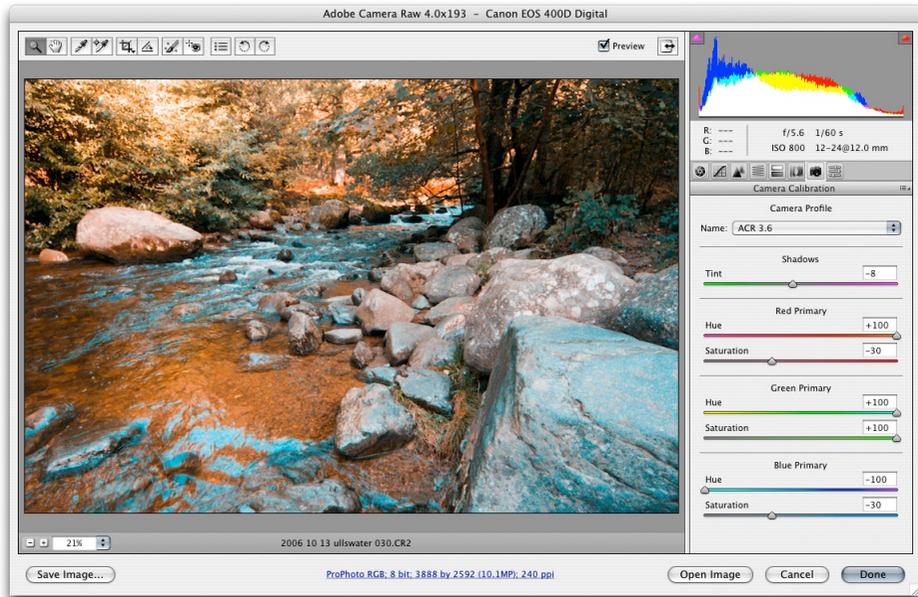

Figure 4 This shows a version with the Calibrate settings used to produce a color infrared effect.