

## Photoshop CS2 Color Workflow

by Randy C. Finch

Upon loading a digital image into Photoshop CS2 (PSCS2), it can sometimes be difficult to know what steps to take and what order to take them in to quickly and efficiently optimize the image for Web or print presentation. This step-by-step guide is designed to help you make the proper decisions for optimizing color images. The steps for black and white images are somewhat different and are presented in a separate article.

Be aware that I only cover the basic steps for optimizing your image, not every possible step that any given image might need. Also, the workflow presented here is for non-RAW images such as JPEG and TIFF. RAW images need to be processed with Adobe Camera Raw software or another equivalent program. This process is discussed in another article.

Throughout this article, I will use a sample image to show how the various workflow steps affect it. Once the entire workflow sequence is complete, my original image on the left below will be transformed to the image on the right.



So, let's get started.

(NOTE: When mentioning modifier keys I will use the ones for the Windows version of PSCS2. For the Macintosh substitute the Command key for the Control key and the Option key for the Alt key.)

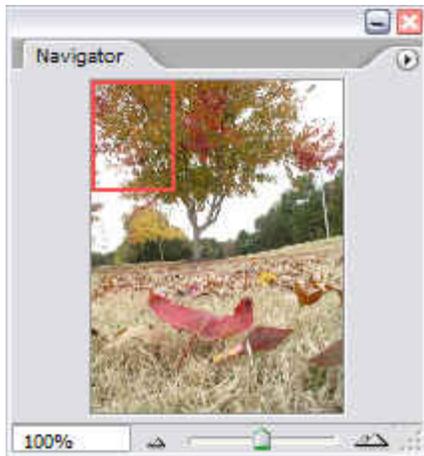
**0. DON'T CROP.** I call this step zero because it is a step recommended by many experts that I believe should not be done. It's cropping. I have read many articles and

books about image workflow that recommend cropping your image to the size you want early on. **DON'T DO THIS!!** Too many times I have cropped an image early in my workflow and then later needed to crop to a different size and/or orientation only to find that I could not get a decent image. However, had I not cropped the image to begin with, I would have been able to get a decent image because I would still have parts of the image available that were originally cropped out. The only exception to this rule is if there are certain elements in the image that you know for *certain* you will never want. But be careful even in this case. Sometimes to get other wanted elements into the image using a certain print size, you may need the unwanted parts of the image. They may have to be cleaned up, but still are needed. For most cases, however, step zero is to load your image into PSCS2 and then **DON'T** crop it.

1. **ROTATE.** If the image is a photograph that was taken with the camera in a vertical orientation, then it will need to be rotated. Select the menu item Image / Rotate Canvas / 90° CW if the image needs to be rotated clockwise. Choose 90° CCW if it needs to be rotated counterclockwise. If for some bizarre reason you took the photo with the camera upside-down, choose 180°. Some cameras have an orientation sensor and will mark the image files with their proper orientation. These files should load already properly oriented, making this step unnecessary.



2. **CLEANUP.** If your image contains any spots caused by dust on the camera's sensor or if it just has some extraneous elements you would like to eliminate, you need this cleanup step. The best way to determine if this step is necessary is to zoom in to a 100% view of your image (View / Actual Pixels) and move the red box in the Navigator palette to the upper-left corner of the image. Slowly begin to scan across the image, then down, and back across like you are mowing a lawn.



If you find any spots that need to be eliminated, create a new blank layer (Layer / New / Layer), make sure it is the top layer, and name it “Cleanup”. Select this layer, then choose the Clone Stamp tool () and make sure the Aligned and Sample All Layers options are both checked. These settings allow the image in the Background layer to be cloned to the Cleanup layer, thus keeping the former untouched. Select a brush size (using the [ and ] keys) appropriate for the cleanup area and start cloning nearby spots to the areas needing cleanup. Usually the clone brush can be made to blend better if its hardness is set to 0-25% and its opacity set to 25-50%. You may have to make more than one pass over a spot needing cleaning, but the end result will usually look better. Below, I decided to clone out the light poles near the center and to the right of the image.

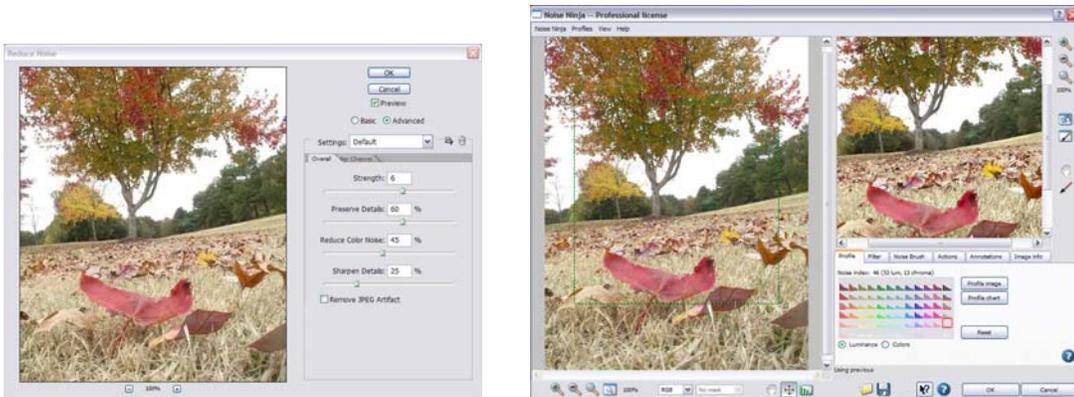


Recently I read an article suggesting that the cleanup step should be done late in the workflow. I do not like this approach for one major reason. If you put the cleanup layer on top of all the adjustment layers discussed in steps 3-6 below, the cloning will

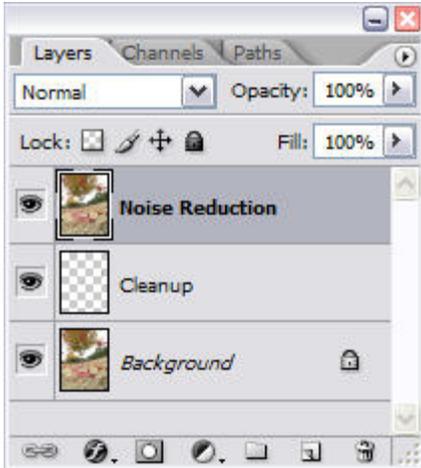
pick up pixel colors that have been processed by the adjustment layers. This is fine until you decide to modify one or more of the adjustments. Then the cloned pixels will no longer match the surrounding pixels. Avoid this problem by doing cleanup early in the workflow.

An exception to this rule applies if you are not confident you can make the image look good with the adjustment layers discussed below, and the image requires a significant amount of cleanup. In this case, you may want to experiment with the adjustment layers before committing to a lengthy cleanup. If you decide you want to keep the experimental adjustment layers, be sure to create your cleanup layer just above the original image and turn off all the adjustment layers above it when using the clone tool.

- 3. NOISE REDUCTION.** If the image you are working on was shot at a high ISO or a long shutter speed, it might contain an unacceptably high level of noise. PSCS2 has a noise reduction filter for this purpose (Filter / Noise / Reduce Noise). Various sliders are available for controlling the strength of noise reduction for both luminance and color while balancing this with image detail and sharpness. In advanced mode, noise reduction can be controlled for each individual color channel. While PSCS2's noise reduction tool is better than no reduction at all, I prefer to use a third party tool from PictureCode named Noise Ninja. It is available as a standalone product or as a Photoshop plug-in. I much prefer using the latter since it simplifies the workflow by allowing a selected layer in Photoshop to be processed for noise reduction.



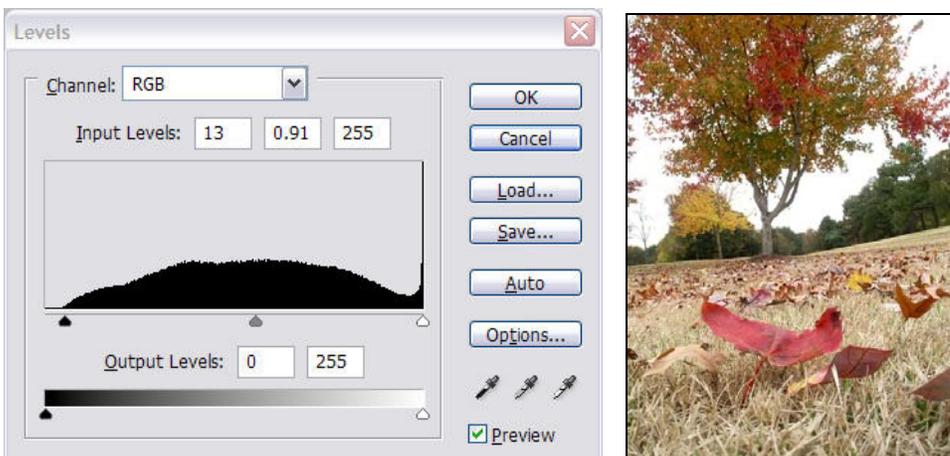
Since the noise reduction algorithm will modify your image, start by creating a separate layer containing a flattened image of the Cleanup and Background layers. Do this by selecting the Cleanup layer and pressing Shift-Ctrl-Alt-E. This convenient keyboard shortcut will combine all visible layers into a new separate layer above the currently selected layer. Name this new Layer "Noise Reduction". Make sure this new layer is selected and apply the noise reduction method of your choosing. Normally, any third party plug-in solutions will appear at the bottom of the Filter menu.



- 4. LEVELS.** This adjustment is typically used to set the range of output tonalities and the mid-tone brightness. It is possible to apply a Levels adjustment directly to an image, but I do not suggest doing this since a Levels adjustment layer is available (Layer / New Adjustment Layer / Levels). This allows the adjustment to be applied in a non-destructive way and allows the Levels adjustment to be tweaked at a future time without having to start over with an original image. Basically, the rule is that if an adjustment you want to make is available as an adjustment layer, use it rather than applying the adjustment directly to the image.

The histogram in the Levels window shows the overall range of tones for the entire image in the RGB channel, which is an average of the three channels - red, green, and blue - that make up the image. To see an individual color channel, select it from the Channel drop-down at the top of the window. For basic use, you will only adjust the RGB channel.

Under the histogram are three triangles: one black, one gray, and one white. These are used to adjust the shadow, mid-tone, and highlight settings, respectively. Shown below are the Levels window with my adjustments and the resulting image.



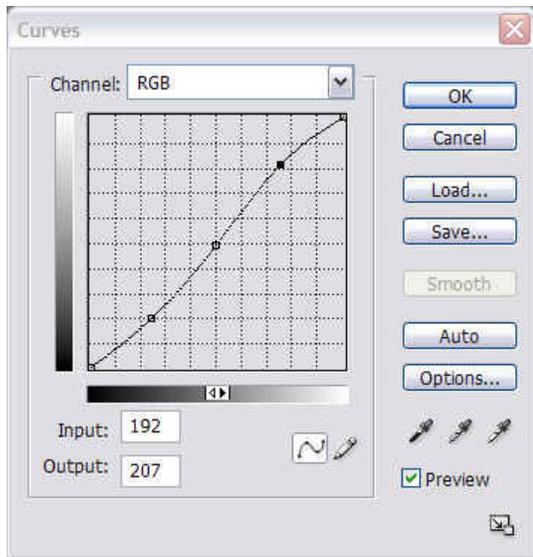
The darkest tones in the pre-adjustment image were not pure black. By sliding the black triangle to the right until it is under the beginning point of the histogram curve, the darkest tones adjust towards pure black. If you hold down the Alt key while moving the triangle, you get visual feedback of what's happening to the image. The image will turn pure white initially. Then, as the black triangle is moved to the right, you will see colors appear as clipping begins. For instance, if you see yellow, that means the blue channel no longer has information in that area (its value has become zero) and only red and green have a value. As the black triangle is moved further to the right, more colors will appear until finally some black appears. Black means there is no color information at all (pure black) in that area.

The same type of adjustment can be made with the white triangle for the highlights. In this case, the image will turn pure black where no clipping exists, and color will appear where clipping in that channel is occurring. For the image above, the sky will initially be pure white indicating that all three channels already have a value of 255. As the white triangle is moved to the left, the colors that reach a value of 255 will appear in the image. If a composite color, such as yellow, appears, that indicates that both colors that make up the composite color (red and green for yellow) have both reached a value of 255.

Typically, you will want to move the black triangle to the right until clipping just begins and the white triangle to the left until clipping just begins. This will give you the widest range of tones possible for the image. However, sometimes you may want deep dark shadows and/or blown out highlights for special effect purposes. Once the shadow and highlights are set you can then move the gray triangle to lighten or darken the mid-tones in the image. Moving it to the right darkens the mid-tones; moving it to the left lightens them.

If the white balance in your image is off, the Levels window can also help. The middle eyedropper in the lower right corner is the Set Gray Point tool. Click the eyedropper, find a spot in your image that should be a neutral gray, and click that spot. PSCS2 will apply a color correction to the entire image that will make the clicked spot a neutral gray. If you cannot find a spot that should be neutral gray, then you can make adjustments to the levels of the individual color channels. If your image only requires a minor white balance adjustment, see Step 6 below.

- 5. CURVES.** This adjustment is good for modifying the contrast of an image without clipping the blacks and whites. The figures below show the Curves window (Layer / New Adjustment Layer / Curves) with my adjustments and the modified image.



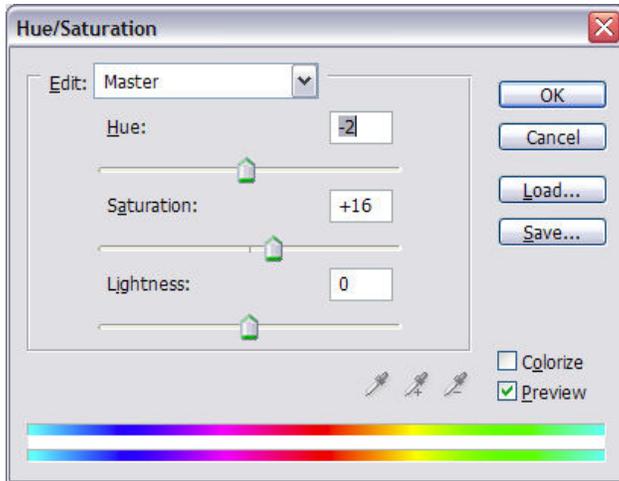
Notice that the grayscale bars to the left and below the curve have the tones running from black (bottom left) to white (top right). This can be reversed by clicking on the small box in the middle of the lower grayscale bar. Also, if the grid in your graph is only 4x4, then Alt-Clicking inside the graph area will toggle it to a 10x10 grid.

The curve, which is initially just a diagonal straight line, represents how the tones in the original image will be mapped when the Curves adjustment is applied. Moving the curve downwards will result in darker tones than the original, while moving it upwards will result in lighter tones.

For my image, I wanted to increase the contrast slightly. To do this, I needed the dark tones to be darker and the light tones to be lighter which results in the midtones being stretched and the shadows and highlights being compressed. To accomplish this, I clicked in the middle of the graph to set a control point. This locked the middle gray in so that it would not change as I made other adjustments. Next I clicked on the lower section of the line and dragged it down. Finally, I clicked on the upper section of the line and dragged it up.

To decrease contrast, the lower part of the line would need to be moved up while the upper part would need to be moved down. This compresses the midtones and stretches the shadows and highlights.

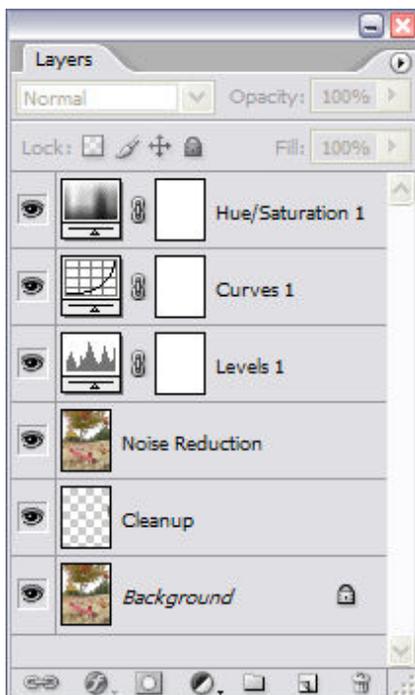
- 6. HUE/SATURATION.** Many photographs can use a bit of saturation tweaking, either less or more. The Hue/Saturation adjustment layer (Layer / New Adjustment Layer / Hue/Saturation) is just the ticket. It has three sliders for controlling Hue, Saturation, and Lightness. Here are the adjustments I made to the sample image and the results.



I added more saturation to the nice autumn colors in the photo. I also adjusted the Hue a small amount. As I mentioned in Step 4, if your image only requires a minor white balance adjustment, you may be able to do it using the Hue slider. Just move the slider left or right until the image appears the way you want.

The Lightness slider lightens and darkens the image, but I never use it since I prefer to make this adjustment using the gray triangle in the Levels adjustment layer.

With the addition of the Hue/Saturation layer, the Layers palette now looks like this, assuming all the steps mentioned thus far were actually needed:

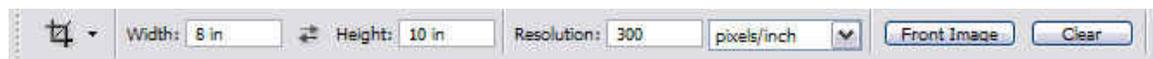


At this point, make sure you save the layered image as either a Photoshop file (PSD) or a layered TIFF file.

- 7. FLATTEN & CROP.** Now that all our adjustments are complete, it is time to merge all the layers into one, otherwise known as flattening, and then crop the image. To flatten the image, simply choose the menu item Layer / Flatten Image.

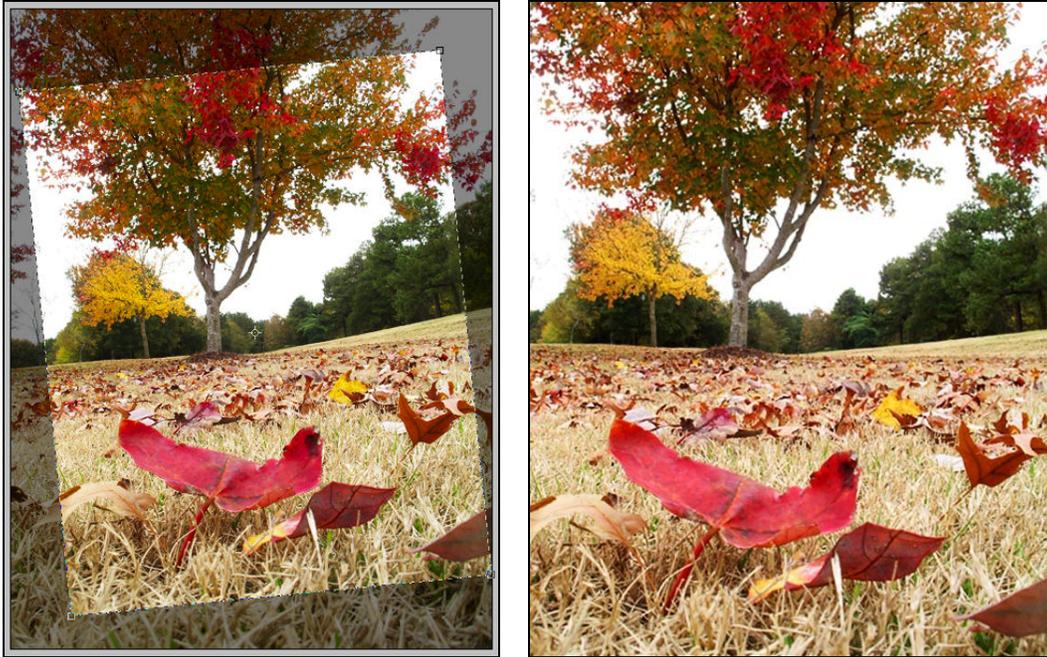
Now select the Crop tool. 

In the tool settings area, you can set the width, height, and resolution for the cropped image. If none of these are set, the cropping will just be the pixels you enclose in the cropping box and the resolution will be the same as the non-cropped image. In my case, I wanted to crop my photo to an 8x10 inch image with a resolution of 300 pixels per inch.

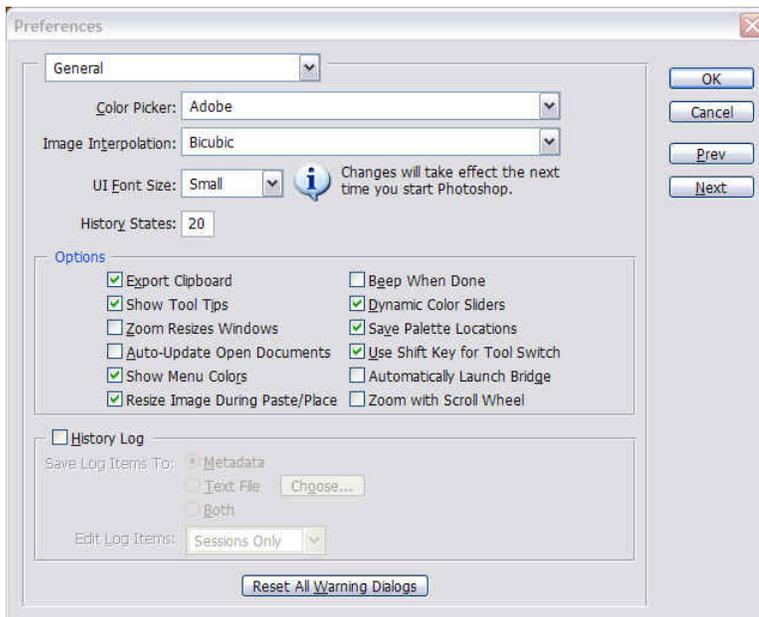


Presets can be selected by clicking the cropping icon to the left and choosing one from the drop-down list. New settings can also be saved as presets.

With the Crop Tool selected, click anywhere in the image and drag a box out to enclose the portion of the image to include in the final image. If both the Width and Height have been defined in the tool settings, the aspect ratio of the box will be confined to match. After creating the cropping box, it can be rotated by clicking outside the box and dragging. A final adjustment to the cropping box can be accomplished by clicking inside the cropping box and dragging the mouse to move the box or clicking and dragging the corners of the box to resize the box. Once the cropping box is sized, positioned, and rotated as you like, double-click inside the box to finalize the crop. As you can see below, I wanted to rotate my image to straighten the horizon.



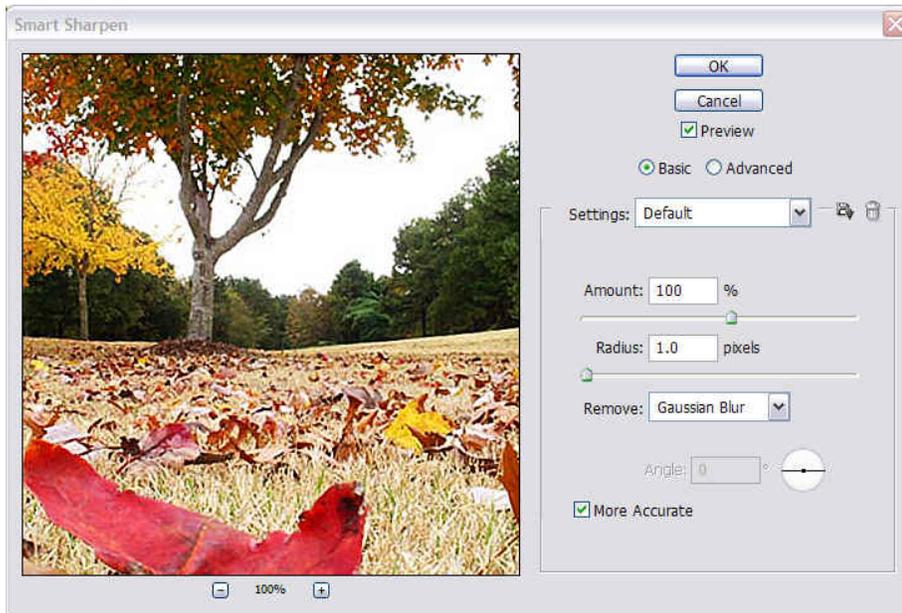
As you may know, Photoshop can use different methods for either reducing or increasing the number of pixels in an image as it is resized to either a smaller or larger image. Since an image may have to be resized during the cropping step, the method used to add or subtract pixels must be set. To specify which method to use, choose the menu item Edit / Preferences / General.



On the dialog box is a setting for Image Interpolation. The method selected here is what will be used by the cropping tool. I normally leave this set to Bicubic.

8. **SHARPEN.** Now that the image has been cropped and sized for the print you want to make, sharpening may need to be applied. For photos using a soft focus effect or those taken in a thick fog, sharpening may not be needed as it would destroy the mood of the image. However, in general, some sharpening is needed before printing an image.

In earlier versions of Photoshop I used the Unsharp Mask filter for sharpening images (Filter / Sharpen / Unsharp Mask). However, in PSCS2, I have become fond of the Smart Sharpen filter (Filter / Sharpen / Smart Sharpen) as it seems to work well and is easier to manipulate.



Sharpening a digital image is basically the process of enhancing contrast at the edges of the various elements in the image. The Amount in the dialog box above controls how much enhancing occurs while the Radius controls how many pixels the contrast edge should use. For highly detailed images, the Radius is normally a small number (0.8 to 1.0), and the Amount is a large number (150 to 250). For low detail images the Radius is normally higher (1.2 to 1.5) while the Amount is lower (80 to 100). In addition, these values are also highly dependent on the size of the image. Personally I have used Radius values of 0.8 to 2.5 and Amount values of 50 to 500. So, it is best to just play around with these numbers for each individual image to see what works best.

The Remove setting allows you to change the type of blurriness the sharpening routine is removing. For an in-focus photo, Gaussian Blur should be chosen. If the photo is slightly out of focus, the Lens Blur can be used. If the blurriness is due to object motion, then the Motion Blur setting can help. When this one is chosen, the angle of motion should also be entered in the Angle setting. Alternatively, the line in the circle can be rotated.

When the More Accurate box is checked, the sharpening algorithm will do a slightly better job, but take a bit longer to process. Unless you are using a slow computer, I suggest leaving this checked.

I had always read that an image should be set to a 100% magnification (View / Actual Pixels) before starting the sharpening filter so that the true effect of the sharpening process could be previewed. However, over time I noticed that the effect of sharpening is less noticeable in prints than on a monitor. Recently I read an article suggesting that, for various technical reasons, an image should be set to 50% magnification while applying sharpening because the way this reduced size image appears on-screen when sharpened more closely matches what a print will look like. I have been using this technique ever since with great results. If for some reason you want to see a preview of the image at 100%, it is right there in the Smart Sharpen window.

Here is my sample image before and after applying Smart Sharpening:



Well, there you have it. A cleaned up, noise reduced, leveled, curved, hue/saturated, flattened, cropped, sharpened final image ready to print. Ciao.