You probably don't realize that your settings for one Photoshop tool or function can affect the performance of another. Knowing how they relate can help you ....

BY ANDREW RODNEY

Six *degrees*
ADOBE PHOTOSHOP

Many of the applications photographers use to process images have intertwined preferences and tool settings that have a profound influence over one another, even when their functions are seemingly unrelated. It's like the game Six Degrees of Separation, but in well-designed software, the connections aren't quite as random or pervasive. Knowing what features are connected can greatly aid in maximizing an application's performance. Let's look at a few examples in Adobe Photoshop.

SAMPLED COLORS. The much-maligned Magic Wand tool has a somewhat veiled but important connection to another tool's setting, the Eyedropper's sampling size (**Figure 1**). The Magic Wand tolerance setting controls the *range of colors* to be selected; the Eyedropper's sampling size defines the *number of pixels* to be scrutinized. The tolerance setting references to make a Magic Wand selection.
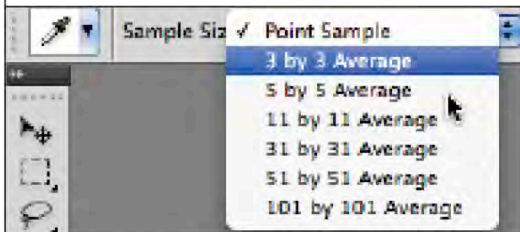

Figure 1: When the Eyedropper tool is active, the pixel sampling options are accessible from the Option bar.

Open an image for a demonstration of this relationship. Identify a reference section in the image with an area you'll be able to

click on repeatedly. Leave tolerance at its default setting, 32. Select the Eyedropper tool and set Sample Size > Point Sample. Toggle back to the Magic Wand (type W), and carefully click on the reference section. Note the range of colors and the amount Magic Wand selected.

Deselect the selection (cmd/ctrl-D), select the Eyedropper, and set Sample Size to 11x11 or even 31x31. Now select the Magic Wand again and click on your reference section. The selection looks quite different and probably larger. If you're selecting a small range of colors, use a low setting for both the tolerance and the sampling size. For larger areas of dissimilar colors, do the opposite. The Quick Selection tool is not affected by the Eyedropper sampling.

The Replace Color command (Image > Adjustments > Replace Color...) also uses the Eyedropper sampling settings. It even affects the color you see in the Color Picker in this dialog. A large pixel sampling may produce a color that looks nothing like what you expected because all the adjacent colors were sampled as well (**Figure 2**).

Do you like to use the eyedroppers in Curves or Levels to set black, white and gray points? Those, too, will use the Eyedropper's pixel sample size in applying those corrections. It's the same with the eyedroppers in Image > Adjustments > Exposure, Black and White, in Hue/Saturation when you target a

specific color, and the eyedroppers in CS4's new Targeted Adjustment tools.

If you use the Info palette to read colors, be aware that the sample size will determine the range of pixels to be averaged into that calculation. Hold down the shift key to access the Color Sampler, click to place a readout point of the image color, then right- or control-click to toggle the sample size and see how the values change. When you use the sampler to measure color in an image, the sampling size will have a huge impact on the colors reported.

GROW AND SIMILAR. When you use Select > Grow or Similar with a selection, the result is tied to the Magic Wand tolerance settings, even when you're not using the Magic Wand. Check the setting before using Grow or Similar to get better control over what's selected.

COLOR RANGE. The Select > Color Range command has an option to select what it specifies as out-of-gamut colors, but the range of colors is based solely on the CMYK profile selected in Photoshop Color Settings (Edit > Color Settings...). If, like most users, you select the SWOP V2 profile, the colors you'll select, while technically out of gamut, are probably not the colors you really wanted.

There's no way to select out-of-gamut colors in Color Range based on an RGB profile. You could select an RGB profile in the Customize Proof Setup (View > Proof Setup > Custom...) and view the out-of-gamut colors through the out-of-gamut overlay (View > Gamut Warning), but there's no access to these colors in Color Range. And speaking of Color Range, there's an option to select pixels from the image and, you guessed it, the selection will be based upon the Eyedropper sample size (**Figure 3**).

INTERPOLATION AND TRANSFORM. Photoshop has different

algorithms for sizing images up or down. Photoshop CS gives us five: Nearest Neighbor (maintains hard edges); Bilinear; Bicubic; and the newest, Bicubic Smoother (up-sizing up) and Bicubic Sharper (down-sizing). You can set a default interpolation in General Preferences (**Figure 4**). When you resize an image with the Image Size command, you can use its pop-up menu to override the default. Not so when you use any of the Edit > Transform command options, including Perspective cropping, even if you enlarge or reduce the selection. When you use Free Transform, you can't always predict whether or not you'll want to resize the selection, and there lies a potential problem. When you can, set the General Preferences interpolation based on the direction (enlargement or reduction) of the resizing you'll be making. You could merely set your preferences to a midpoint (Bicubic), which will do a decent job of resizing those pixels, but the latest interpolation options will produce better results.

CONVERSIONS. In Color Settings, there's a section of conversion options for setting Engine, Rendering Intent, Black Point Compensation and Dither. This entire section, though, is generally used only when you convert from one color space to another in the Mode change menu (Image > Mode). When you use the Convert to Profile command, you can override any of these preference settings; the Print command, however, is always set for Adobe ACE. If you wish to make prints from Photoshop identical to prints from a non-Adobe application—those applications cannot use the Adobe ACE color engine—you'll have to go through a few steps to bypass the Adobe engine: Set the Engine options accordingly, use Convert to Profile, then choose No Color Management in the print dialog. It's the same with Dither, although you'll almost
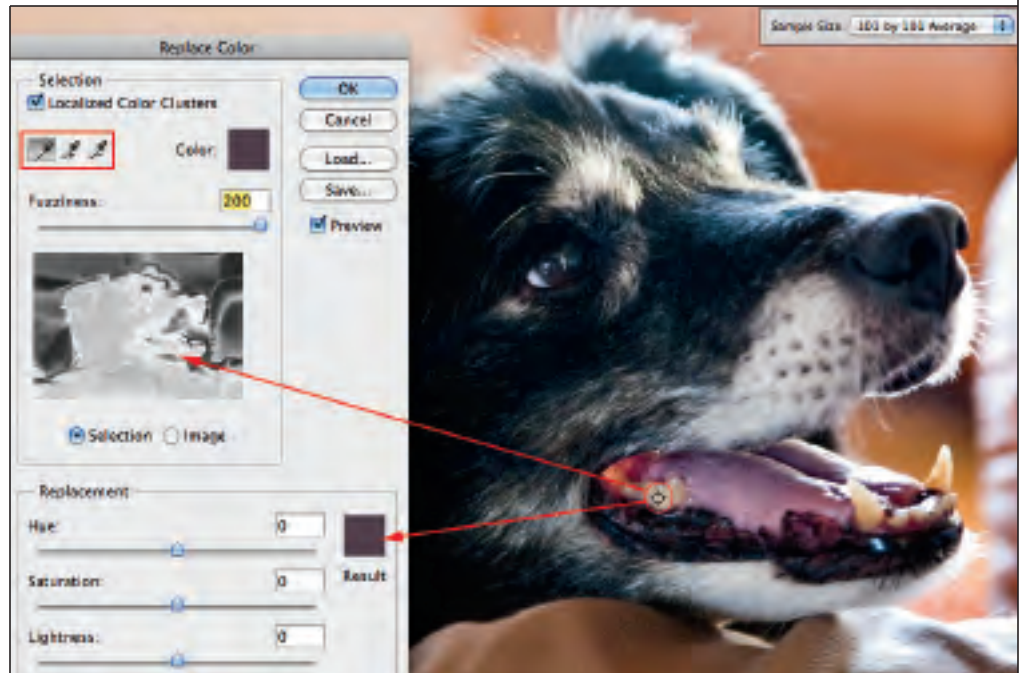

Figure 2: The Replace Color eyedroppers also access the pixel sampling set in the Eyedropper (see Figure 1). When the sampling is set to a high value, in this case 101x101, the colors that are selected might not be the ones you expect. Here I've clicked on the dog's tooth, but the sampled color is different because the sample includes pixels outside the tooth area.
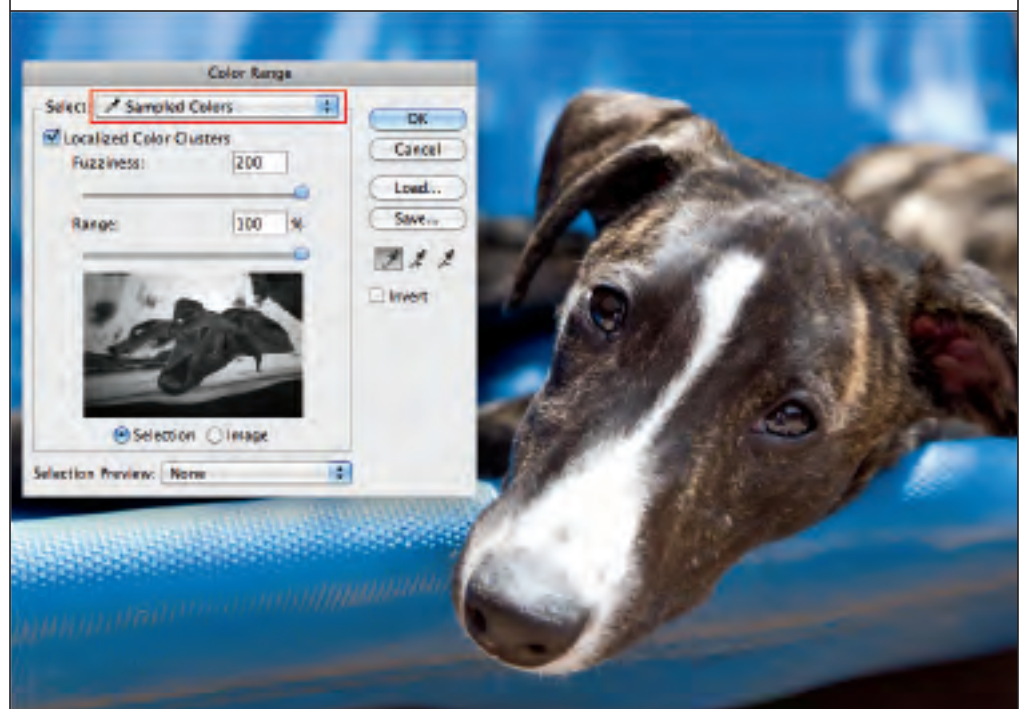

Figure 3: Color Range set to Sampled Color also accesses the Eyedropper tool's pixel sampling size.

always want that setting turned on to help maintain smooth gradients in the print. If any other applications apply dither, it would likely be different from Photoshop's.

DITHER AND MODE. Dither is useful in making conversions from one color space to another. (Access dither in the Color Settings menu.) It's used when you convert from 16- to 8-bit color as well, even into and out of the Lab color space. The effect is often quite subtle. It's useful to know that dither might not be available in other products. If you see differences when you compare prints of the same data made from different applications, this could be the cause. When you try to produce identical conversions, Dither will add random noise, so the results will all be slightly different.

COLOR SPACES AND INTENT. Conversion settings also kick in when you drag and drop or copy and paste data between
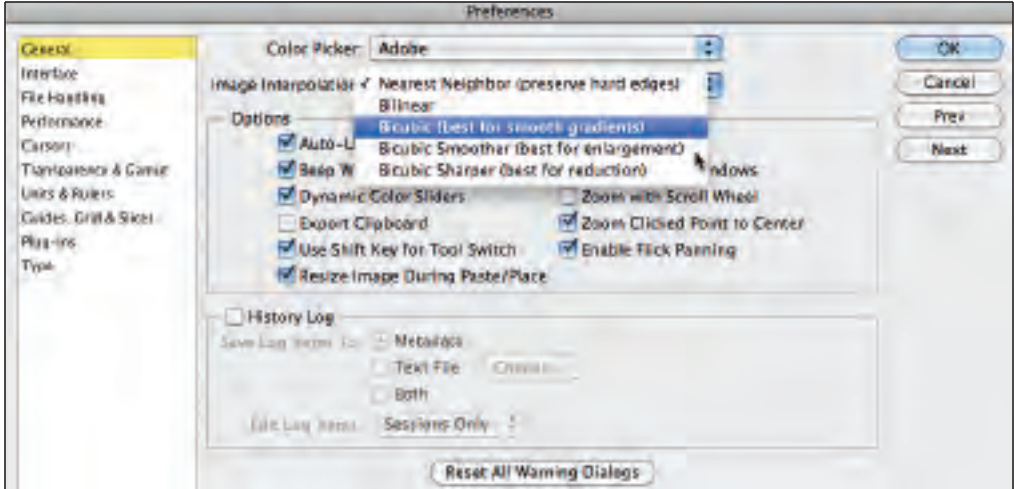

Figure 4: In Photoshop General Preferences, you can select an interpolation algorithm, but it will be used for every transform sizing routine. For best results, base your algorithm selection on how you want to resize the data (enlarge or reduce), and choose it before using the Transform command.

images in different color spaces. When you select data in an Adobe RGB document and paste it into an sRGB document, the conversion will be made in the rendering intent selected in the Color Settings. That can have an especially important effect when you're working with documents in an output color space such as CMYK. You might try setting

the rendering intent you desire in Color Settings before doing the copy/past step. You could also use the Convert to Profile command.

Conversions between RGB working spaces are always Relative Colorimetric, so I set this intent in Color Settings.

RENDERING INTENTS THAT DO ZIP. This disconnect confuses many users. In the Convert to Profile command, you can select four rendering intents (see **Figure 5**). But virtually all working spaces (sRGB, Adobe RGB, ProPhoto RGB) have just one conversion table and will apply only apply the Colorimetric intent (Relative or Absolute). If, for example, you convert from ProPhoto RGB to sRGB and select Perceptual or Saturation, you'll wind up with the Relative Colorimetric intent anyway. It would be helpful if the non-applicable rendering intents would gray out in the menu, but that's not how Photoshop behaves, and it's not likely to change. If you think you should be converting with a Perceptual intent because you generally prefer it for printing or soft proofing (where such profile tables are available), sorry for the bad news, but that's not what you'll get. ∎
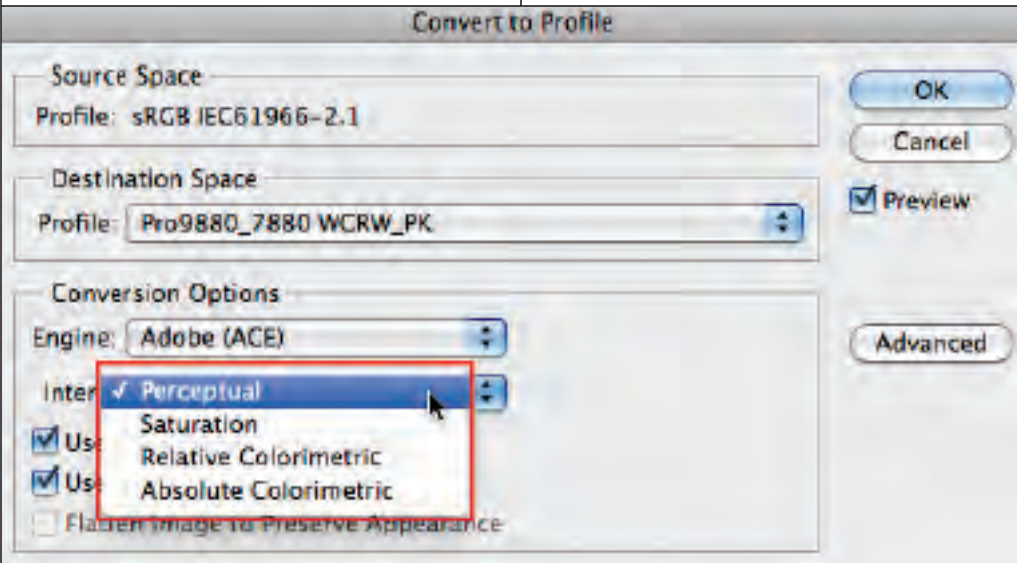

Figure 5: There are four rendering intents available in the Convert to Profile command, but in some instances, Perceptual and Saturation will provide a Relative Colorimetric conversion instead.