



Color Connection

BY MARY MCGIVERN

Making Prints Pop

Adjusting Photoshop images using Lab Color

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HAVE YOU EVER looked under your *Image Mode* menu and wondered what *Lab Mode* was? You're not alone. This humble image mode has some powerful uses in getting your images from screen to print.

We can use *Lab* color to sharpen images without shifting color, create a better grayscale image and convert a richer CMYK color conversion.

Sharpening images can be very tricky. The most common mistake is to sharpen too much. As a wise Photoshop instructor once told me, "When you think you have it sharpened just right, take it back slightly to find perfection."

Over the years I have come to deal with sharpening images using *Lab Image* mode, *Levels* adjustments and the *Unsharp Mask* filter. Sharpening your image in standard RGB image mode often works satisfactorily.

However, sometimes sharpening changes the colors in the images. This makes sense since the *Unsharp Mask* filter bases its changes on pixel contrast. We can get around this problem by changing the image mode to *Lab* and sharpening our image there.

SHARPENING IMAGES

Lab mode has three channels just like RGB mode (see **Figure 1**). The *Lightness* channel contains the brightness and contrast information in the image; the *A* channel contains green and magenta information; and the *B* channel contains the blue and the yellow information.

Highlight the *Lightness* channel in the Channels palette (see **Figure 2**). Notice that your image turns to grayscale. By adjusting the brightness and contrast in the *Lightness* channel, we can affect the overall perceived sharpness of the image.

To adjust brightness and contrast, select the *Levels* adjustment (*Image, Adjust, Levels*) from the Image menu (see **Figure 3**). Drag the black slider to the right to assign all colors in the image to darken. This boosts the contrast in the image (see **Figure 4**).

BEHIND THE CURTAIN

Use a similar technique with the *Unsharp Mask* filter to sharpen only the brightness and contrast of an image.

First, let's come to terms with this filter. The *Unsharp Mask* filter (see **Figure 5**) increases the contrast between neighboring pixels. To understand the full potential of this filter we should define the options in the dialog box.

Amount — This number tells Photoshop the degree of sharpening (from 1 to 500 percent) the filter will perform on the selected image. Higher values produce more profound effects.

Radius — This option controls the thickness of the sharpening effect. The higher the value, the thicker the edge on the contrasting pixels.

Threshold — This slider controls the range of the contrast of the pixels. Higher values sharpen pixel colors further apart in contrast color. This works well when you want to sharpen the darker contrasting colors in an image but want the subtle color changes to remain smooth.

It is easy to sharpen the image too much, resulting in a grainy texture. Look

at the original image in **Figure 6**. Notice that the dark areas become grainy or splotchy when I apply 100 percent sharpening at a 1-pixel radius (see **Figure 7**).

This is because we are sharpening the pixel colors right next to each other. We need to tell Photoshop that we want to only sharpen the contrasting pixel colors. The *Threshold* slider will help us do that. Increase the *Threshold* levels until you see the graininess disappear yet the edges are still sharp (see **Figure 8**).

Usually if you align the *Threshold* slider just left of your *Radius* slider your sharpening will be perfect.

Turn the eye on the *Lab* channel and examine your sharpening results. Notice now that your colors are true to the original unsharpened image (see **Figure 9**).

GRAYSCALE CONVERSION

Lab Color mode is also an excellent throughway for color conversion from RGB to grayscale. When we convert an image from RGB to grayscale, Photoshop uses the information in the color channels to distribute brightness and contrast. But what may appear bright in color may look muddy in black and white.

Suppose your sign client needs a copy of an image you used in a billboard campaign for a black-and-white newspaper ad. That picture must be vibrant using only brightness and contrast.

The image in **Figure 10** has bright blues in the sky and the water. In the color image this is pleasing. But when we convert it to grayscale directly from RGB (see **Figure 11**), those bright blues become a medium gray. They appear muddy.

Let's try converting this image through Lab Color. Change the image mode to Lab Color (*Image, Mode, Lab*



Figure 1: Lab mode has three channels just like RGB mode. The "Lightness" channel contains brightness and contrast information; the "A" channel contains green and magenta information; the "B" channel contains blue and yellow information.



Figure 2: When the Lightness channel in the Channels palette is highlighted, the image turns to grayscale. By adjusting brightness and contrast here, we can affect the perceived sharpness of the image.

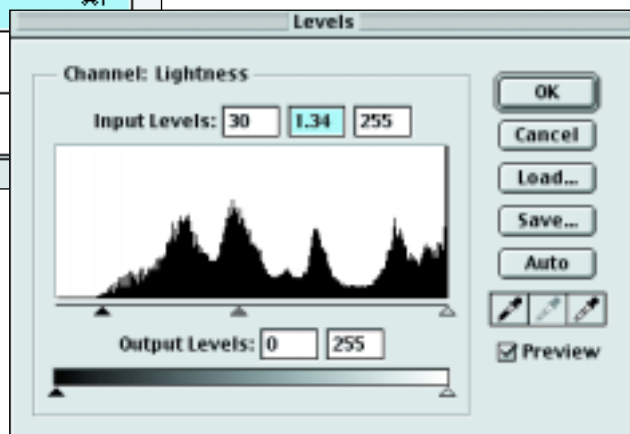


Figure 3: Select the "Levels" adjustment from the Image menu to adjust brightness and contrast.



Figure 4: Dragging the black slider to the right darkens all colors in the image.

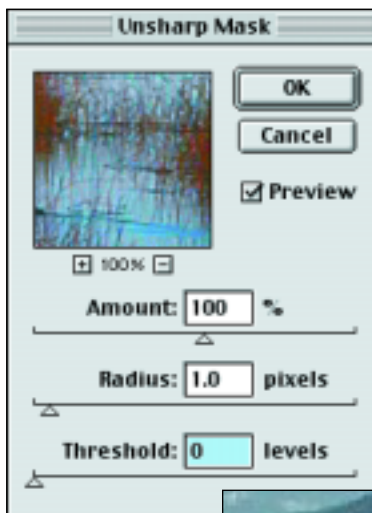


Figure 5: The "Unsharp Mask" filter increases the contrast between neighboring pixels.



Figure 6: The original image.

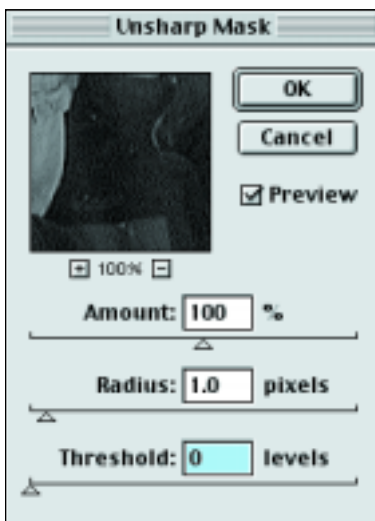


Figure 7: Dark areas become grainy when 100 percent sharpening at a 1-pixel radius is applied.

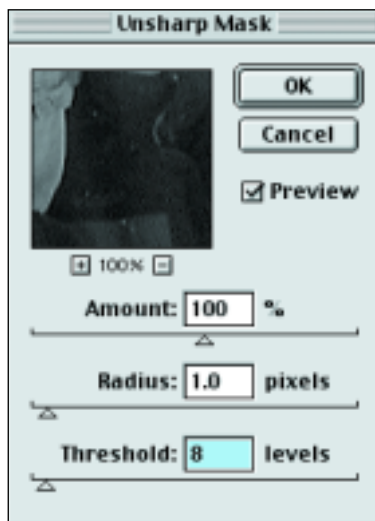


Figure 8: The "Threshold" slider will tell Photoshop to sharpen only the contrasting pixel colors. Increasing this will eliminate graininess, yet edges remain sharp.



Figure 9: After sharpening, colors remain true to the original.

CONTINUED



Figure 10: The bright blues of the sky and water in this image are pleasing.



Figure 11: Converted to grayscale directly from RGB, the bright blues become a medium, muddy gray.



Figure 12: The Lab Color conversion image is crisper because the water and sky are brighter.



Figure 13: Occasionally a color image defies conversion. Try converting the image to Lab Color first.

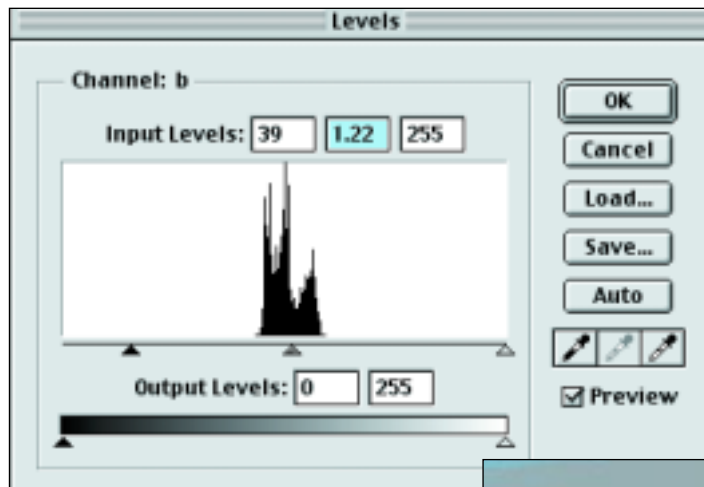


Figure 14: Adjust these channels with a "Levels" adjustment.



Figure 15: Highlight the appropriate channel, in this case the "B" channel, to boost the blue colors in the image.

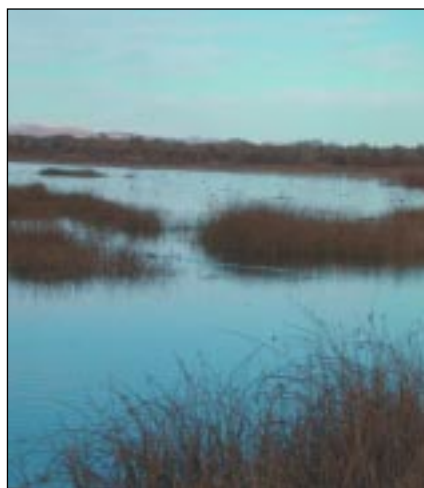


Figure 16: After you have adjusted the color, turn the eye on the Lab channel and view the results.

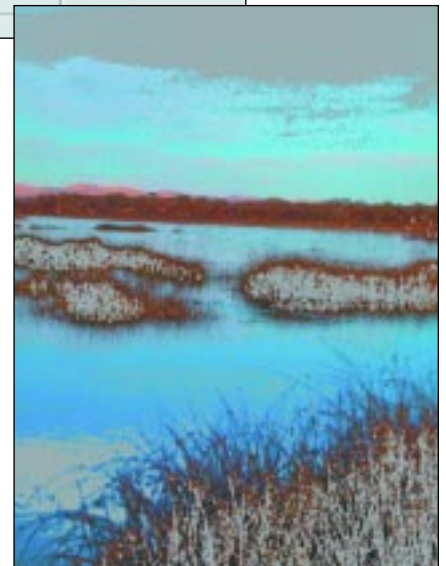


Figure 17: The Gammut Warning displays non-printable colors as gray. Return to the adjustment tools to tone down the offending colors.

Color) and highlight the lightness channel. Next, change the image mode to grayscale (*Image, Mode, Grayscale*).

Compare the Lab Color conversion in **Figure 12** with the RGB conversion in **Figure 11**. The Lab Color conversion image is crisper because the water and sky are brighter. Even though the conversion from RGB is an acceptable image, the conversion through Lab Color is truer to the original seen in **Figure 10**.

CONVERTING FILES TO CMYK

The single most difficult task for any printing professional is to get what we see on the computer screen to appear the same when printed. Most printers print in CMYK. However, we view our images in RGB. The first thing we must do is calibrate our computer monitor.

Use the Adobe Gamma control panel to calibrate your screen. The step-by-step instructions will walk you through the process. Your printer may have its own calibrating software; in this case you should follow the manufacturer's instructions.

We should manipulate our images in RGB mode because our monitors are RGB. That way we are viewing the exact colors we are manipulating. Also, many of the filters and image adjustment tools are only available in RGB.

A third reason why we should edit our images in RGB mode is because RGB images are three-quarters the size of CMYK. Larger file sizes can result in slower filter and image adjustment processing. Many scanners default to saving files as CMYK. You may want to change the default setting to save your files as RGB instead.

Once you have an acceptable image in RGB, preview what it will look like in CMYK (*View, Preview, CMYK*). This is how your image will appear when converted to CMYK. If you are using bright or fluorescent colors they will change to muted versions of those colors. In fact, unless you are using specialty inks, you should stay away from colors that are too bright.

CONVERTING FILES THROUGH LAB COLOR

Most of the time Photoshop does a decent job converting your colors from RGB to CMYK. But every once in a while you will have a color image that defies conversion (see **Figure 13**). When this happens try converting the image to Lab Color first (*Image, Mode, Lab Color*).

Since the *A* channel contains the green and magenta information, in Lab Color green information is white and magenta information is black. Similarly, on the *B* channel the yellow information is white and the blue information is black. If we adjust these channels with a *Levels* adjustment we can tweak the colors (see **Figure 14**).

Because Lab Color has magenta, green, blue and yellow instead of just red, green and blue we can achieve truer color adjustments in the channels palette.

To start, let's highlight the appropriate channel. In this case I chose the *B* channel (see **Figure 15**) because I want to boost the blue colors in the image (*Image, Adjust, Levels*).

In the *Levels* dialog box drag the black slider to the right to darken the gray information in this channel. Make sure the middle gray slider is still in the middle to avoid adjusting or shifting the yellow information. Turn the eye on the Lab channel and view the results (see **Figure 16**).

After we have adjusted our image in Lab Color mode it is time to convert to CMYK. Again, preview your image in CMYK (*View, Preview, CMYK*). You should see less change in the colors.

If you are still concerned, turn on your Gammut Warning (*View, Gammut Warning*) to see if you have any non-printable colors. Non-printable colors will appear gray (see **Figure 17**), meaning that you have saturated your colors too much and they won't print as you see them on screen. You should return to your adjustment tools to tone down the offending colors.

The final step for this color conversion is to change the image mode to CMYK (*Image, Mode, CMYK*). Your image is now ready to print.

Note: Only convert to CMYK when you have finished manipulating the picture. Because we lose color information in the process, we should never reconvert our images to RGB.