PROFESSIONAL PHOTOSHOP®

FIFTH EDITION

THE CLASSIC GUIDE TO COLOR CORRECTION

DAN MARGULIS

The landmark book completely revised for the age of digital photography

Professional Photoshop

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Peachpit Press

sky darker overall, which is good. But where whites meet reds in the Canadian flag (and similarly in all other flags), the transition is a crisp and immediate one. That calls for conventional USM. Yet the three nearest flags have relatively large blocks of similar color. To get a believable ripple, hiraloam would be better.

Figure 6.9B is conventional USM, done in RGB at settings of 450%, 1.0, 12. The hiraloam competition is in Figure 6.9C, at 50%, 20.0, 12. Both add considerable pop to the original, but in very different ways. Choosing between the two is like choosing between good color and good contrast, or between the spaghetti and the sauce. Successful sharpeners are swinish. We want both.

If you want to combine the two methods, the conventional USM has to come first, as hiraloam may bring out noise just enough for low-radius sharpening to notice it. Also, we need slightly lower settings for each than if they were applied by themselves, as to some extent the two reinforce one another. The result should be something like Figure 6.9D, which combines the crisper flags of Figure 6.9B with the better sky of Figure 6.9C.

Sharpening can be carried to extremes. With an infinite amount of time, you can test a cascade. You might try an *ultra*-high Radius sharpen, say a 100.0 Radius coupled with a 20% Amount, and then do hiraloam and then do conventional. It works sometimes. However, being aware of blending possibilities provides a bigger bang for the buck.

Beware of Presharpening

Applying USM to an image that somebody else has already tried to sharpen can be a frustrating experience. Artifacts of the first sharpening may be pronounced enough that they can't be excluded even with a high Threshold.

The somebody else who does this is nowadays quite likely to be a machine. If you are acquiring images through a camera manufacturer's module or through Camera Raw, light sharpening may be being applied by default. Check for it, and turn it off!

So Much for Newton's Third Law

The introduction of blending modes comes at a fortuitous time. The end of our discussion of the seagull of Figure 6.7 was really the end of the first part of this book. Further adventures lie ahead. They're important, but what got us up to this point is indispensable.

Let's jump ahead, and talk about how we will correct the original shown in Figure 21.1A. Inasmuch as the book has but 20 chapters, it is problematic to steal a glance at something in the 21st, but discuss it we must. How do we propose to correct an image we've never seen of an unknown subject that was shot when we were not present?

I can answer this.

We will try to make it look more like what a human would have seen if the human was in the position the camera was. We will seek out the lightest and darkest significant points and set them to the most extreme values that our process can hold. We will place the most important parts of the image in steep parts of the curve; we will consider whether RGB, CMYK, or LAB is the place to do the work; and we will make an intelligent decision about sharpening.

These rules will be as true for Figure 21.1A as for any other image we have worked on or ever will. If we don't follow them, we can't possibly produce professional work. People who do follow them will beat us every time.

From now on, we'll be looking at methods that work some of the time, but not always. Many of them involve blending, a topic that

Figure 6.9 *(opposite) Different styles of sharpening the original, top. Second from top, a conventional sharpen with a 1.0 Radius. Third from top, an alternate version with a Radius of 20.0 and a low Amount of 50%. Bottom, a version combining the middle two.*


A


B


C


D

will take us through the next several chapters. Here's a first foray into it.

For every action, said Newton, there is an equal and opposite reaction. While this is good physics, it's bad unsharp masking.

USM compares the original to a blurred copy of itself. Those parts where the original is darker (see Figure 6.6A) are made darker still. Areas where the original is lighter (Figure 6.6C) are lightened more. That equal and opposite reaction needs to be squashed.

In Figure 6.9B, conventional sharpening placed a dark halo in the red areas of the Canadian flag and a light one in the adjoining sky. The two are equally evil. Black lines in a red flag look bad, and so do white ones in a blue sky.

To its left, though, the flag of the province of Ontario sings a different song. Its dark blue can swallow a black line a lot easier than the sky can quaff a white one.

It turns out that there are many such cases, probably even the majority of images, where dark halos are more palatable than light ones. It happens practically any time that a relatively dark object butts a medium-dark one. The concept is so vital to image quality that by 1986, every commercial drum scanner was able to use its massive (for those days) 16K of RAM to control the two kinds of halos on the fly, without going through the shenanigans that Photoshop requires of us two decades later.

The barrel cactus of Figure 6.10A is an example. We can forget about hiraloam; this image is full of well-defined edges, particularly at the business end of those spines, you may take it from someone who once fell into such a cactus in an effort to evade a conversation with a rattlesnake.

Dark halos around these spines are a good thing—they make them stand out. Light halos on the inside are bad, as they wipe out the characteristic dark red.

I offer Figure 6.10B, which required several steps, as a reasonable response. Figures 6.10C, 6.10D, and 6.10E are examples of things to avoid.

Disk space and RAM permitting, it's a good idea to make subjective edits like USM on a separate layer. You can always decide later that you've gone too far, and reduce the layer's opacity. I, in fact, generally go too far *deliberately,* reasoning that I can always reduce the opacity but I can't increase it beyond 100% if I decide that it isn't sharpened enough. We don't ever want to be in the position of having to sharpen conventionally twice, because sharpening an artifact can be deadly.

For the following procedure, the extra layer is not a recommendation but a requirement.

- Layer: Duplicate Layer.
- Give the new layer a stiff jolt of conventional USM. Hiraloam is irrelevant because light hiraloam halos are not usually objectionable, but light conventional ones often are.

Stumbling Blocks: Too Much, Too Soon

•When to sharpen. Generally, one saves sharpening for last, but this rule isn't firm. The reason to avoid sharpening early is that a later curve may exaggerate the halos too much. However, if you think the image needs just minor tweaks, it won't hurt to sharpen beforehand.

•Doesn't sharpening change the highlight/shadow values? Halos can indeed be lighter than normal highlights and/or darker than normal shadows. This means nothing. We choose highlights and shadows not because they are literally the lightest and darkest points of the image but because they are the lightest and darkest *significant* points. A sharpening halo can't be considered significant detail.

•Luminosity blues. Running a couple of chapters ahead, several readers have tried to sharpen a single channel and then use Edit: Fade>Luminosity to avoid color shifts. This is a sensible idea that doesn't happen to work. Instead, sharpen the channel(s) on a new layer set to Luminosity.

For this image I chose robust values of 450%, 1.2, 2. This produced Figure 6.10C, with the predicted dark halos around the spines and deterioration of the color and detail inside them.

The Layers palette has a mode indication to the left of the opacity setting. The default setting is Normal, which means that we see the top layer, not the bottom. The bad news is that there are 22 other possible settings as of Photoshop CS2; the good news is that a dozen of them will be referred to in this book as frequently as *Principia Mathematica*, which is to say, not at all.

Two of the useful ones are Darken and its sister Lighten. They are misnamed; Darken should really be called Don't Lighten. It works exactly as Normal does, except that no pixel is allowed to get lighter. So,

- Set the mode of the top layer to Darken.

The only difference between the two layers is the sharpening halos. The dark halos, being darker than the bottom layer, are preserved, but you may kiss the light halos good-bye, inasmuch as the bottom layer cannot be made lighter anywhere.

We are now at Figure 6.10E. The light halos are completely gone, so the image looks unnaturally dark.

- With the top (Darken mode) layer still active, make another duplicate layer.

The top two layers are now identical sharpened versions, both set to Darken mode. The overall appearance of the image is unchanged.

- Change mode of the top layer from Darken to Lighten (in this instance, changing to Normal would produce an identical result). Doing so doesn't lighten the dark halos, which are the same on the top two layers. It does restore the light halos that were disallowed in the middle layer by Darken mode. Overall appearance has now reverted to that of Figure 6.10C.
- Change opacity of the top (Lighten mode) layer to 50%.

Lightening and darkening have now been separated onto two independently controllable layers. I left Figure 6.10B as is, but could have tweaked the opacity of both sharpening layers further. Another possibility is to use not just different opacities but different sharpenings on the lightening and darkening layers. If the lightening half of the sharpening needs (in effect) a lower Amount, it probably could use a lower Radius as well.

Figure 6.10D is another advertisement for keeping channel structure in mind. It was prepared exactly as above, except all work was done in RGB, whereas Figure 6.10B was converted to CMYK before sharpening. The RGB version isn't bad, but the CMYK seems deeper. Without all this layering, RGB and CMYK sharpening would give almost identical results.

Inkjet and Other Printers

All but the noisiest images improve with judicious sharpening. The form of output, though, determines how much to use. This chapter has assumed offset printing. Here are three common variants, in order of poorest to best print quality.

- **Newspaper printing** is so inherently low-contrast that it calls for a heavier hand with USM, especially in the Amount field. Newsprint doesn't facilitate bright whites or rich blacks, so halos are less visible.
- Treatment of **large-format printers** depends on the use of the product. If it will be viewed at a distance, sharpening can be quite heavy. But if it also may be viewed closely (for example, if it is posted at a bus stop), you may wish to reduce the Radius.
- Inkjet and other **photo-quality printers** produce a softer look than offset, so in principle they can be sharpened more. However, they also support whiter whites and darker blacks. This combination suggests a slightly higher Radius, and lower Amount, than you would use for offset printing.

And, of course, if somebody else will correct the file after you're done with it, you shouldn't sharpen at all.


A


B

A Few New Wrinkles

USM offers extraordinary opportunities both to improve believability and to mess up the image beyond recognition. Its dangers can be finessed, provided we are willing to treat unsharp masking as a stiletto, not a shotgun. Photoshop can do everything we need, but sometimes requires kludgy two- or three-step operations that would not be necessary with a better implementation.

To put everything in, as it were, better focus, let's return to the cause of the worst catastrophe of the chapter. As noted back then, facial images, particularly those of women, are a real minefield, because any detail we bring out in the skin is likely to be something that the model wants us to see about as much as love handles or varicose veins. Figure 6.2B proved the point.

And yet a certain amount of USM is clearly wanted. Check out Figure 6.11 for an illustration of how makeup artists and drum scanner operators think alike.

There are two distinct faces and two distinct styles of sharpening going on in both, the two kinds discussed in this chapter. The whites of the eyes are of course lighter than skin, so they need a dark halo. It would also be nice to get a light halo inside the eye, but the cosmetics industry hasn't yet figured out how to accomplish that; give them time and they'll probably do it with Botox.

Figure 6.10 *Opposite top, the original. Opposite bottom, a version sharpened by emphasizing darkening more than lightening halos. Below, C uses the same sharpening settings as version B, but with no reduction of light halos. E is the same image with the light halos removed completely. D is an RGB repetition of the steps done in CMYK to produce version B.*