

Making Two Ends Meet

Topics: Overlay blending through a blurred layer mask as a means of augmenting highlight and/or shadow detail.

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Author's comment: Images that are half light and half dark proved to be a particular problem in the age of digital photography. Photoshop's Shadows/Highlight command was a step in the right direction, but this new method was much stronger. Today's Bigger Hammer action, a part of the PPW panel, derives from it.

This archive, to be released over several years, collects the columns that Dan Margulis wrote under the *Makeready* title between 1993 and 2006. In some cases the columns appear as written; in others the archive contains revised versions that appeared in later books.

Makeready in principle could cover anything related to graphic arts production, but it is best known for its contributions to Photoshop technique, particularly in the field of color correction. In its final years, the column was appearing in six different magazines worldwide (two in the United States).

Dan Margulis teaches small-group master classes in color correction. Information is available at <http://www.ledet.com/margulis>, which also has a selection of other articles and chapters from Dan's books, and more than a hundred edited threads from Dan's Applied Color Theory e-mail list.

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Making two ends meet

When half the image is blown out and the other half falls in deep shadow, normal correction methods don't work. Photoshop CS's Shadow/Highlight command helps, but for maximum flexibility, try a blur and a blend.

The left-hand side of the span shown in Figures A and B meets the backside of Venice's Palazzo Ducale, the most opulent building in the world in its time. On the right, it hits a dungeon of the darkest and most depressing category.

After standing trial in the palace, prisoners would be led across the water. On their way, they would be tortured by one last, limited glimpse of the Grand Canal before being thrown in a cell to rot. Consequently, it is known as the Bridge of Sighs.

This area of Italy is the fatherland of all commercial publishing, printing, and typography. All originated elsewhere, but the Venetians were the first to make a business of them, in the late fifteenth century, and tough businessmen they were, too. In fact, those who challenged the government-approved printing monopolies occasionally found themselves heading the wrong way across the Bridge of Sighs.

Brilliant sunshine goes hand in hand with harsh shadows, but when the two meet in one picture the result can be disagreeable. Figure B corrects the problem with an unusual type of blend.

This kind of image provokes sighing even today, because the left half is in strong sunlight and the right side is in shadow. The camera, therefore, saw the picture as half too light and half too dark. You and I wouldn't have, because the human visual system is a great deal more tolerant of weird lighting conditions than a camera is. Instead, if we are fortunate enough to be in Venice, we see something more like Figure B.

There was never an easy way of fixing wildly over- and/or underexposed pictures until Photoshop CS paddled in. Its Image>Adjustments>Highlight/Shadow is one of the more significant additions in the program's history, but it isn't exploited to the extent it should be. Most people are afraid to venture far from its default setting, which is no surprise since the key field is both counterintuitive and undocumented.

Next time, we'll take a look at the structure of the command, but to use Shadow/Highlight properly, you need to understand what it takes to get by without it. And so, for the remainder of this column, forget Shadow/Highlight: we'll do things the hard, but ultimately more rewarding, way.





Figure C's bridge, produced by curving through a luminosity mask, gets darker but loses contrast when compared to Figure E in these magnified versions. Below, a piece of the uncorrected image (D).



The weakest goes to the wall

The better we get at Photoshop, the less we need selections. If a picture is too light, or too green, or even too green in the shadows and too red in the highlights, one set of curves can usually handle the problem.

Images that are too green on the right side and too red on the left are, as they say in Venice, another pair of sleeves. Neutralizing both sides is ordinarily just too big of a move away from the art's spirit, and requires a selection.

Similarly, a picture that is simultaneously too light and too dark isn't a good candidate for global correction. Sure, if we want better highlight detail, we can get it with a curve, at a horrible price—the shadows will close up even more. Even if we decide we can leave the shadows alone and not lighten them, we need some way of restricting the darkening to the lighter parts of the image.

This turns out to be easier said than done. The likeliest possibility would be to concoct a mask and apply the darkening curve through that. For example, the keyboard shortcut Command-Option-~ loads the image luminosity as a mask, which sounds like what we want. The lighter the area, the more strongly it gets selected, and the more it will be affected by a subsequent curve or whatnot.

A luminosity mask might work if the highlight consisted of a snowbank. But a lot of what we take for a "highlight" in the Bridge of Sighs is nothing of the kind. The bridge itself may be white, but the fine lines in the ornamentation are more like a midtone. They won't be fully selected by the mask, they won't darken as much as the background marble, the difference between background and ornament will be reduced, and we'll get Figure C.

What's needed is something like Figure E, which darkens the detailing as much as the background even though it's not a highlight, yet avoids excessive darkening of large areas else-

where. It's a snap to do it if you know the secrets of Shadow/Highlight, and without Curves, Levels, or a selection. We only need a blur and a blend.

Fetch me my rapier, boy

Rather than show the intermediate steps, we'll work with an easier example. We lay our scene in fair Verona, an hour by train from Venice, and ten minutes by foot from the balcony where, it is reputed, Juliet let Romeo know how she felt about boys who use the Brightness/Contrast command.

The shadow and highlight in this fourteenth-century tomb are two houses unlike in dignity. The whole bottom half of Figure F is too dark. But if we try to lighten the whole picture, the sky and much of the spire will wash away. If we instead load an inverted luminosity mask prior to the correction, we'll steam into the same contrast-busting complication that sank us in Figure C. What little distinction there is between the black latticework in the foreground and the lighter background needs to be maintained, if not intensified. Yet any selection based on darkness will select the blacks more than the background, making it impossible to hold the relation between the two.

The solution starts with some kind of black-and-white rendition of the image. Technically, the best choice is the red channel of the original RGB (the red always has the best rendition of a sky, which may be important here) but any channel will work, including a straight B/W conversion of the file.

I used the Command-Option-1 shortcut (load the first channel, namely the red, as a mask). Then, Select>Save Selection, which gives us the option of saving into a new channel of the same document, or as a separate file. The choice makes no difference here. Also, for reasons that will shortly become obvious, the new channel needs to be inverted. I did so immediately although it could have been inverted at sev-



Figure G was produced from Figure F with a single blend: J was applied to F in Overlay mode. Figure J is an inverted, blurred version of the original red channel (H). The blur has to be big enough to wipe out the black iron latticework.



eral later points in the process.

Those who use channels as masks know that a slight blur is helpful in hiding any artifacts that may arise when the image is corrected through the mask. If you want to be more ambitious, however, you must be like the plumber who announced that he only needed two tools: a bigger hammer and a bigger wrench.

The doge's in the details

The latticework is plainly visible, and now much lighter than the background, a fatal flaw for present purposes. It's time for the bigger hammer. No wimpy blur, but a total wipeout—a Gaussian blur with Radius of a whopping 16 pixels. Arrivederci, latticework.

We could try using Figure J as a mask, but there's a better way. Going back to the original image, we create a duplicate layer. With the composite RGB image visible, using Image:

Apply Image, we apply the blurred monstrosity in Overlay mode, which lightens the underlying image wherever the channel being applied is lighter than a 50% gray. Everything that used to be a shadow is now lighter than 50% gray in said channel, because we inverted it after blurring. Wherever the blend channel is darker than 50% gray—in other words, things that used to be light—it darkens what's underneath.

If we want to affect the shadow half of the image only (which was my original plan), we change the layer mode to Lighten, which stops any part of the image from getting darker. Otherwise, there highlights darken as well. But in this case, I was quite happy to see that happen, because it produced extra detail in the spire. So I decided to just use the image as it was, flattening immediately after the Overlay step.

An accurate blur is the key to this approach. Look closely at the spire in Figure G. It's surrounded by a light halo, the result of the big blur that in effect widened the spire before us-



K



L

The choice of blending channel makes a difference. Figure K has the familiar problem of harsh highlights and shadows; the other two correct it with blurs and overlay blends. But L bases the blur on the red channel. M, an entirely different look, uses the blue.

I then inverted and blurred this fourth channel, just enough to eliminate all detail in the bridge. This took a Radius of 11.5 pixels. Then, I created a duplicate layer, and applied the fourth channel to it in Overlay mode. This darkened the highlights as planned, but lightened the shadows far too much. To stop that, I changed the layer mode to Darken, and began the procedure again to try to improve the shadows.

This time, I saved a copy of the green into a fifth channel.

The red would not have been suitable, because the sky and the blue posts in the canal would have fallen into the shadow half and been lightened.

The dappling in the shadow areas was so pronounced that I needed a 25-pixel Gaussian blur to eliminate it. Then, I made another duplicate layer and applied an inverted copy of the fifth channel to it in Overlay mode. Since the objective was to lighten the shadows and not to make the highlights even darker, I changed this layer's mode to Lighten. As before, the lightening was too much of a good thing, so before calling it quits I reduced the opacity of the third layer to 40%. I kept the second layer, the one that darkened the highlight, at 100%.

Many, if not most, examples of this annoying category of images can be handled with the Shadow/Highlight command in a fraction of the time to do the overlays shown here—provided you fathom why the Blur field therein is critical, which hopefully this column has made clear.

But the method shown here is more powerful and more flexible. And it's not



M

ing it to lighten. The halo seems acceptable here, but it certainly shouldn't be any bigger. The blur had to obliterate the latticework, true, but we need to be careful not to go farther than necessary.

Two blurs and two blends

In the Bridge of Sighs image, highlight detailing is considerably finer. The dark areas in the marble aren't nearly as wide as the ironwork we just obliterated in Figure J. Therefore, a smaller Radius setting in the Gaussian Blur filter is appropriate. Unfortunately, the shadow detail on the side of the prison is rather coarse. So, this time we need two different blurs, two different channels, and two different layers.

For the highlights, I saved the red into a fourth channel. Because the light areas of the image are basically neutral, it wouldn't have made any difference for the bridge had I chosen the green or blue instead. But in the green and blue, the sky is a highlight also, and would have been darkened along with the bridge and palace.

just because of all the layering, blending, and blurring options. The interesting part is the choosing the channel to blur.

Don't think, incidentally, that you can just paste a copy of the entire image, blurred and inverted, on top of itself in Overlay mode. If you do, certain colors will be neutralized because their light components will darken and their dark components lighten. If you use a single channel as the overlay rather than all three, that can't happen—but the question is, which channel?

These gondoliers are to be envied greatly

For our final example, we return to the canals of the Most Serene Republic, where people have been getting about in gondole since the eleventh century. The gondolier's uniform is also traditional: striped shirt, straw hat with sash, cellular telephone. And so is the familiar problem: bright Venetian sunshine, dark shadows.

To make Figure L, I saved a copy of the red channel, and blurred it at a 17.0 Radius to obliterate the gondolier's face. Then I applied it to two duplicate layers on the original file, each time in Overlay mode. I set one of these layers to Darken mode at an opacity of 50%, and

the other to Lighten at a normal 100%.

Figure M was produced in exactly the same fashion—but saving the blue channel for the blur instead of the red. Because all red items—the face as well as the seat cushions and flooring—are much darker in the blue than in the red, this version lightened them far more than was the case in Figure L.

If, at the start of this column, you'd have been willing to settle just for more detail in the highlights and shadows, pretend you're eating in Italy. Be a bit more greedy, because now there are a lot of other tasty options on the table. Figures L and M are both much improved over the original, but they're totally different conceptions. Master this method, and you can have whichever effect you like.

Blur, blend, and stride briskly back across the Bridge of Sighs, into the palace.

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