

▶ RAW files help to reveal greater shadow and highlight details

# Expand Tonal Range

## Using A Single Image

Text And Photography  
By Linde Waidhofer

From the beginning, photography has always involved an inherent frustration. Our eyes can see an incredible range, from details in the darkest shadows to rich colors in sunlit patches—film has never even come close to recording this range. Nail the highlights, and shadow areas often turn featureless black. Expose the deep shadow detail, and say goodbye to the lighter third of the image.

As he formulated his Zone system, Ansel Adams used special development to extend the contrast range of his negatives. Years later, Galen Rowell solved the same problem with split-neutral-density filters, pushing the technique to new limits. And with the advent of digital photography, photographers have discovered that they can combine two images of a scene (one exposed for the highlight, one for the shadows) into one perfectly exposed image using the computer.

Lately, I've worked out an interesting new variation on that digital technique by combining two different versions of the same image in Photoshop in order to expand the contrast range. Only now, thanks to the ability to shoot RAW digital files, can I obtain these two versions of the image with just one click of the shutter.



1) Typical Exposure

### Creating The Image

A RAW file contains the unprocessed raw data that the camera has recorded from the sensor. When shooting and saving your images as JPEGs, the camera will apply special algorithms that affect white balance, contrast, sharpness and color, in essence, "processing" the photograph. However, with RAW files, the image is brought into the RAW converter with the camera settings, but leaves the photographer with the ability to make changes before it's opened up in a photo-editing application.

Think of a RAW file as a digital negative—not a finished image, but a wonderful starting point from which the photographer can construct a final photograph.

Let's assume you have a shot of a challenging scene in terms of contrast, with highlights and shadows just too far apart to work. Instead of going for one or the other, you may instead decide to split the difference and shoot a middle-of-the-road exposure, which normally would result in a mediocre shot. However, by creating and saving the photo in RAW, this mediocre shot can result in an outstanding image.

### Drawing Out The Details

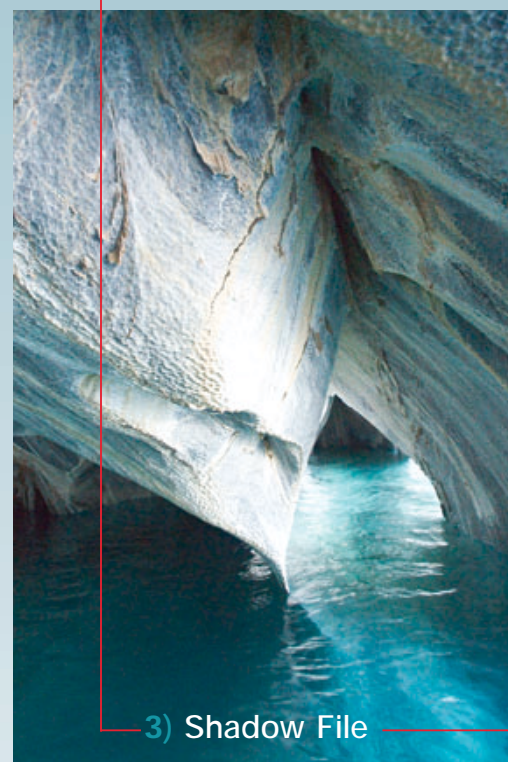
Currently, I process RAW files from my digital SLR with the Camera RAW plug-in for Adobe Photoshop (this feature is now built into Photoshop CS). I think of the process as "developing" my digital file. This plug-in allows me to second-guess decisions I made in the field. For example, I can choose a new white balance and, more importantly

for our purposes, I can vary the effective exposure as much as one to two stops. Digital voodoo? You bet. And I love it.

Although it appears magical, it's still important to protect your highlights; if the highlights are overexposed to the point that there's no data, you'll have nothing to work with on the computer, even though you shot in RAW. No data. No image. Period. Avoid this problem by judiciously consulting the camera's histogram display after an exposure. If the graph representing captured pixels overlaps the right side of the



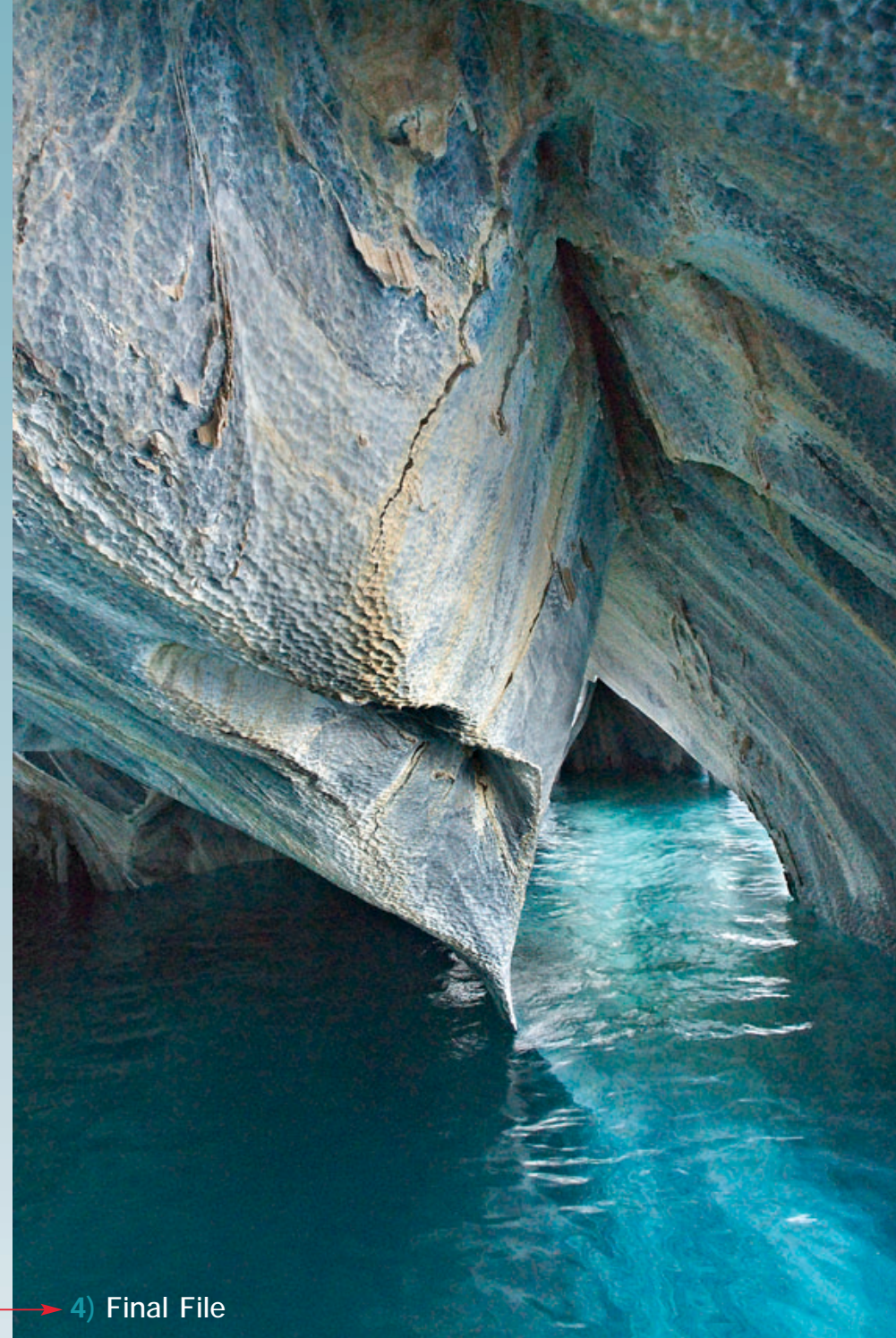
2) Highlight File



3) Shadow File

1) **TYPICAL EXPOSURE:** This is the compromise, handheld exposure from which I made my final image. Here, the shadows are too deep and murky, and lack both detail and color, while the smaller highlight areas are on the verge of blowing out—far too light at any rate, although not clipped to pure white.

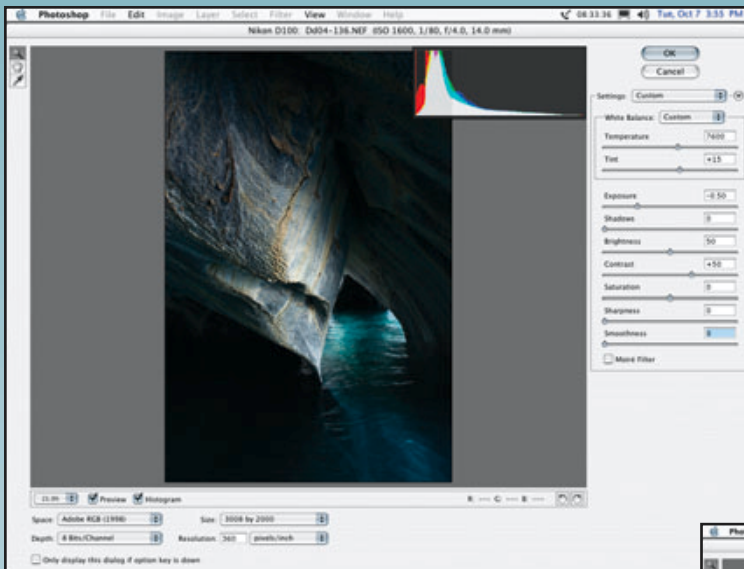
2) **HIGHLIGHT FILE:** Here, I "developed" the RAW original file in Adobe's Camera Raw to be a half-stop darker than my basic in-the-field exposure. This puts more texture and richness in the pale highlight areas of the rock.



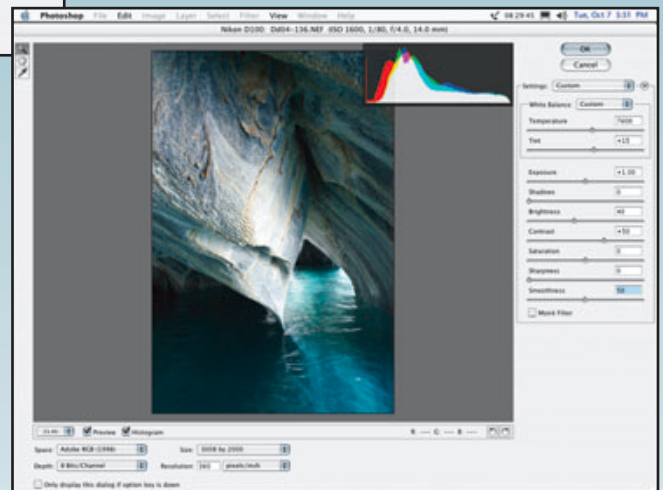
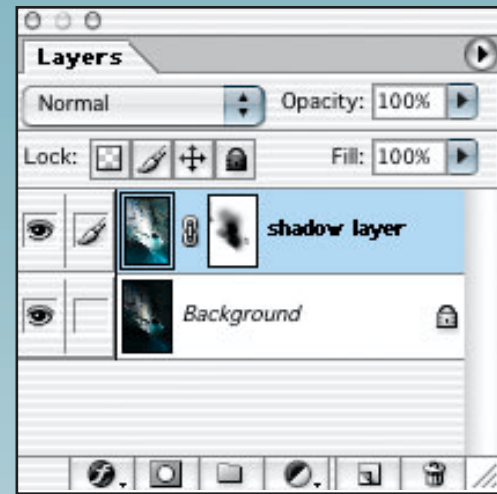
4) Final File

3) **SHADOW FILE:** Going back to my original RAW exposure, I "developed" another version of the same photo using Adobe's Camera Raw plug-in, this time making the exposure one-and-a-half stops brighter than my in-the-field exposure. This opened up the deep, murky shadow areas, the dark water and the dark rock under shadowy overhangs.

4) **FINAL FILE:** This is the final result of stacking Image 3 over Image 2 as a separate Photoshop layer and then using a layer mask to blend the best parts of both versions—the improved highlights of Image 2 into Image 3 to replace its blown-out highlights. This is a little bit analogous to using a two-stop split-neutral-density filter to balance out the contrast range of the exposure, yet it's infinitely more flexible because I can pick and choose which parts of the image to darken or lighten, at my leisure, in front of the monitor in my digital "lightroom."



▲ Highlight File



▲ Shadow File

*ABOVE: Two image files—one for highlights and one for shadows—are combined using a layer mask. Simply paint the mask to let the underlying image show through.*

to eliminate, keeping only the “best” sections of each image.

I should add that part of the beauty of this technique is that it’s completely non-destructive. Your original RAW file is still on your hard drive, untouched. If you get a new idea for interpreting this image, you can always do it again, differently. All your options are still open. But for now, you’ve

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 See: “Is Digital Better Than Film?” (Oct. ‘02)

solved the contrast-range conundrum by using a couple of the different exposures hidden in every RAW image file. **OP**



*When you shoot a scene that’s underexposed or overexposed, you’ll see a histogram—either one means you’ll have a file with no image data at one of the extremes; no amount of computer work can re-create that data.*