This series explores the process of updating your portfolio, a critical tool for promoting your business. In this second installment: scanning.

BY ELLIS VENER

Remaking your *portfolio*

PART 2: SCANNING

Scanning film correctly is more of an applied science than an art. With high-resolution, high-quality scanners such as the Epson Perfection 4990 Pro and the Nikon Super Coolscan 5000 ED and Super Coolscan 9000 ED selling for reasonable prices, and with powerful third-party alternatives to the OEM scanning software, it could make sense to do this work in-house rather than farming it out.

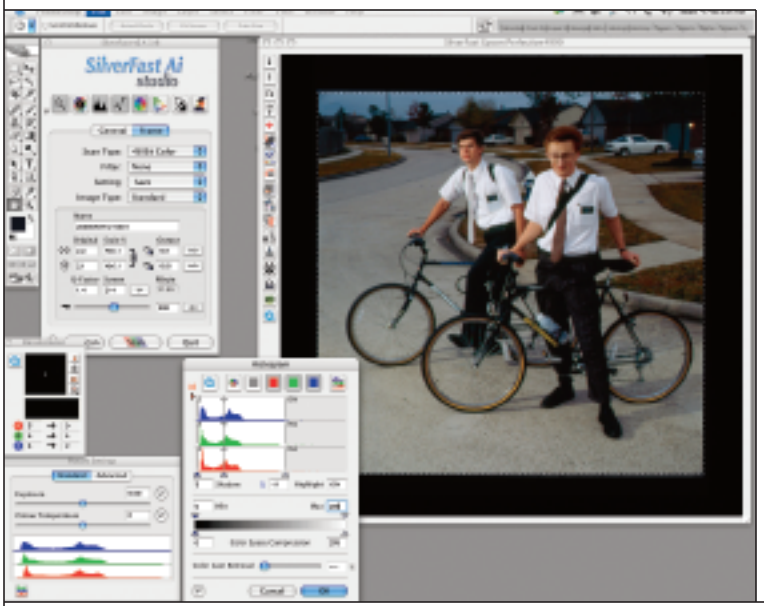
While this article specifically refers to scanning as part of a series on how to remake your portfolio, the information applies to practically any film-scanning project you plan to undertake yourself.

If you're going to do your own scans, consider these simple logistics: Install the scanner away from vibrations and electromagnetic interference; keep it out of bright light; keep your work environment dust-free and uncluttered. You'll need a staging area for handling the film, and a naming or numbering system for tracking both the film images and the scans in your archives.

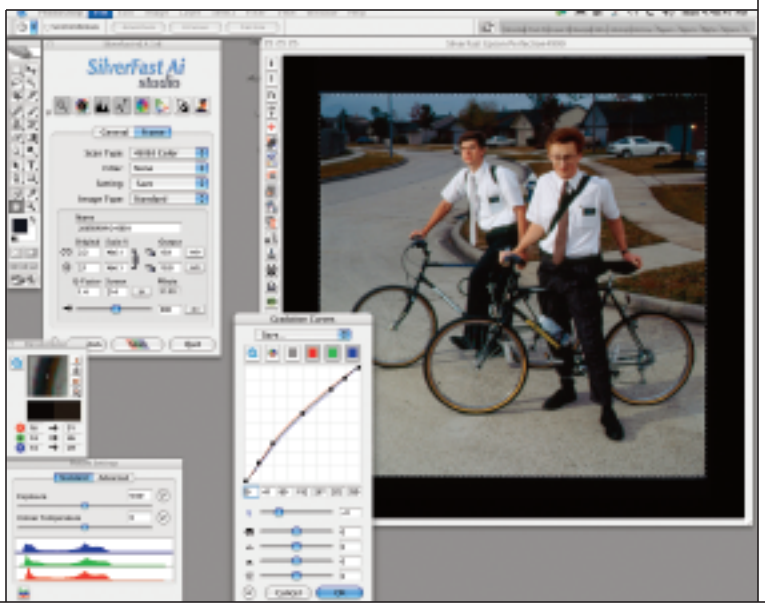
CALIBRATION AND PROFILING

After installing and connecting the scanner, decide how or whether to color calibrate and profile it. The Epson Perfection 4990 Pro software bundle includes LaserSoft SilverFast Ai 6 and Epson Scan for scanning and MonacoEZcolor for profiling. SilverFast Ai 6 is much more powerful than Epson Scan, and it also has a built-in profiling option. MonacoEZcolor is not as powerful as the high-end profiling and calibration packages, but it does a decent job overall, especially for profiling the scanner's performance. EZcolor comes with Monaco's proprietary 5x7-inch print and a 4x5-inch transparency IT-8 targets, which can be used only with Monaco software (the necessary reference files are encrypted). Nikon Coolscans come with Nikon Scan 4 software, which doesn't have a profiling option.

Here you see the full histogram information for all three channels in SilverFast Ai 6 Studio.



Adjustments in the Gradation Curves dialog can help after global correction in Ai 6 Studio.



©Ellis Vener

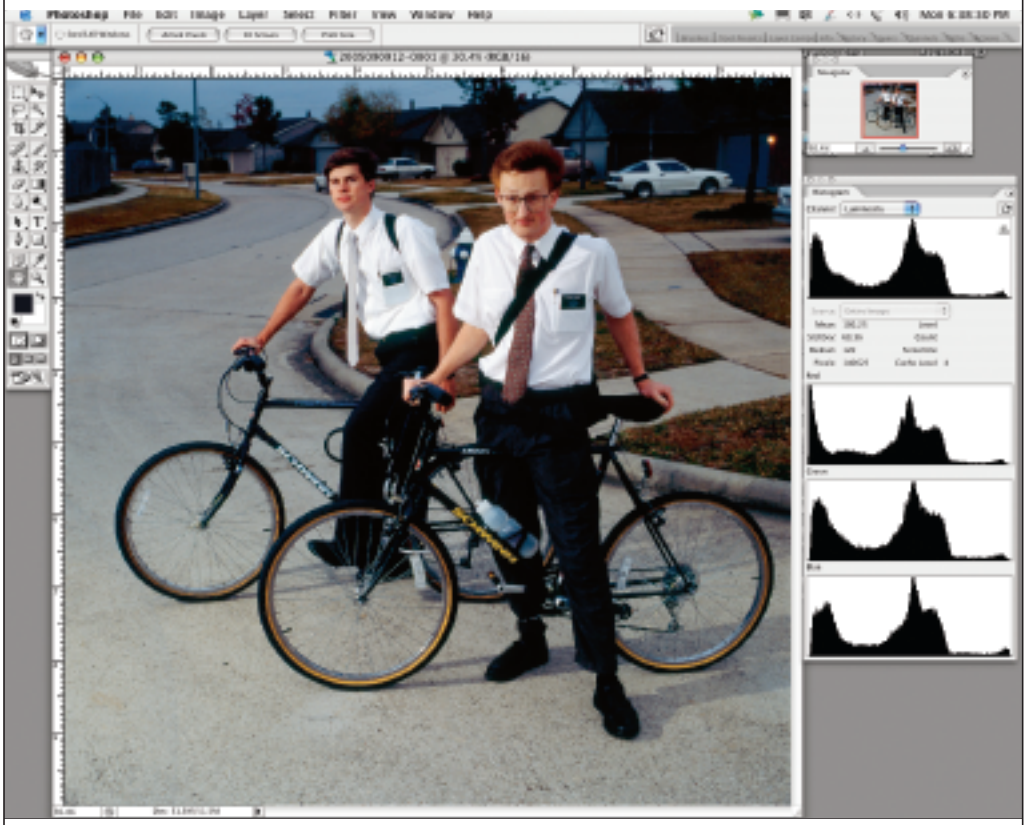
(Left) The original Nikon Super Coolscan 5000 ED scan of 35mm Fujifilm Provia 100F transparency. (Right) The image has undergone Auto USM and GANE (grain reduction) using SilverFast Ai 6 Studio, PhotoKit Capture Sharpener filter in Photoshop CS2, and additional spot and scratch checking, with fixes made using the Healing brush.

If you choose not to use Monaco-EZcolor to create your profile, and do choose SilverFast Ai 6 as your scanning software, you can use a LaserSoft IT8 target. Additional IT8 target sources include Hutchenson Consulting (www.hutchcolor.com), Wolf Faust (www.targets.coloraid.de), and Kodak, Fujifilm, and others through such suppliers as B&H Photo (www.bhphotovideo.com) and Adorama (www.adorama.com).

Factory-installed profiles do an okay job, but like a one-size-fits-all garment, the profile might fit, but not necessarily well. Profiling the performance of your specific scanner always yields a custom fit, making much easier work of matching the scan and final print to the original. Custom profiling doesn't take long, and rarely needs to be done more than once on a scanner.

Fujichrome films have a slightly larger color gamut than Kodak transparency materials, so IT8 targets on Fujifilm transparency material also encompass the Kodak Process E-6 gamut. If you use a Kodak-based target, Fujichrome transparency materials might exhibit less color saturation than the original transparency, depending on the subject matter and original lighting. Are you really finicky? Try Wolf Faust's IT-8 targets for specific families of Fujichrome films.

If you'll be scanning only color negatives, skip the profiling step—there's no way to create a good profile for color negative materials.



The histogram of the scanned image, now opened in Photoshop CS2, shows distribution of tones in the Luminosity of all three color channels.

SOFTWARE

Because I use different makes of scanners, I decided for simplicity's sake to standardize by using only SilverFast Ai 6 Studio software. Ai 6 comes with built-in Quicktime video tutorials, explanations of every control, and a host of features you might sometimes need. The comprehensive manual that's also available can be a little difficult to understand (the translation from German to English isn't great). VueScan Professional is another third-party scanning software option (www.hamrick.com).

COLOR SPACE

You must choose a color space for your scans. Adobe RGB (1998), a common choice for a relatively large device-neutral workspace, contains most but not all of the colors that E-6 and Kodachrome films can reproduce. If getting everything possible out of your film is critical to you, there are two options. The very large ProPhoto color space is gaining in popularity for digital camera users, but it's way bigger than what film can capture for scanning (see Andrew Rodney's September 2005 color management column in *Professional Photographer*). To me, the better choice is the one designed specifically for scanning film, Ekta Space PS 5, J Holmes, created by the landscape photographer and color expert Joseph Holmes. Ekta Space is just large enough to contain every color that can be recorded on E-6 films in normal photographic situations. This free download (www.josephholmes.com/profiles.html) comes with an 18-page PDF document on color space theory, and an explanation of why, if you care about the accurate reproduction of color, it's just not a good first step to "smash" a large color gamut into a smaller one.

HISTOGRAM

When you do your prescan, the histogram tool becomes vitally important. It quantifies the image's exposure range and color information. In Silverfast Ai 6, to get the full range of information, drag in the black point and white point indicators from 0 and 255 to just beyond the end of the image information displayedby the "mountain range" of the histogram. Peaks and valleys in histograms show only the relative amount of color or density at a particular level. Usually there's a small amount of data—fine detail—on the tail ends that barely show up in the histogram. At the same time, you want to keep the output range at 0 and 255, respectively. As in Photoshop Levels, adjusting the middle slider changes the overall brightness and separation of the mid-tones.

MANIPULATION & CORRECTION

In SilverFast Ai 6 Studio, you can view and manipulate the levels of the red, green and blue channels individually. I use these separate histograms to make sure I'm not clipping any of the channels. After this stage, you can, if you desire, color correct or distort the color of the scan. SilverFast Ai Studio has two tools for this, Global Color Correction and Selective Color Correction, which allows you to target and adjust specific colors. Additionally, when using the Selective Color tool, there is an option to do your corrections using masked areas in up to four layers. You can create and use

as many masks per layer as your system's RAM will allow. Of course you can also do this kind of adjustment later in Photoshop.

NOISE

There are two sources of noise in scanned images, electronic noise from the process and noise from the grain of the film. Purely electronic noise manifests as random flecks of bright color that's most evident in the dark tones of the image. Use the software's pixel zoom display in the Densitometer and carefully examine the RGB tonal values pixel by pixel. If the noise level is not acceptable, one solution is to rescan the image using the multi-pass feature of the SilverFast software. The process cancels out these random bits with the real signal. Warning: the multiple-scan approach greatly increases the per-image scan time, so use it only when necessary.

Noise from film grain occurs in the interaction of the grain structure in the film with the particular light source used in the scanner. Diffused light hides the grain structure (and some dust), while specular light—LEDs in high-resolution scanners—makes the grain structure more pronounced. SilverFast Ai 6 Studio has an optional tunable grain filter, GANE, which is the last control used before actually scanning the image. Perceptually, a little graininess is a good thing. LaserSoft recommends using a GANE intensity setting lower than 80 percent with high-resolution scanners. If you don't like what GANE does, try noise suppression software like Noise Ninja from PictureCode. You can also try the built-in grain and noise reduction filters in Photoshop CS and CS2.

RESOLUTION

Should you scale the scan for the immediate intended output, or go for the full optical resolution? With images on 35mm film, I scan at the highest optical resolution. But I rarely need a 4,800-ppi scan of images on medium- and large-format film. The resulting files would be very large indeed. If your goal is to output large exhibition-grade prints, get your images professionally drum scanned.

OTHER ADJUSTMENTS

Unsharp masking (USM) and sharpening can also be applied in the scanning software, but I prefer to do it later in Photoshop with the PhotoKit Sharpener plug-in (www.pixelgenius.com).

As a final step in scanning, turn on the Digital ICE technology—it's a sanity saver. It largely solves the eternal and tedious work of clearing dust from the image. Still, it's a good idea to take a mowing-the-lawn approach to inspecting the image in Photoshop for flaws ICE might have missed. With your image at 100 percent, start your inspection in the upper left corner of your image (the home key takes you there) and page down. Move one column across and page up, then one column over and down, until you've viewed the entire image, and have used the Healing Brush in Photoshop CS or CS2 to remedy the remaining wounds.

This process sounds like a lot of work, but you can do it relatively quickly. The only major flaw I found in the Epson Perfection 4990 in scanning film is that the 4x5 film holder doesn't hold the film flat enough. With the exception of not being able to directly profile the Nikon Super Coolscan 5000 using Nikon Scan, I found few nits to pick with this device, either.

Both these reasonably priced scanners do a fine job, but neither the Epson Perfection 4990 Professional nor the Nikon Super Coolscan 5000ED can match the best results from a really high-quality drum scanning service like West Coast Imaging (www.westcoastimaging.com) or NancyScans (www.nancyscans.com). Or you could invest thousands in a Hasselblad or Imacon Flextight. Getting the scan right minimizes the amount of work you will have to do in Photoshop to get your image to print the way you want it to, and speeds the processes of archiving and printing. ■