

Digital Restoration from Start to Finish

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CHAPTER 3

Software for Restoration

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CurveMeister2

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PixelGenius PhotoKit Sharpener

Neat Image Pro+

Color Management

Color management software is at the top of my software list, because without good color management, everything else becomes much harder. You need to manage your system's color if you want to get quality results.

Why should color management matter? Walk into any consumer electronics store and look at the wall of TVs they have for sale. They're all tuned to the same program, but no two of them look alike. Identical inputs, different outputs—that's the problem. No equipment displays or

reproduces color perfectly, and that's true of your computer monitor and printer.

Minimize monitor errors, and you'll be a lot closer to seeing your photograph's true tones and colors. Reduce printer errors, and you'll get better-looking prints than you ever did before, and you'll get them more easily. Your operating system must support color management for you to get good control over your photographs. All recent flavors of Mac OS Classic and OS X work. If you're running Windows, upgrade to Windows 2000 or XP.

Color management uses data files called *profiles* to fix color rendering problems. Profiles don't alter your image file. The profile is a little translator that adjusts the electronic data before it goes to your monitor or printer to cancel the errors that the monitor or printer introduces. It works behind the scenes to make sure that "what you see" is closer to "what you get."

Profiling your printer is most important for quality results, and I cover that in Chapter 11, *Printing Tips*. If you don't spend any other money to get into digital restoration, do spend the money for a custom printer profile. It's really worth it.

You don't really need a calibrated monitor to do good digital printing, but working without one slows the work. You'll have to do more mental translation from what you see into what you think you'll get, and you'll waste more time and money on tests.

Don't worry about scanner profiling. For normal digital photographic work, you'd also want a good profile for your scanner to ensure that your scans have maximum fidelity. In restoration work this is not even desirable. As I explain in Chapter 4, *Getting the Photo into the Computer*, it's unlikely you'll want to make a scan that faithfully reproduces the damaged photograph in its deteriorated state.

Profile Mechanic Monitor (<http://www.dl-c.com>)

Your monitor probably has controls to correct the overall color temperature, brightness, and contrast. Tools like Adobe Gamma work with that and only ensure that on average your monitor is operating properly; there will still be errors in how colors and tones are displayed. A monitor profile corrects all of those individual color errors.

For example, your monitor may reproduce a middle gray just fine but portray fire-engine red as being a little too bright and a little too yellow. A custom profile won't alter the grays, but it will make the red a little darker and a little bluer to compensate, just enough to balance out the distortion of the monitor.

To profile your monitor, you need special hardware and software that measures and analyzes the colors being displayed. Profile Mechanic Monitor (\$180) from Digital Light & Color is inexpensive as monitor-profiling packages go (Figure 3-1). To use it, your video board must



Fig. 3-1 Unlike your printer, it's not absolutely necessary that your monitor be calibrated to produce the best restorations. However, calibrating your monitor using a package like Profile Mechanic Monitor will make sure that what you see on the screen looks a lot more like what you'll get in the print. That lets you work faster and easier, with fewer wasted test prints.

support hardware color look-up tables (CLUTs). Just about all modern video chip sets do.

Profile Mechanic Monitor includes a USB "hockey-puck" photosensor that directly measures the light and color produced by your screen. You position the sensor over a box displayed on the screen, and the software flashes a series of differently colored squares. In the initial trial-and-error manual stage, you must adjust the controls on your monitor to make the brightness and contrast match a displayed ideal brightness curve. After that, profile creation is an entirely automatic process.

A monitor can be set up in any of several different standard ways. You have a choice of color temperatures of 5000 kelvins (D50), 6500 kelvins (D65), or 7500 kelvins (D75) and of gammas of 1.8 or 2.2. (Gamma is a measure of how light the middle gray tones look.) There's no one right configuration. Many standardize on D65 and gamma 2.2 as a good compromise between adequate monitor brightness and correct color rendition. D50 and gamma 1.8 is often recommended for work that is going to a press.

I like D50 and gamma 2.2. D50 is bright enough for me, and it's a close match to standard daylight viewing conditions. It is also better than D65 for work that will be viewed under incandescent lights. My experience is that gamma 2.2 produces a closer brightness match to the prints that come off modern inkjet printers than gamma 1.8.

By the way, this is true whether you're running a Mac or PC. The old rule that the Mac gamma should be set to 1.8 is based on ancient and obsolete technology. It's got no more bearing on current equipment than 72 dpi does on actual monitor resolution.

You don't have to agree with my preferences. Experiment! I made profiles for all six combinations of color temperature and gamma and looked at them to decide which ones worked best for me.

Monitors age and drift in brightness and color with time. It's a good idea make a new profile every couple of months to ensure that your display is still producing the quality it ought to.

Image Processing Software

Photoshop CS2

In this book I use the latest version of Photoshop, CS2, but older versions are quite serviceable. Some of my techniques work on versions as far back as Photoshop 5.5. If you're running an older version of Windows or Mac OS 9 Classic, as I am on one of my computers, the latest version of Photoshop you'll be able to run is Photoshop 7. Many of Photoshop 7's most valuable tools and filters are 16-bit capable, as is the all-important History Brush tool, but it only supports layers and adjustment layers in 8-bit mode.

If you think Photoshop is your cup of tea and you can't afford (or can't run) the latest version, search around and you may find legitimate individual copies of Photoshop 7 for sale for under \$100. If you buy a used copy, make sure that the seller transfers the serial number to you; Adobe has an established procedure for doing that. Also look for copies that are "upgradable," meaning that the original owner hasn't already upgraded to a later version of Photoshop. That gets you into the Photoshop food chain, where upgrades are much, much cheaper than full packages.

One big warning: Beware of vendors that claim to sell you "OEM" versions of Photoshop and websites that say you can download it from them. Photoshop has never been legally distributed that way. A vendor who seems to have unlimited copies of Photoshop at supercheap prices is selling counterfeit or pirated goods. Don't get taken in, and please don't support the crooks!

If you're a registered student, Adobe often has educational packages that save you considerable money over the list price. Look into this before paying regular prices for Photoshop.

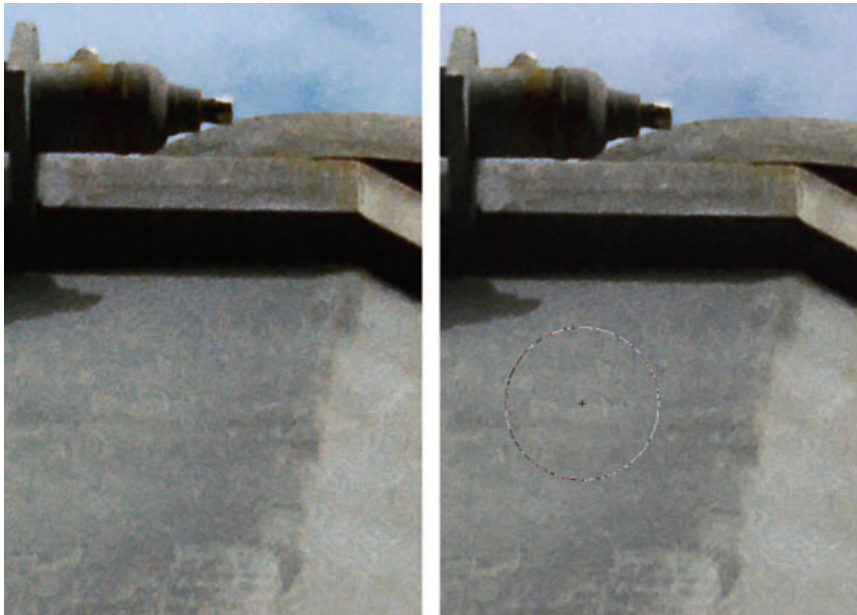


Fig. 3-2 Photoshop CS2 has a new cursor, and it's worth the price of the upgrade all by itself. The photograph on the left shows a circular brush cursor in Photoshop CS. It pretty much disappears against middle tones. The new CS2 cursor (right) never disappears, and you can add a crosshair to the middle for precision work.

Why do I think CS2 is worth the upgrade? For a start, you'll be able to use more memory (as much as 3.5 GB of RAM), but you'll need to be running on a 64-bit CPU with a 64-bit OS, like Windows Server or Mac OS X.

The tool cursor is changed for the better! In the past, it faded into invisibility over midtones. The new cursor is *always* clearly visible, regardless of the background (Figure 3-2). A new preference adds central crosshairs to a brush tip cursor. Now I can see the area a tool is affecting and precisely maneuver it at the same time, which is really useful when I'm trying to do precision cloning. I can assign the mouse scroll wheel to zoom in or out of the image. I do a lot of bit-tiddling and fine work when doing restorations; zooming in and out without touching the keyboard is just great.

These "minor" changes save me lots of time and eyestrain. I swear I'd upgrade to CS2 just for these.

The new Spot Healing Brush is a big improvement over the old Healing Brush. I didn't find myself using the original Healing Brush very much, because I thought there were better ways to fix problems. The new Spot Healing Brush is easier to use and works a lot better.

Smart Sharpen goes way beyond Unsharp Masking. There's a new blur algorithm I prefer; Lens Blur doesn't produce as much bright halving around edges or grain/noise enhancement as Gaussian Blur does. Shadow and Highlight controls let you define how much sharpening gets applied to light and dark tones. For example, you can suppress

shadow sharpening in film scans and underexposed digital photos that suffer from a lot of shadow noise.

The Reduce Noise filter also has a very nice range of controls; I can choose how much noise reduction to apply to each channel and select to preserve and even enhance certain levels of detail while reducing overall noise (Figure 3-3).

One unpleasant change: The progress bar now only pops up (in mid-screen) if an operation is taking longer than 8 seconds, a very long time to wait. Worse, the behavior is unpredictable: Sometimes it pops up after 2 seconds; other times it doesn't show after a dozen seconds or more. It's maddening. A Windows registry patch named ForceProgress_ON.reg, in the Goodies\Optional Plug-Ins\Photoshop Only\Optional Extensions folder of the CD, will force the bar to appear any time an operation is going to take more than a fraction of a second. This is worse than the old, unobtrusive progress bar, but it's better than the erratic default behavior. I don't know what Mac OS users can do.

Picture Window Pro v4 (<http://www.dl-c.com>)

Picture Window Pro (Figure 3-4) is an impressive and, at \$90, inexpensive digital darkroom program. Published by Digital Light & Color, this program is fully 16-bit native, offers multiple undos, supports color management and device calibration better than Photoshop, has color correction and advanced sharpening tools that outdo Photoshop's, and takes up only 5 MB of your hard drive. A bonus: Picture Window has no annoying activation schemes, like Photoshop. (*Note:* The nonpro version only supports 8-bit images and lacks some of the best tools of Picture Window Pro.)

If you don't already own Photoshop, Picture Window Pro will give you a lot more bang per buck. You can download a free trial that is fully functional for 30 days. Picture Window Pro only runs under Windows. I run the program under Virtual PC on a Mac, so (non-Intel) Mac lovers aren't entirely out of luck, but it will run much slower. Picture Window Pro understands 8- and 16-bit TIFF, so Picture Window Pro and Photoshop share a common file format, but Picture Window Pro will not read nor write PSD files. If you like using Photoshop's special PSD-related features, you won't be able to easily go back and forth between the two programs.

Picture Window Pro is a deceptively simple-looking program. I've known people to dismiss it simply because it's not Photoshop and doesn't include some of the tools they expect to find. What such cursory examination fails to reveal is that Picture Window Pro comes well equipped with its own unique tools and methodologies.

Picture Window Pro's interface is not Photoshop's. Personally, I don't consider that a bad thing, as I've never been a big fan of the Photoshop

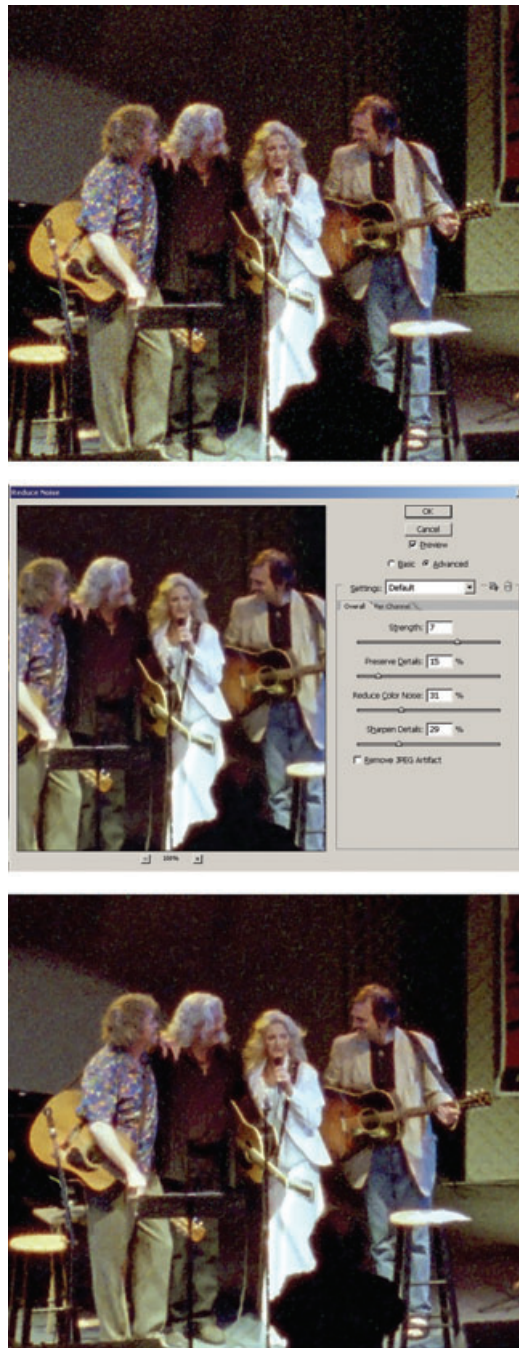


Fig. 3-3 The new Reduce Noise filter in Photoshop CS2 is a good tool for cleaning up noisy scans. Slider adjustments control strength, sharpness, detail preservation, and color noise elimination. The latter comes in especially handy when you're cleaning up film scans, as I did here. The filtered bottom photograph is a lot better than the raw photograph at the top.

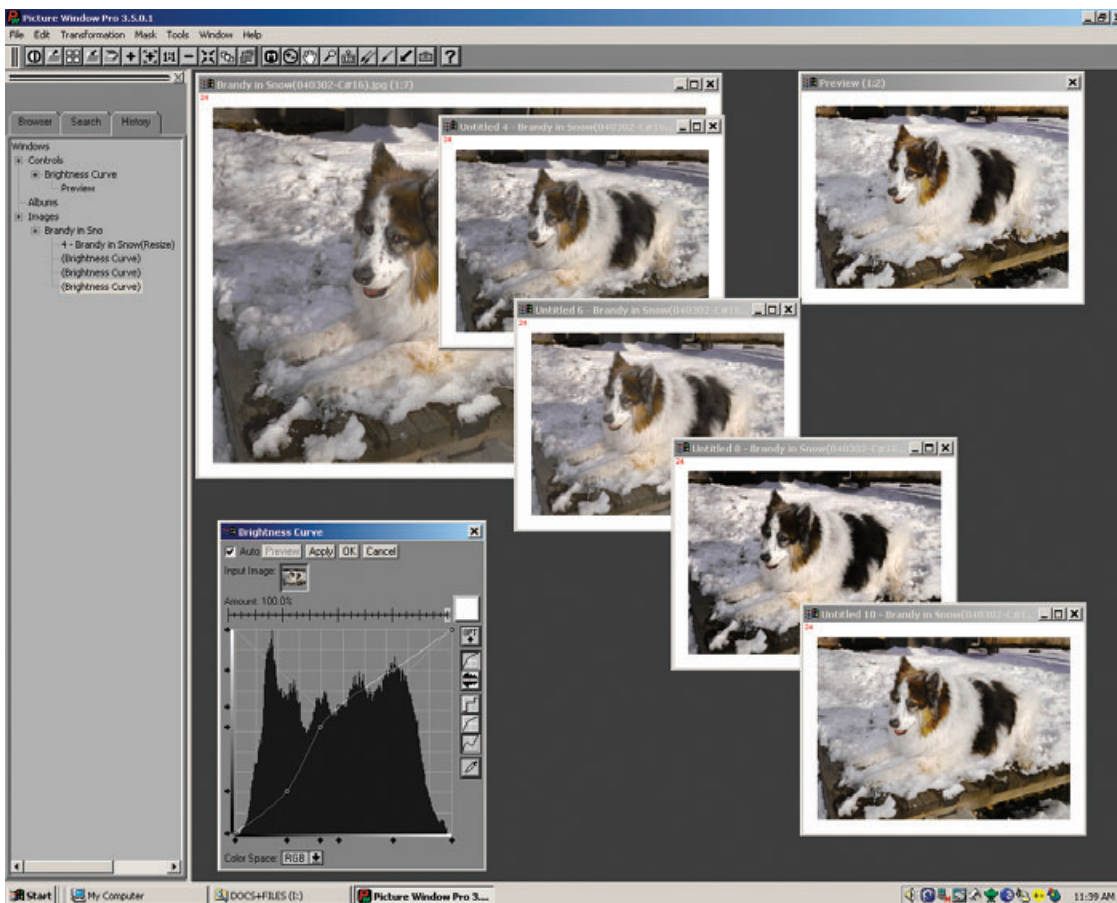


Fig. 3-4 Picture Window, from Digital Light & Color, works like a real digital darkroom. Each time you change a photograph, you create a new print. This screenshot shows me using the Brightness Curve Transformation to produce four different versions of the original photograph in the upper left background. I can save as many of these “prints” as I choose. I can also work on each print with other tools, and so follow parallel, independent paths of development for the same original photograph.

interface. To use Picture Window Pro effectively, you’ll need to unlearn some Adobe ideas and acquire new ones.

Each time you perform an operation in Picture Window Pro, you create a new copy of the photo in a new window (hence, the program’s name). I can’t overstate how different this is from Photoshop, where operations change the original image. It’s more like darkroom printing, where printing a photo differently doesn’t erase previous prints, except that these are live files. You can go back and work with each one, taking it down its own artistic path.

For example, when the brightness curve control panel appears, so does a copy of the photo in a new preview window. As you adjust the

curves, changes are reflected in the preview window. Press the Apply button, and a third window opens up containing the transformed image. Your original image remains unaltered in its own window, and the preview window and the control panel remain open; you can try other curve settings and every time you press Apply, a new window with a new modified image appears.

These image windows all exist independently of each other, and you can modify any of them using other transformations. PW's browser provides a tree diagram showing the genealogy of all of your image windows, so you can track and manage your workflow.

You can pull off some interesting tricks, once you wrap your head around this. For instance, each image in Picture Window Pro is similar to a snapshot in Photoshop, except it has its own independent existence. Using the clone tool between different image windows is a credible alternative to Photoshop's History Brush. Cloning isn't quite as convenient nor does it have as many options, but you can use it between any two images in PW, without worrying about the chronology of history states. You can "brush" backward or forward in time, even sideways between parallel branches of development.

Picture Window Pro includes some wonderful tools. The color correction controls emulate CC, Wratten, and color temperature correction photographic filters. These feel familiar to traditional photographic printers. Picture Window Pro's color correction transformation (also available as a separate Photoshop plug-in called Color Mechanic, described later in this chapter) is extraordinarily powerful and intuitive and unlike any other color correction tool you've ever used. If you already own Photoshop and have no desire to add Picture Window Pro to your ensemble, purchase that plug-in; you won't regret it.

Picture Window Pro offers resampling with sharpening using advanced sharpening options that do a better job of enhancing fine detail than Photoshop. For the ultimate in preservation of detail, there's PW's advanced sharpen transformation. It's actually a three-part affair: a noise reduction stage, a speck removal stage, and finally a sharpen stage. The first two stages are most useful by themselves for cleaning up photographs, whether or not you need to enhance their sharpness.

I use Picture Window Pro's powerful mask selection methods even when working primarily in Photoshop (masks are just grayscale images, so you can create them with one program and use them with another). You can define masks with hue, saturation, and value ranges, a la Asiva Select (described later in this chapter), with a Mask Brightness Curve (Figure 3-5), and with mask-painting brushes that can find edges and select pixels of similar color (see Chapter 7, Making Masks, page 234). While PW is very speedy at opening and saving files (even faster than Photoshop), most of its comparable transformations run slower. Assume operations like Curves and sharpen or blur filters will take two to three times as long in PW as in Photoshop.



Fig. 3-5 Picture Window has some very powerful mask-making tools. The Mask Brightness Curve, for example, is much more flexible and useful than Photoshop's crude Color Range tool. Here I used the Curve to create a mask (lower right) that selected the midtones of the photograph in the upper left and smoothly faded out toward the whites and blacks. You can create very complex masks by using several of the masking tools in combination.

Plug-Ins

Plug-ins let me work much more efficiently, saving me much time and effort. Many plug-ins produce higher quality results than I could ever achieve by hand, no matter how much time I might spend. In the remainder of this chapter I introduce you to plug-ins that aid my restoration work. These are by no means tutorials nor even complete descrip-

tions of their capabilities. Throughout the book I use these plug-ins in my examples of how to fix various kinds of problems. That will give you some sense of their worth and how to apply them. All of them have trial downloads, so you can check them out thoroughly.

You don't necessarily need Photoshop to run plug-ins; most plug-ins will run in Adobe Photoshop Elements, Adobe PhotoDeluxe, and Corel Paint Shop Pro, but each plug-in maker decides which programs their plug-ins will be compatible with and what OS they'll run under. A few, for example, only work under Windows (noted below), and several may require a more recent version of Windows or Mac OS than you're running. Check the plug-in publisher's website to find out which environments their plug-in will run in.

Plug-ins come with a cost, and I don't just mean their purchase price. Plug-ins are frequently memory hogs, because they're performing very complicated calculations. See my remarks on RAM usage in Chapter 2, page 34. As a rule plug-ins need to use a piece of the RAM that is available to Photoshop. As long as you've got at least twice as much RAM assigned to Photoshop as the size of the file you're opening, bare-bones Photoshop will usually run. It will run slowly, because as soon as you start doing anything it will start writing scratch files to the disk, but it will perform.

Not so for plug-ins. They need to work in real RAM, and sometimes their RAM demands are large. For example, DIGITAL ROC and DIGITAL GEM need additional RAM that's equal to about two and a half times the size of the image file you're working on. DIGITAL GEM Airbrush needs almost seven times the file size!

Some plug-ins perform extraordinarily elaborate computations and take a long time to run even on a very fast machine. It can truly try one's patience waiting for some of them to finish executing. Still, what I get in return for that time can be incredibly valuable. So, as the seconds (and sometimes minutes) tick away, I try to remind myself that if I were doing this manually, it would take me 10 times as long, and it wouldn't look half as good.

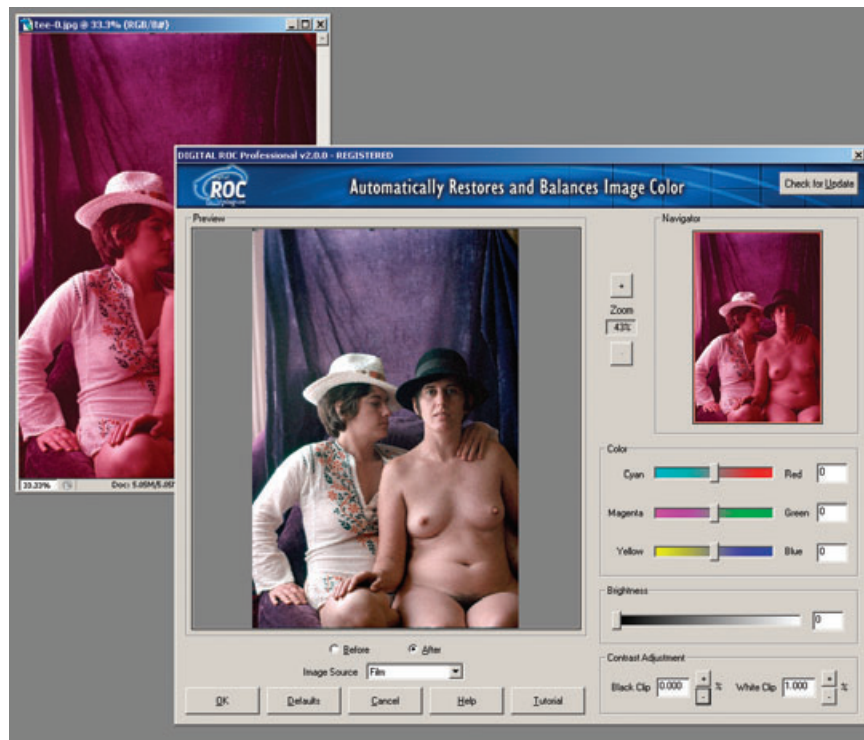
Remember that you can use plug-ins with masks, history brushes, and layers that you can blend into the original image in different ways. Don't just take what a plug-in hands you; shape it to your needs.

DIGITAL ROC Pro and GEM Pro (<http://www.asf.com>)

DIGITAL ROC and DIGITAL GEM are built into some scanners as part of the DIGITAL ICE³ package. Applied Science Fiction, now known as the Eastman Kodak Austin Development Center, has turned them into plug-ins.

I strongly recommend these two plug-ins even if you have a scanner that's equipped with ICE³. The plug-ins work differently from the scanner software and have advantages that the scanner software doesn't.

Fig. 3-6 The DIGITAL ROC plug-in for Photoshop does things that the version built into DIGITAL ICE³ cannot. The plug-in version lets you adjust color balance, brightness, and contrast for optimal results. This screenshot shows DIGITAL ROC correcting a badly faded slide from the late 1970s.



Although the scanner plug-ins get to work on the raw scanner data before it gets to your computer and consequently often do the most effective job of repairing flaws, they aren't very flexible. They have fewer adjustments and controls than do the plug-in versions. Furthermore you can't use masking techniques or layers to selectively control where and how the scanner software works its magic. Controlled application of DIGITAL ROC and GEM is a very powerful tool.

These plug-ins come in regular and professional versions. Buy the professional versions, even though they cost twice as much (\$100 apiece) because they work on 16-bit as well as 8-bit images, but more importantly they include a number of adjustment controls that aren't available on the regular versions. I find these controls absolutely essential to getting really good results.

ROC stands for *restoration of color*. DIGITAL ROC Pro (Figure 3-6) analyzes the color gamut of the original file to adjust, expand, and normalize each color channel. Think of it as kind of an automatic graphic equalizer for color instead of sound. The plug-in is not as effective as the version incorporated into scanners, because it doesn't have access to the raw scan data, but it's the next best thing.

Just about any color rendition problem can be fixed using Photoshop's standard tools, but it can take a lot of work and expertise to do

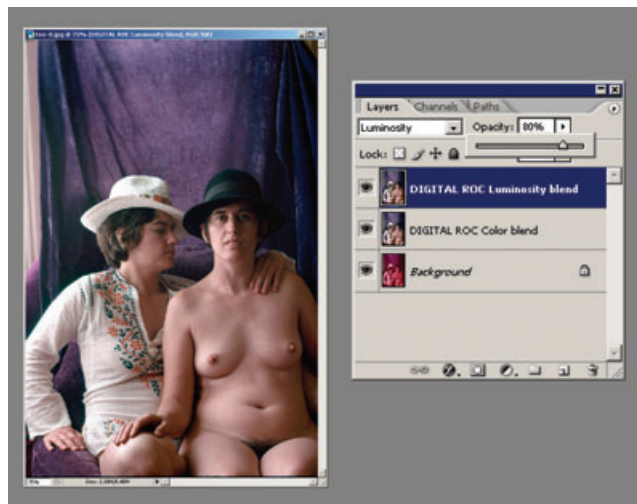


Fig. 3-7 By itself, DIGITAL ROC produces great color, but the results are often too contrasty, with extreme highlight and shadow detail clipped. A great way to control this plug-in's contrast is to make two duplicate layers of the original photograph and apply DIGITAL ROC to both of the duplicates. Set the first duplicate layer to Color blend and the second to Luminosity blend. Adjust the opacity of the Luminosity-blended layer down from 100% to reduce the contrast of the photograph to the desired level. If you keep this as a layered file instead of flattening it, you can go back at any later time and alter the opacity settings to change the way the photograph looks.

so. DIGITAL ROC will do 50% to 75% of the job all by itself in one pass. It's that good. Don't confuse what DIGITAL ROC does with a simple Auto Levels or Auto Color adjustment in Photoshop. DIGITAL ROC really does restore color, coming up with credible tones and hues from extremely faded, nearly monochrome originals. It probably doesn't do anything that I can't do manually in Photoshop, but it does it automatically and swiftly.

Sometimes DIGITAL ROC can be too contrasty and saturated, with a tendency to blow out the highlights. Normally I set the brightness level much lower than the default of 25; sometimes I take it all the way down to 0. I also usually set the black clip at 0%. Setting the white clip to 0% sometimes produces obviously distorted results, but typing a value between 0.1% and 1% works well.

I often apply DIGITAL ROC to duplicate layers of the photograph and blend them into the base layer with luminosity and color blends (see Chapter 6, *Restoring Color*, page 193). That lets me modulate the strength of the color and contrast changes separately (Figure 3-7). See Chapter 9, page 336, for a complete restoration of this photo.

DIGITAL GEM (Figure 3-8) reduces grain and noise without significantly affecting fine detail. GEM is a special kind of noise filter that is designed for film grain, but I have found it extremely useful for dealing with any kind of fine random noise. I use it primarily to reduce the grain

Fig. 3-8 The DIGITAL GEM plug-in for Photoshop does things that the version built into DIGITAL ICE³ doesn't. The plug-in lets you choose whether to suppress coarse or fine noise, emphasize highlight or shadow noise suppression, and sharpen up the photograph after noise reduction. I used DIGITAL GEM with the settings shown here to improve the photograph in Figure 3-9.



in my restorations, especially with very low-contrast originals that will have their contrast increased during restoration (Figure 3-9). Whenever I have a vexing noise problem, whether it is due to paper surface texture, cracking or grazing, or dirt on the original, I experiment with GEM to see if it will improve the situation more than Photoshop's standard filters.

GEM's controls are rather complex and take some practice to master. DIGITAL GEM has two different filter types, a *coarse* mode and a *fine-grain* mode, with different sets of controls. In the coarse mode, noise control sliders control how much the filter reduces grain noise in the highlights and shadows. Moving a slider toward maximum tends to decrease image detail for those tones, while moving it toward minimum preserves fine detail but removes less of the noise.

In the fine-grain, mode the noise controls change to a *suppression* slider and a *detail sensitivity* slider. The suppression slider controls the strength of the operation; as you push the slider toward maximum, it more aggressively filters out grain and noise. The detail sensitivity slider determines how much image detail the filter preserves versus how much grain it suppresses. Increasing the value in this slider preserves more fine detail but may leave more grain behind.

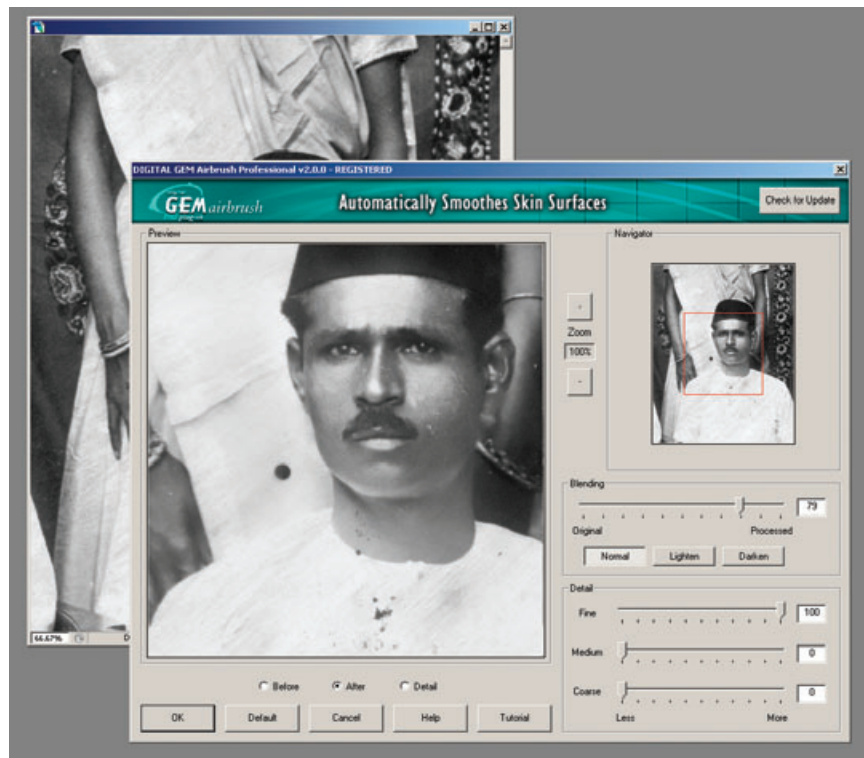


Fig. 3-9 Low-contrast and faded originals may become very grainy when they're restored because the increased contrast emphasizes the grain along with everything else. The restoration of the top photograph (enlarged in the middle photo) demonstrates this problem. The color and tone are fine, but the grain dominates the photograph. Applying DIGITAL GEM with the settings shown in Figure 3-8 produced a much nicer photograph, seen at the bottom.

Because grain suppression is almost always somewhat destructive of fine detail no matter how cleverly done, I often use this with the History Brush, so that I can apply grain reduction exactly where I want at a controllable strength.

When I need to use DIGITAL ROC, I usually apply it before doing anything else, to bring the photograph into some semblance of correct

Fig. 3-10 DIGITAL GEM Airbrush, as its name and title bar suggest, is primarily a retouching tool that produces smoother and more attractive skin tones. Nonetheless, it can be a very effective tool for reducing fine, overall damage, like the pervasive small scratches that obscure this photograph.



tonality and color. There are times, though, when I find it better to apply DIGITAL GEM first to reduce the noise in the image. DIGITAL ROC can be confused by very high noise levels; GEM lightly applied can clean up scans so that DIGITAL ROC does a better job.

DIGITAL GEM Airbrush Pro (<http://www.asf.com>)

DIGITAL GEM Airbrush Pro (Figure 3-10) is a more specialized kind of grain and noise reduction tool than DIGITAL GEM. As its name suggests, it's meant as more of a retouching tool, to soften blemishes, creases, and lines in people's hands and faces. If your restoration objectives include "prettifying" the subject, this plug-in makes that work go much faster.

I have found, however, that GEM Airbrush has uses beyond the mere cosmetic. Many old-time portraits had rather heavy-handed retouching done to them. Faces will show obvious cross-hatching or stippling marks that to the modern eye look more like disfigurement than enhancement. GEM Airbrush sees them as not much different from facial wrinkles, and it can help eliminate them. GEM Airbrush can also suppress fine scratches and scuff marks (Figure 3-11).

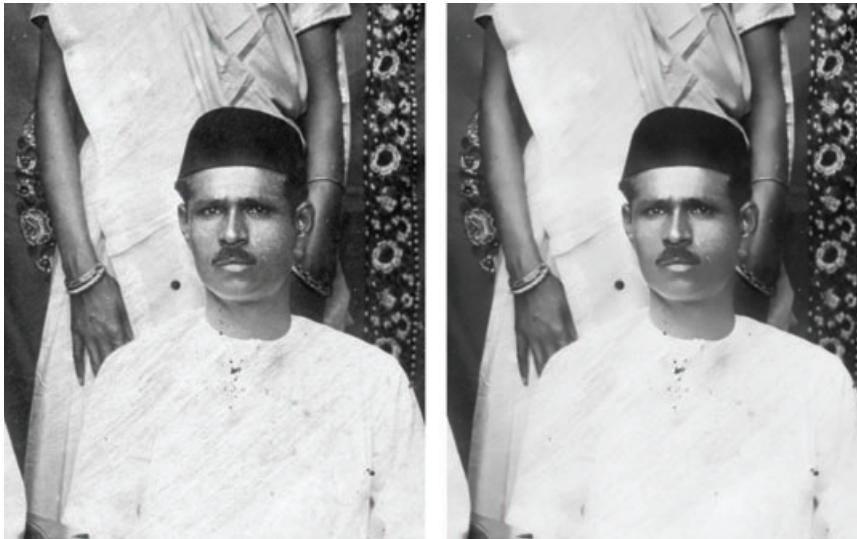


Fig. 3-11 The photograph on the left is covered with fine scratches. Applying DIGITAL GEM Airbrush, with the settings shown in Figure 3-10, eliminated most of the scratches (right photograph). Normally, you should apply this filter with a History Brush so that you can avoid altering areas with important fine detail that might be damaged by the filter.

This plug-in tends to destroy moderate and fine detail, so you want to apply it carefully. There are three detail-controlling sliders for fine, medium, and coarse detail. Increasing the adjustment from 0 to 100 increases the amount of that kind of detail that is retained in the filtered photograph.

GEM Airbrush is a tricky tool to learn to use well; its behavior isn't exactly intuitive. Still, I have found that its unique noise-filtering abilities make it worth one's while to spend the time to understand it. I think it's best used with masks or the History Brush, so that its effect can be applied only where desired.

Color Mechanic (<http://www.colormechanic.com>)

Color Mechanic (Figure 3-12), from Digital Light & Color is derived from the incredibly useful Color Correction Transformation in Picture Window. That's good news for Mac users, since Color Mechanic plays happily with Mac versions of programs like Photoshop.

Color Mechanic comes in a regular (\$30) and a pro (\$50) version; the pro version supports 16-bit files and has some additional controls I find valuable. Digital Light & Color also allows one to upgrade from the regular to professional version for an additional \$30, so you won't lose much money if you decide to get the regular version and later decide you need the professional.

Color Mechanic takes advantage of the way we naturally think about color correction. We can look at a photo and immediately identify the colors and tones that are off, but Photoshop lacks an intuitive way to correct them. We can't simply tell Photoshop, "That skin tone is too pink

Fig. 3-12 Color Mechanic is a most remarkable and unique Photoshop plug-in for manipulating colors in a photograph. Clicking the eyedropper on the “before” photograph (left) sets control points in the color-space hexagon at the lower left. Dragging those points to new locations changes the original colors to new ones. Nearby colors warp smoothly, so there are no abrupt and unnatural-looking color changes. The resulting photograph and color-space hexagon are shown on the right. Figure 3-13 shows an expanded view of the color space for this adjustment.



and that gray too blue; fix it.” Color Mechanic comes close to doing just that with a remarkably simple way to correct color. It presents you with a view of your file and a color-space hexagon. Click on a point in the image, and the corresponding color is selected within the color hexagon. You can drag that color into any other place in the color space. The color space warps smoothly around that change, as if it were a rubber sheet change, so related colors adjust to fit; greatly different colors aren’t affected at all (Figure 3-13). Changes are immediately reflected in the “after” image and the color hexagon. There are also sliders to control the brightness and (in the pro version) the strength of the color changes.

You can do this to as many color points as you like, custom-tuning the color palette to fit the photo. You can lock down colors so that they don’t change by adding a correction point and not dragging it to a new location. That pins the color at its original value, no matter what other warps you make to the color space.

Restoring the color in a badly faded photograph is often a process of approximations. Some fine adjustment is usually needed to get the colors to look exactly right. Color Mechanic’s great for that, especially for correcting slight color casts in neutrals and skin tones without introducing unwanted side effects. That can be extremely difficult with Photoshop’s standard tools, even with plug-ins like DIGITAL ROC. See Chapter 6, Restoring Color, page 227, for more about using this wonderful plug-in.

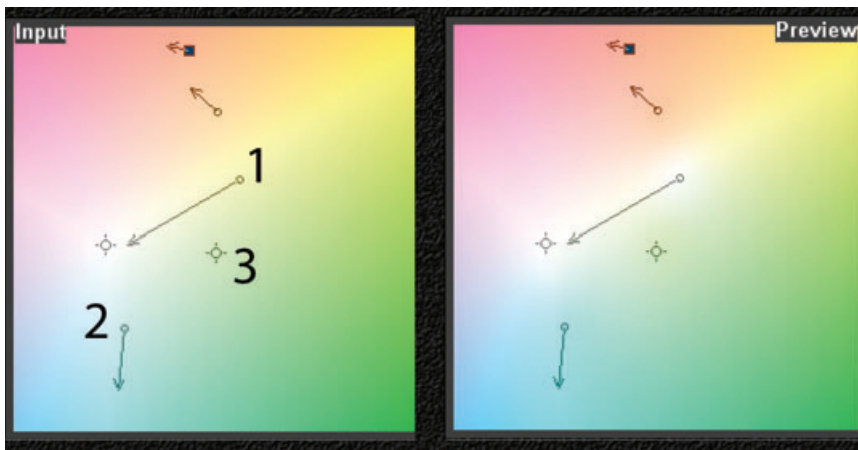


Fig. 3-13 These are enlarged views of the color-space adjustments I made in Figure 3-12. The numbered points demonstrate the different kinds of changes that Color Mechanic can make. I dragged Point 1 toward the neutral center point to desaturate the background of the photograph. The Preview color space shows that white has “bled” from the head of the arrow back to the control point. Point 2 was dragged away from the center and from the green hues. That increased the saturation in the dress and shifted the hue slightly to the blue. I used Point 3 as a lock-down point; since I didn’t draw an arrow from it, the input and preview colors will be the same. It preserves those yellow-green hues in the color space unchanged.

Image Doctor (<http://www.alienskin.com>)

Image Doctor (\$130) from Alien Skin Software is a plug-in that I recommend with qualifiers. Image Doctor contains four tools; the ones that will most interest restorers are Smart Fill (Figure 3-14) and Spot Lifter (Figure 3-15).

Smart Fill is an extremely powerful image repair utility. Smart Fill serves a function similar to that of Photoshop CS2’s Patch Tool, but it is more sophisticated (and more difficult to use). It can fill in large gaps in a photograph with surrounding tones and complex textures so adroitly that it’s difficult to tell that any repair work has been done (Figure 3-16).

Image Doctor is brilliant when applied to simple selections but not good on complex ones. It’s sometimes easy to create a selection mask that isolates the missing parts of a photograph or a network of cracks (see Chapter 7, Making Masks), so that you can work on restoring those without messing up the remaining photograph. You’d think Image Doctor would be the perfect tool for filling in networks of cracks or crazing in a photograph and for quickly restoring missing chunks of image. The problem is that the amount of computation that Image Doctor has to do increases with the complexity and size of the selection (obviously very high for networks of cracks). Image Doctor creates a sampling box for re-creating the missing detail based on the expanse of the

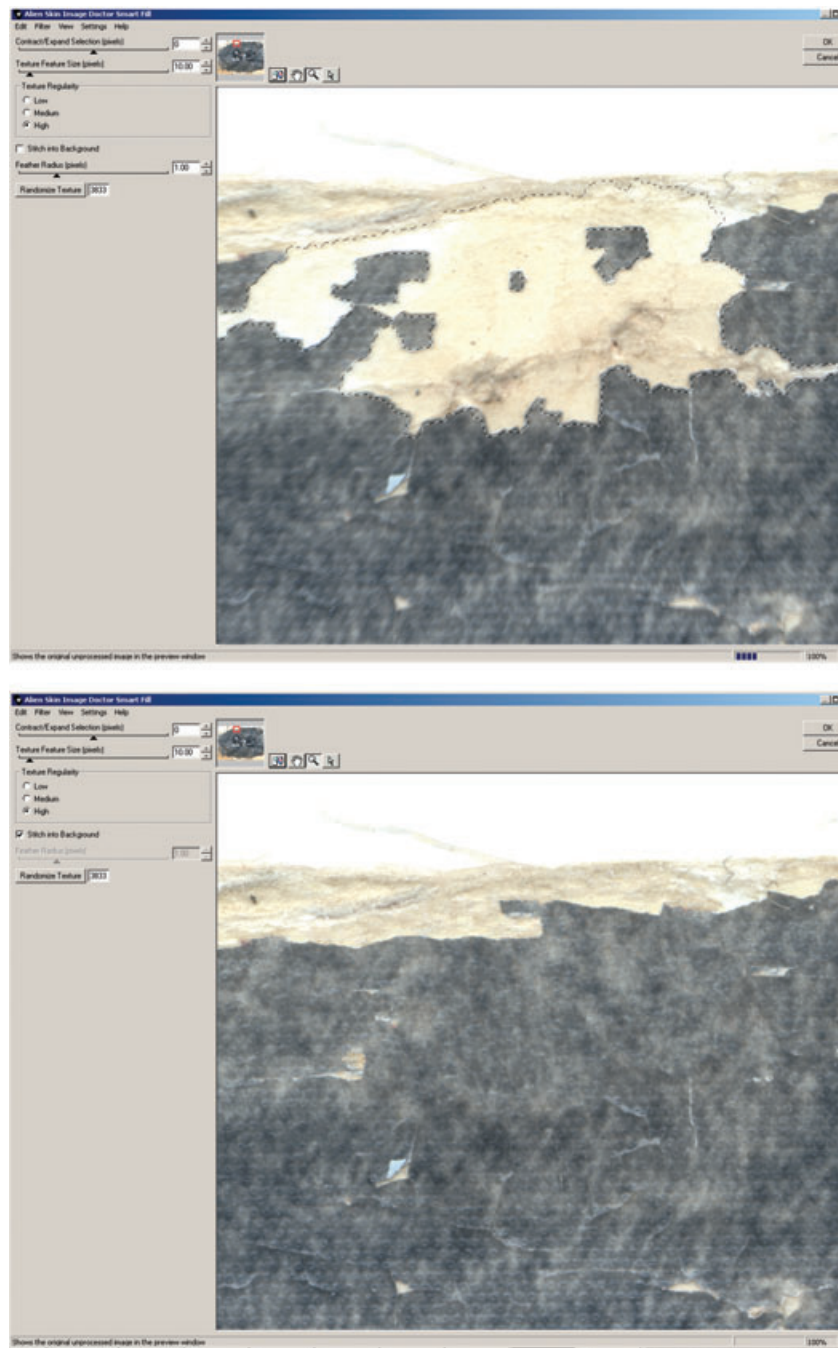


Fig. 3-14 Image Doctor is an efficient plug-in for doing the first level of repair on damaged originals. Its Smart Fill function repaired the selected area in the top photograph, producing the bottom photo (this is a close-up of the photograph in Figure 1-3). Smart Fill can't perfectly interpolate detail that isn't there, but it does a good enough job of reestablishing tones and textures to substantially reduce the amount of manual labor needed to completely fix the missing pieces.

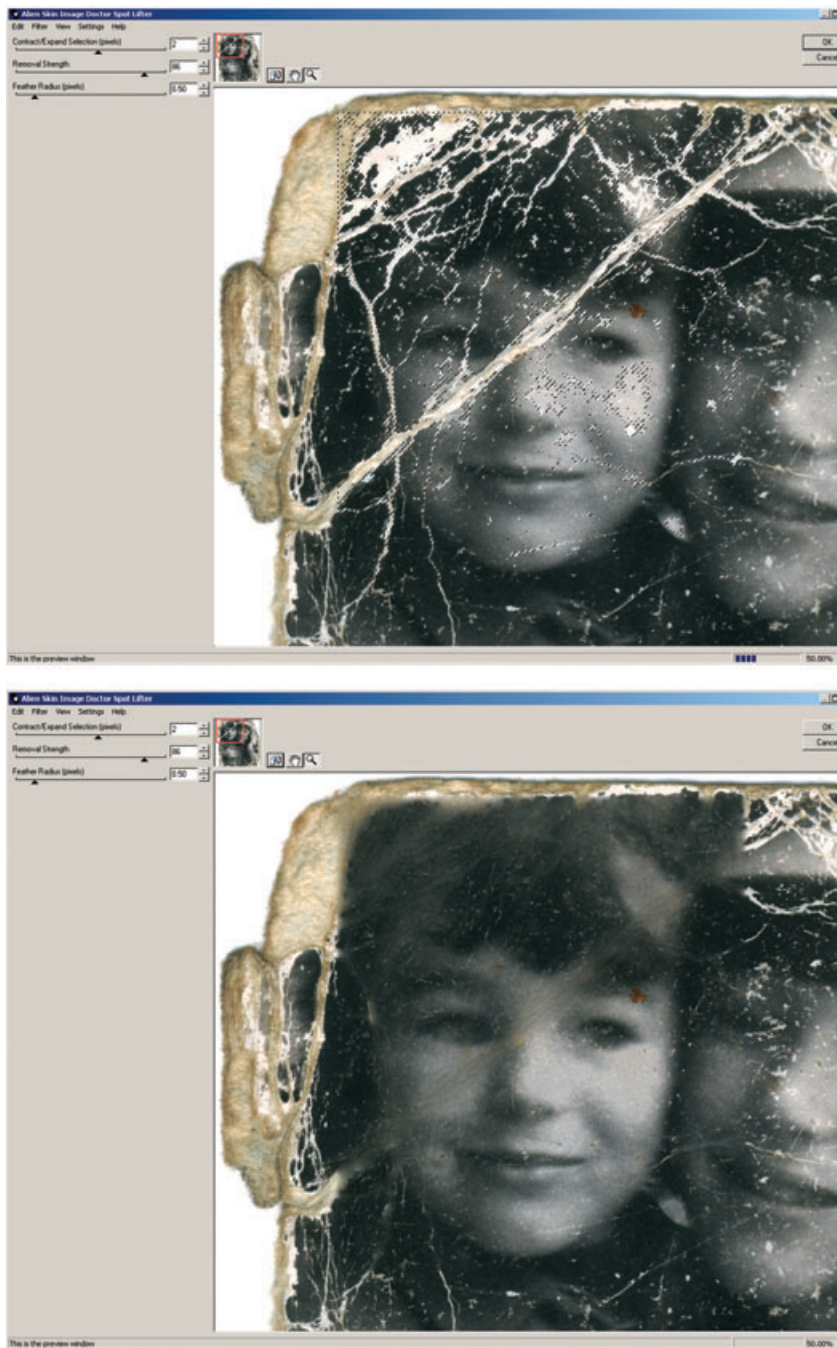


Fig. 3-15 Image Doctor’s Spot Lifter works rapidly on complex selections (upper photo), but it doesn’t create brand-new textures like Smart Fill does. It did a very good job of filling in the cracks in this portion of Figure 1-8, once I had created a selection for them (see Chapter 7).



Fig. 3-16 Smart Fill can repair multiple areas in one pass, as it did in the photograph on the right, but you'll need a very fast computer and patience. It's still a lot faster, however, than doing the repair work by hand!

selected areas; for damage scattered across an entire photograph, Image Doctor attempts to analyze the entire photograph for all of the regions that need repair. The result is exponentially increasing processing time. I can readily come up with selections that take Image Doctor the better part of an hour to process. Image Doctor will tax the fastest CPU you can throw at it.

Image Doctor is so useful, though, that it's worth figuring out some work-arounds. The following work principles tame Image Doctor enough to make it a useful tool:

- Divide the photograph into small regions, and work on them separately. Image Doctor will take much less time to fill in many voids that fall within a region that's only 5% of the total area of the photograph than it will to fill in a handful of voids scattered across the entire image.
- The more complex the shape of the selected regions to be filled in, the longer it seems to take Image Doctor to do its job. Smooth masks to keep the edges and contours of the selections as simple and uncomplicated as possible.

Spot Lifter is Smart Fill's simpler sibling. It's faster and easier to use, but it doesn't do anywhere near as clever a job of replicating surroundings, because it doesn't attempt to duplicate textures. It doesn't work well

when the void it's filling is surrounded by areas with lots of detail. Spot Lifter will work on much larger regions and more complex selections without taking insanely long amounts of time. Spot Lifter usually doesn't do an invisible repair job, but it often suppresses damage to the point that it is no longer a distraction in the printed photograph.

Image Doctor also includes a highly effective JPEG Repair tool. You won't need this when working on scans you've done yourself, but on occasion you may have to do restoration from a file someone sends you because they don't have the original any longer. It's possible to do decent restorations from such files, and in those circumstances you'll find JPEG Repair valuable for cleaning up compression artifacts. It does a much better job than Remove JPEG Artifact in Photoshop's Reduce Noise filter.

Focus Magic (<http://www.focusmagic.com>)

Focus Magic (\$45) is a remarkable piece of software. It's an honest-to-God real sharpening algorithm that works as a stand-alone program or a Photoshop plug-in. I'll spare you the math about how it works. What's important is that this is not a mere edge-enhancement routine like most so-called sharpening filters; this one actually undoes the blur.

Focus Magic can remove motion blur as well as out-of-focus blur (Figure 3-17). Sometimes its improvements are astonishing. It cannot work true miracles; I'd estimate that usually it's limited to about a factor of two gain in real fine detail and sharpness; that's often enough to take a lousy photo and turn it into an acceptable one or make a borderline photograph really sharp.

The cleaner and more noise/grain-free a photograph is, the better Focus Magic will work; it indiscriminately sharpens noise and grain just as much as image detail. This can produce objectionable artifacts, especially in areas that demand smooth tonality, like faces. Focus Magic has settings that will minimize these artifacts at the expense of some efficacy. Its default source setting is *Digital Camera*, which requires a very noise-free original. Unless your photograph has almost no grain, dirt, and noise, the *Grainy Image* source setting will work a lot better. That may give sharpened photographs a slightly plastic look, with sharpened edges but smoothed-out continuous tones.

I use Focus Magic to help deal with textured photographs, especially those printed on that annoying "honeycomb" paper surface that used to be so popular and creates so much trouble when I scan it. It's not hard to get rid of that texture with one or another of the noise or blur filters in Photoshop, but that almost always degrades the fine detail in the photograph. An adroit use of a filter to remove the paper texture followed by an application of Focus Magic often eliminates the paper texture with little or no loss of any actual image detail (Chapter 8, page 307).

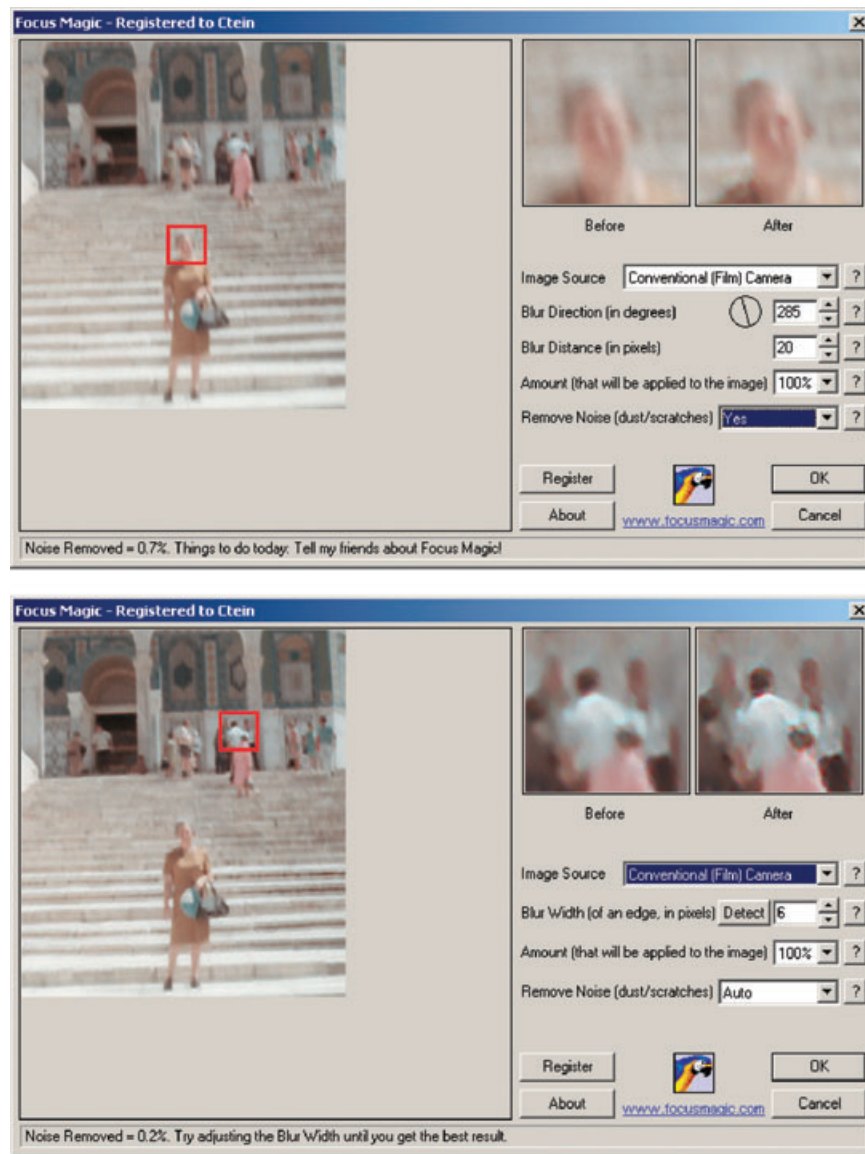


Fig. 3-17 The plug-in version of Focus Magic can remove motion blur (top photo) and out-of-focus blur (bottom photo). It will actually retrieve detail that is invisible in the original photograph. Here, I used it to correct both camera shake and bad focus that afflicted this snapshot. Focus Magic can also be used to pull maximum detail out of already-sharp photographs.

Given that many of the photos we get to restore aren't really sharp, this tool is great to have. With a low-noise photo, the results can border on the unbelievable (Figure 3-18). I apply Focus Magic in some fashion or another to many photographs I restore. Even when working with high-quality scans from my own original photographs, I often apply Focus Magic with a one-pixel radius setting to subtly enhance fine detail and kick up the edge sharpness a bit.



Fig. 3-18 On the left, the snapshot before Focus Magic. On the right, the improvements Focus Magic wrought. The plug-in turned an unusable photograph into an acceptable one. With a better original, Focus Magic can make a marginal photograph excellent.

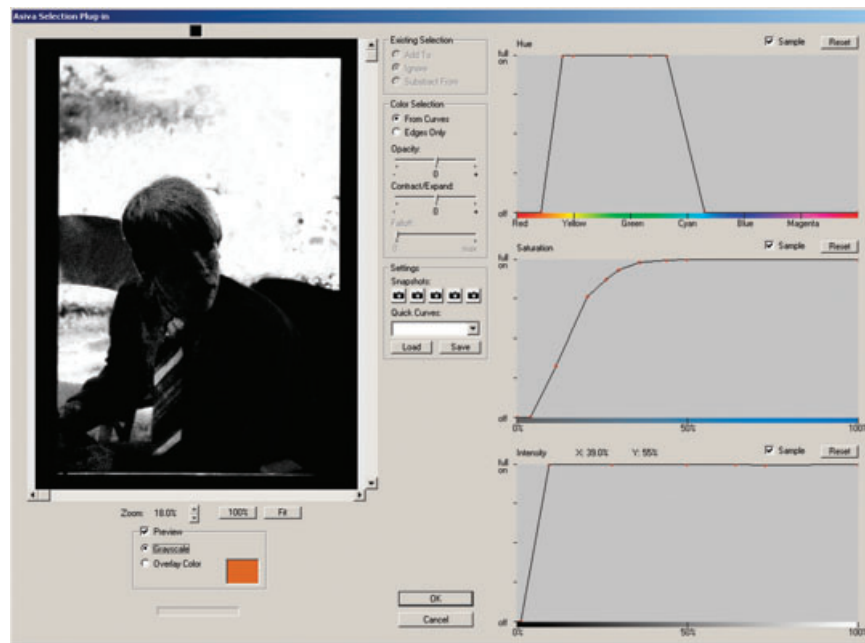
As a stand-alone program, Focus Magic has some features that aren't available through the plug-in. The *despeckle* filter does a very good job of descreening scans of halftone photographs. It minimizes the halftone dots and extracts the maximum amount of real image detail at the same time (see Chapter 9, Tips, Tricks, and Enhancements, page 320, for other good ways to descreen halftones). It's fast, too. The big disadvantage of the stand-alone program is that it can only open and save JPEG files. The plug-in works on any file that can be opened in Photoshop.

Asiva Selection (<http://www.asiva.com>)

Asiva Selection (\$40) is a plug-in that creates masks. Asiva's novel selection method uses hue, saturation, and intensity (HSI) to isolate different parts of the photograph (Figure 3-19). Hue corresponds to spectral color: red, orange, yellow, etc. Saturation (or chroma) is how pure the color is; for example, primary yellow and red have high saturation, and pastels have low saturation. Intensity (or value or luminance or brightness) is how light or dark the tone is, white being maximum and black minimum. Regardless of what color-space your images are using in Photoshop, Asiva Selection works with HSI values automatically. Three curve windows in the Asiva Selection interface control the range of hues, intensities, and saturation that will be selected.

Learning how to set these curves well takes some practice, even if you're familiar with HSI space. Fortunately, a save option lets you preserve settings and reload them later, so you can experiment with different ones. There are also useful preset *quick curves*. A drop-down menu loads selection curves for a variety of subjects, including multiethnic skin tones, water and sky, and primary colors.

Fig. 3-19 Asiva Selection creates masks for difficult selections. To make a background selection for the photograph in Figure 3-20, I created a Hue graph (top curve) that selected for colors in the yellow-green part of the spectrum. I adjusted the Saturation and Intensity curves to reject the darkest tones and the ones that had very low saturation. That effectively selected for the green, sunlit grass.



You can manually create a selection in one of three ways. The first is to draw in the hue, saturation, and intensity curves directly. Click on the curve to add a control point to it, which can be dragged up or down and left or right. You can see the results of your manipulations in the preview window, either as a grayscale image or as a color overlay on the original photograph.

The second way is to click on a point in the preview window with the eyedropper, and the values near that pixel are fed directly into the selection graphs. You can then modify those curves by hand. You can choose which of the selection graphs are affected by the eyedropper by checking or unchecking the sample option above each graph.

The third and most useful way to specify a selection is to drag the eyedropper tool diagonally across the preview window, which samples all the pixels in a rectangular box. You can use adjustment sliders to expand or contract your selection and to fade its edges. The finished mask can be used with any other Photoshop tools. In Figure 3-20, I used the mask from Figure 3-19 to soften and tone down the background.

Mask Pro (<http://www.ononesoftware.com>)

Mask Pro is an elaborate and expensive (\$200) masking plug-in. It actually incorporates three related tools. The Mask Pro filter extracts portions of the image, Mask Pro Select defines a mask that you may use with other Photoshop filters and tools, and Mask Pro Work Path converts



Fig. 3-20 The original photograph is shown at left. To produce the photograph on the right, I applied the selection created in Figure 3-19 and used the Curves and Saturation tools to darken and soften the background. Even though I made a very substantial change to those areas, there's no visible evidence of masking; the boundary between the foreground and background still looks natural and clean.

a channel or selection into a work path. I primarily use Mask Pro Select.

Peculiarly, this “professional” plug-in is limited to working on 8-bit files. That’s inconvenient, but masks are portable, so there’s a work-around. If I want to create a mask with Mask Pro for a 16-bit image, I duplicate that image, convert it to 8 bits, create my mask, save it in a channel, and then copy that channel back over to the original 16-bit file.

The two tools I use most often for creating masks are the Highlighters and Eyedroppers (Figure 3-21). Highlighters are good and fast when there are large areas to mask that have relatively simple geometries. Run the Keep Highlighter tool around the inside of the perimeter of the area to be selected. Run the Drop Highlighter tool around the perimeter of areas to be excluded. You don’t have to be terribly accurate; what Mask Pro does is analyze the range of tones and colors in your “keep” and “drop” selections and use those to find the edges of the regions you want to mask.

The Keep and Drop Eyedroppers sample many points in the photograph to build up a palette of colors and tones that you want to include (Figure 3-22). The Eyedroppers are vital when you’re trying to isolate poorly distinguished areas like wisps of hair or similar colors.

Usually, once you’ve made these selections, you’ll activate Mask Pro’s Magic Brush tool and tell Mask Pro to apply it to the entire image. That creates the whole mask based on your criteria at once. If you need to be

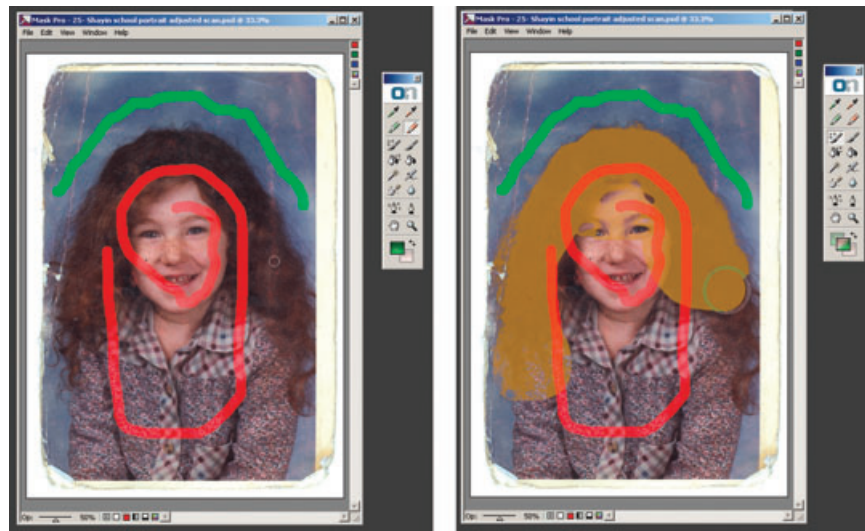


Fig. 3-21 The Mask Pro plug-in for Photoshop has extremely sophisticated selection tools. I used the Keep and Drop Highlighter tools to tell Mask Pro which colors I want to select (the green squiggle) and which colors I want to mask (the red squiggle) in the figure on the left. I activated the Magic Brush tool (green cursor circle on the right) and painted it over the photograph. Mask Pro automatically generated the mask, shown in tan. Mask Pro does a good job masking along complex and diffuse edges, such as the boundary between the girl's hair and the background.

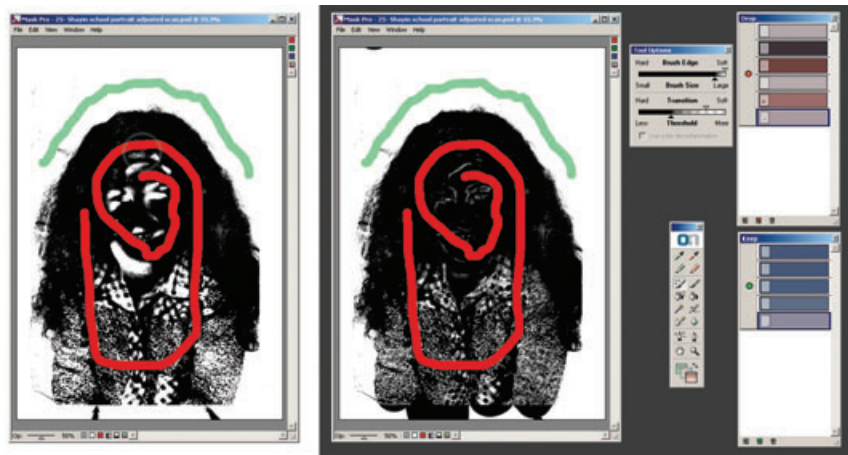


Fig. 3-22 Mask Pro's Keep and Drop Eyedropper tools let me refine the mask selection. I repeatedly clicked the Eyedroppers on the photograph to create palettes of colors that I wanted to keep and drop (shown on the right). Then I applied those choices to the whole image. The mask on the left is the one that I generated using just the Highlighter tools. The mask on the right is the one I created with the help of the Eyedropper tools.



Fig. 3-23 I applied the mask I generated with Mask Pro in Figure 3-22 to the photograph on the left. I used the Curves tool to substantially lighten the background and shift it to a more attractive shade of blue. This demonstrates how well Mask Pro works when faced with complex selections and convoluted boundaries.

more selective and fine-tune what you're doing, you can use the Magic Brush to paint in the mask manually. You can create very elaborate masks, altering the "draw" and "keep" selections and palettes on the fly to use one set of criteria for masking one part of the image and another set for another part. You can also vary the strength and threshold settings for the mask brush as you work to control how "aggressive" your masking will be.

Unlike Photoshop's Extract tool, Mask Pro can analyze the entire image based on the inclusion data and create a very elaborate mask with multiple regions that need not be contiguous (Figure 3-23). Mask Pro isn't the least bit fazed by complicated mask criteria and geometries. Mask Pro is much more flexible and versatile in applying its functions and does a better and more sophisticated job of analyzing what is to be selected than does Photoshop's Color Select. Mask Pro is less confused by noisy originals; its selections are much cleaner and require less touching up.

A unique Mask Pro tool is the Chisel. It shaves off or adds pixels at the edge of a selection, based on your selection criteria; it doesn't just mechanically alter masks like "expand" or "contract." Chisel always smoothly follows the perimeter of the selection, so you can't accidentally take a big gouge out of your selection.

CurveMeister2 (<http://www.curvemeister.com>)

I will admit that it took me a while to warm up to CurveMeister2 (Windows only, \$80). The reason it's making my recommended plug-in

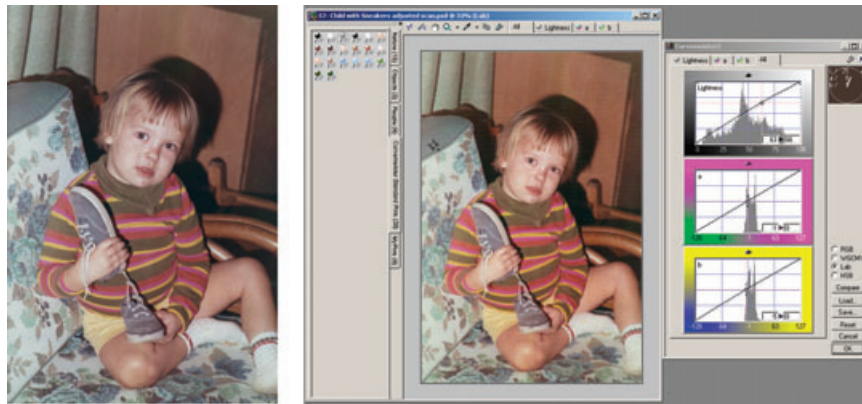


Fig. 3-24 The photograph is too blue. The CurveMeister 2 plug-in has several clever tools for correcting color and lets you choose different color spaces to try them out in. Yet, you don't need a sophisticated knowledge of Curves to make corrections with this plug-in—that's its whole reason for existence. To fix this photograph, I used pushpins. I selected the gray-color pushpin (upper left) and placed it on the back of the cushion in the photograph. CurveMeister 2 instantly created a set of curves that corrected the overall color of the photograph quite well.

list is that I think many readers will appreciate its value much more readily.

The Curves tool is the heart and soul of fine image control in Photoshop (see Chapter 5, Restoring Tone, page 134). If you haven't mastered curve corrections, you can't precisely manipulate tone and color rendition in your photographs. Unfortunately, curves are not a natural nor familiar concept for many photographers, and so they tend to avoid them. This is a mistake.

CurveMeister2 hands photographers powerful and intelligible ways to adjust curves. For a start, the CurveMeister2 interface (Figure 3-24) is much more agreeable than Photoshop's. You can see and work with the curves for all the channels simultaneously. The curves have histograms superimposed on them, which makes it a lot easier to match the range of values in your photograph with points on the curve.

CurveMeister2 lets you work simultaneously in four different color spaces. You can experiment with curve adjustments in each color space and compare the results in the plug-in preview window before committing yourself to applying the curve adjustments in one particular space. There's much to be said for noodling around; often playing with curves leads to a better result than going into them with a certainty of exactly what adjustments you need to make. CurveMeister2 encourages such useful playfulness.

CurveMeister2 adds a bunch of special controls to the curves windows that make standard adjustments easier to do, such as increasing contrast or saturation without altering overall color balance or midrange values. CurveMeister2 has several ways to assign pixels in the image to points

on the curves to set highlight or shadow points or maintain overall neutrality. The “floating neutral” point in particular is a fast and clear way to alter brightness levels with minimum alteration of colors.

Pushpins are a clever idea! Pushpins are predefined colors that you can assign to points in your photograph. CurveMeister2 comes with a set of standard pins, and additional sets can be downloaded from the author’s website. For instance, CurveMeister2 comes with a collection of pushpins for skin tones from a deep ebony to pale Nordic. You can add intermediate skin tones of your own to the existing set. Stick one of these pins into the skin of a person in your photograph, and the curves will adjust themselves to make the subject’s skin tone and color match the pin’s. By pinning key colors this way, you can quickly bring a badly color-distorted photograph into approximate compliance with reality.

CurveMeister2 is of minimal value to me because it’s not layer-savvy. When you apply most adjustments and filter plug-ins in Photoshop to the base layer of an image, you see the results as they will look after they’re filtered through any overlying layers. The preview window in CurveMeister2 completely ignores those layers; all you see is the layer that you’re working on and the effect that CurveMeister2 will have on it. This means that the actual effect of applying CurveMeister2 to a multilayer image file looks entirely different from what the preview shows.

I would not normally recommend a tool with this flaw, except that I do know how much trouble controlling curves gives many otherwise-skilled photographers. The best way to figure out if CurveMeister2 is for you is to download the trial version of the plug-in and thoroughly and carefully read the extensive help manual. There are lots of worthwhile gems buried in this application that won’t be obvious to you until you do.

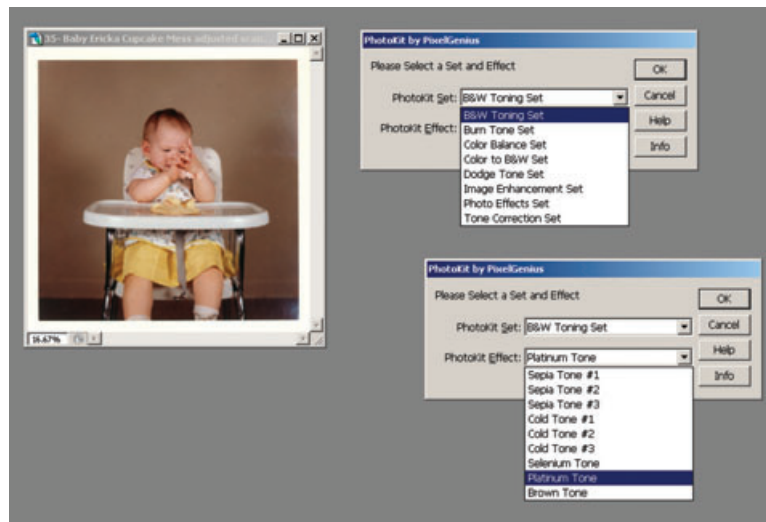
PixelGenius PhotoKit (<http://www.pixelgenius.com>)

PixelGenius PhotoKit (\$50) is a nice finishing tool for photographs. It’s a collection of special effects such as dodges and burns, contrast and brightness changes, modest sharpening and noise reduction, and B&W toning. PhotoKit is actually a bundle of scripts that appears under the File/Automate menu. There’s little in the way of user interface; selecting PhotoKit brings up a simple dialog box with drop-down menus from which you select the effect you want (Figure 3-25).

PhotoKit creates a new layer with a modified image in it that lets you alter or discard changes you make with no damage to the original, using any of the usual layer options. You can stack multiple PhotoKit effects because each time you apply it, it creates a new layer.

The effects have deceptively simple titles. In truth they are visually sophisticated adjustments, designed with great finesse and subtlety. Do

Fig. 3-25 PixelGenius PhotoKit is a collection of automated scripts for Photoshop. The B&W Toning Set, pictured here, is a good way to digitally tone photographs before printing them out. Shown here are the drop-down menus for selecting B&W Toning (upper right) and the type of toning (lower right). Note that I'm applying this script to a color photograph; PhotoKit will create a B&W photo automatically.



not mistake them for ordinary curves or color adjustments; I can't do anywhere near as good a job myself of replicating the looks of various kinds of darkroom prints as PhotoKit can.

The B&W Toning Set is the one I find most useful in photo restoration because it very closely replicates the look of many conventional B&W photographic images (see Chapter 11, Printing Tips, page 440). Platinum tone, for example, does a spectacular job of creating the look and feel of a platinum print from any B&W or color photograph (Figure 3-26). Similarly, selenium and brown toning realistically emulates toned darkroom prints.

The dodges and burns, image sharpening, and noise reduction effects are equally clever; mundane names belie their complexity. Not all of you will feel the need for the finishing touches that this plug-in can provide, but I strongly recommend downloading the trial version to get a feel for yourself of the aesthetic quality of these scripts.

PixelGenius PhotoKit Sharpener (<http://www.pixelgenius.com>)

Photoshop's sharpening tools are pretty primitive and not terribly sophisticated. (Picture Window has smarter sharpening tools.) Filters like Unsharp Masking in Photoshop are convenient, but many scripts and actions have been written to try to make them work better; in other words, to do more of the kind of sharpening we want with fewer of the artifacts we don't want.

PhotoKit Sharpener (\$100) is the logical outgrowth of many of these hacks. Like PhotoKit, it is a collection of scripts. PhotoKit Sharpener has four collections of effects. The first two collections deal with sharpening the captured image (Figure 3-27). The third applies creative sharpening



Fig. 3-26 Here are the results of applying PhotoKit Platinum Tone to the color photograph in Figure 3-25. PhotoKit has created a beautiful platinum look that would require considerable skill to create by hand. The “platinum” image is in its own layer; the original photograph hasn’t been irrevocably changed the way it would be if you used Photoshop’s Duotone controls to tone this photograph.

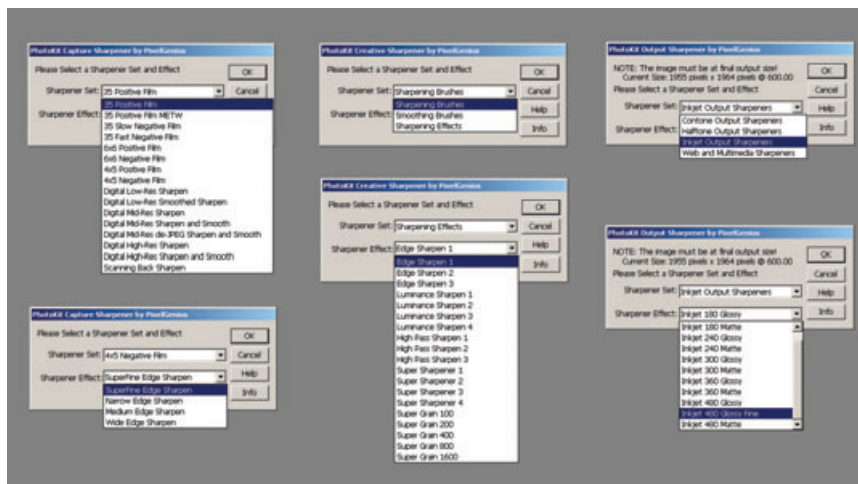


Fig. 3-27 PhotoKit Sharpener has an almost bewildering collection of sharpening options and methods. The Capture Sharpener collection (left) lets you choose the input medium and an effect to apply to that medium. Creative Sharpener (center) has three different tools, each with its own large collection of sharpening effects. Output Sharpener (right) lets you select how the image will be printed out and optimize the sharpening effect for different devices within that category.

Fig. 3-28 Applying PhotoKit Sharpener's Edge Sharpen 3 option to the photograph on the left produces the one on the right. As the Layers window shows, PhotoKit Sharpener applies its changes in layers. With light and dark edges enhanced separately, you can control the influence of each using the Opacity slider. The original photograph remains unaltered in the background layer.



to enhance an image's edges and fine detail. Last, the output sharpening collection tweaks the image just enough to compensate for the softening effects of various kinds of printers and print settings.

The capture sharpening scripts address the modest losses in sharpness that can occur during scanning. Ideally, one would like to restore those losses without exaggerating noise at the same time (difficult for true sharpening algorithms like Focus Magic). PhotoKit Sharpener provides a bunch of preset sharpening routines for different kinds of input conditions. The plug-in was designed with film scanners and cameras in mind, not print scanning, but many of the algorithms work well for scans of faded prints. The manual clearly explains the purpose of each scanning choice, so you can intelligently decide what will work best with your print scan. For example, the negative film scan settings do more to minimize grain enhancement than positive film scan settings, so they'd be preferable for working with noisy print scans.

The sharpening is applied in separate layers for highlight and shadow sharpening and each layer's sharpening selection masks are preserved (Figure 3-28). You can change the strength of the sharpening by adjusting the opacity of the layer, and you can control where it's applied to the scan by modifying the layer mask. For example, if you want a stronger edge effect and less sharpening in broad tonal areas, a simple Curves adjustment to the mask will do the job.

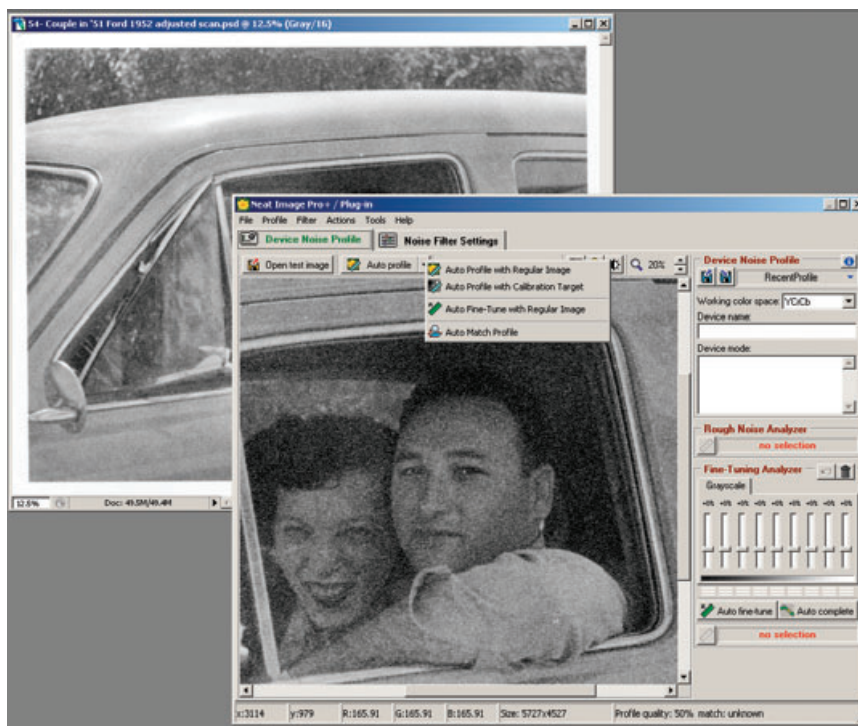


Fig. 3-29 Neat Image is an extremely sophisticated noise filter that profiles the noise in an image, builds a custom filter from that, and lets you control exactly how that filter gets applied to eliminate noise from the photograph. In this screenshot I'm using Neat Image to Auto Profile the noise in the photograph.

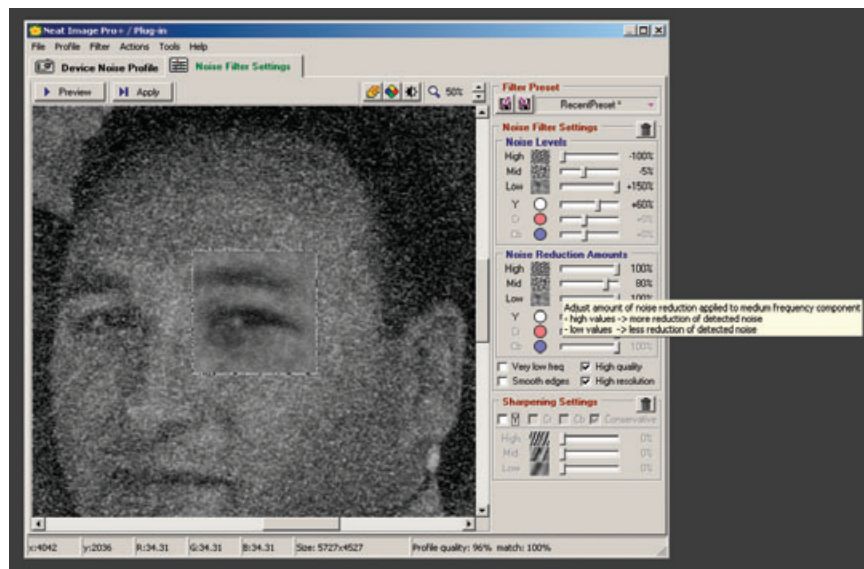
Different printers soften image detail in different ways, so PhotoKit Sharpener has many preset sharpening routines to optimize the quality of the output for just about any kind of printing device. Like CurveMeister, this package doesn't really do anything that you can't do by hand. What it does is turn the sharpening expertise of some really talented people into automated scripts, so you don't have to reinvent a wheel that's already been perfected.

Neat Image Pro+ (<http://www.neatimage.com>)

Neat Image is an extraordinarily versatile noise- and grain-reduction program. Hand it any image with undesirable grain or texture in it, and Neat Image will analyze the characteristics of the photograph and construct a custom profile tailored to the noise in the photograph (Figure 3-29). Neat Image subdues ordinary film grain or scan noise, paper textures (see Chapter 8, Damage Control, page 307), and even halftone screens.

Neat Image runs under Mac OS X or Windows 98 and up, as either a stand-alone program or a Photoshop plug-in. Several different flavors

Fig. 3-30 Once Neat Image has created its profile, you can preview the effect of that profile on the photograph and adjust the filter settings on the right to fine-tune how that filter will be applied to the photograph. The settings are many and complex, but they all have pop-up help windows that explain what they do.



of Neat Image are available, ranging from a free download with useful but limited capabilities to Pro+, which is 16-bit capable and includes both the stand-alone and Photoshop plug-in versions of the program. Pro+ runs \$75; if you don't need Photoshop compatibility, then Pro provides all the same capabilities for \$15 less.

Neat Image was surprisingly easy to use, considering how versatile it is and how many control settings there are to play with. I barely had to glance at the quick-start instructions before diving in. That's not an argument against reading the 60-page manual; you'll get a lot more out of the program if you do. It's a compliment on how well Neat Image is designed. Controls even have pop-up windows (Figure 3-30) that give quick instructions in how to use them when you mouse over them.

Neat Image cleanup is a three-step process. First, generate the noise profile. Neat Image analyzes a small portion of the image that is free from true subject detail to determine the grain and noise characteristics. It will automatically select that region, but if you don't like its choice, you can move the selection box anywhere in the image that you think is more appropriate. Second, preview the profile's effects and alter the filter settings to tailor the noise reduction to your needs. Finally, apply your filter settings to the photograph.

You can save the noise profile and settings if you want to use them on a series of similar photographs or experiment with a bunch of different settings to see which ones give you the most attractive final result. I used Neat Image on an intractably noisy photograph that my other noise reduction tools were incapable of dealing with (Figure 3-31). The



Fig. 3-31 Changing the filter settings in Neat Image changes its effect on a photograph. The top figure is the original noisy photo. The middle and bottom figures are the same photograph after being filtered by Neat Image. The filter profile is the same in both of these photos, but varying the filter settings greatly altered the results.

top illustration shows the original photograph, while the middle corresponds to the filter settings in Figure 3-30, which I think looks pretty good. The bottom illustration shows what happens when I turn the filter settings up to maximum strength. Even with maximum noise reduction, there's surprisingly little loss of real image detail, given the amount of grain suppression that's going on. Neat Image is one amazing program.