Example 11: Restoring Faded Color Snapshots

Both of the snapshots in Figure 11-11a were made around 1980 on the same brand of paper, and they were even stored together. Nonetheless, they've aged very differently. The photograph on the top (which is, in fact, the newer one) has lost a great deal of cyan dye density, turning the print brick red. The snapshot on the bottom was badly underexposed, so the print is pale and poor in contrast, but what fading has occurred is much more neutral in hue.

Fig. 11-11a Fading is not always a predictable thing. These two snapshots were made only a few years apart. In fact, the more badly faded photograph on the top is the newer one.

These two snapshots don't look much alike, but similar restoration techniques worked on both of them. I started with better scans, as usual.

Figure 11-11b shows the scanner software settings I used to make the scans in Figure 11-11c. I got to those settings simply by clicking the black eyedropper on the darkest part of each photograph and the white eyedropper on the lightest part.

Fig. 11-11c The adjusted scans had better color and contrast than the original photographs did, but they were still far from having correct color.

Fig. 11-11b I used the black and white eyedroppers in the scanner software to select the brightest and darkest points in both snapshots. Those settings produced the improved scans shown in Figure 11-11c.

 Both of the resulting scans are good candidates for Digital ROC color correction, but I decided they needed some cleaning up before doing that. As Figure 11-11d illustrates, both photographs are very grainy, which means there's a lot of chroma noise. Those
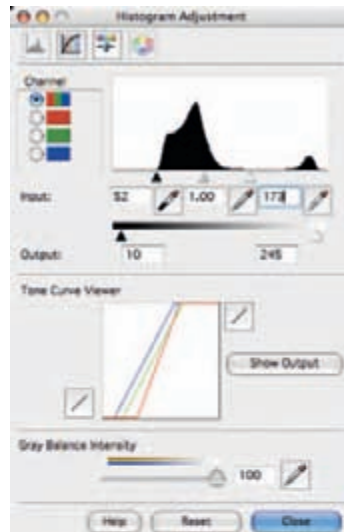
Fig. 11-11d Enlarged sections of both snapshot scans showed that the photographs were grainy and had a high level of chroma noise. That noise could throw off my color correction tools, so I eliminated it using the filters shown in Figures 11-11e and 11-11f.
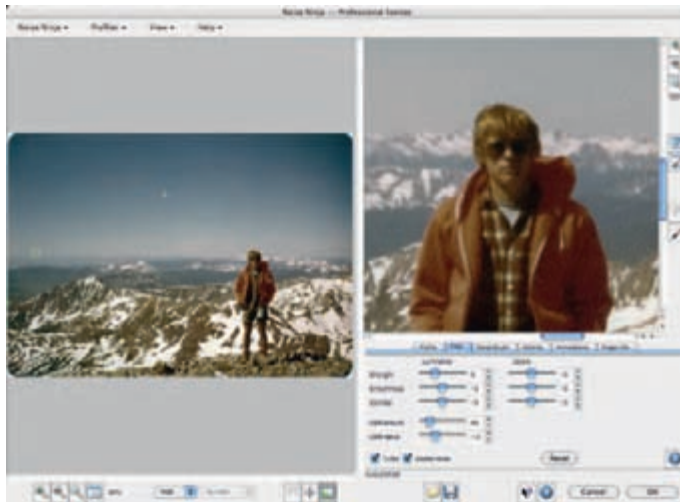

Fig. 11-11e Noise Ninja, used with the setting shown here, did a good job of reducing chroma noise. Note that I dialed back the Luminous Strength to minimize the filter's impact on fine detail.

random fluctuations in color can throw Digital ROC off the track; when they are too severe, the software has trouble ignoring the noise and working its color-correction magic based solely on the image.

I ran each photograph through noise reduction before I did color correction. The first snapshot did not have an extraordinarily high degree of noise and Noise Ninja, with the settings shown in Figure 11-11e, was able to satisfactorily suppress it without losing real detail.

The second snapshot was a much tougher case, and so I turned to Noiseware for a fix. Figure 11-11f is not a straight screenshot; it's a composite I constructed to show all the Noiseware control palettes I used to attack the grain in this photograph. In particular, I ran the color noise detection and reduction up to near maximum while minimizing the color detail protection settings. This very effectively suppressed chroma noise without sacrificing detail.
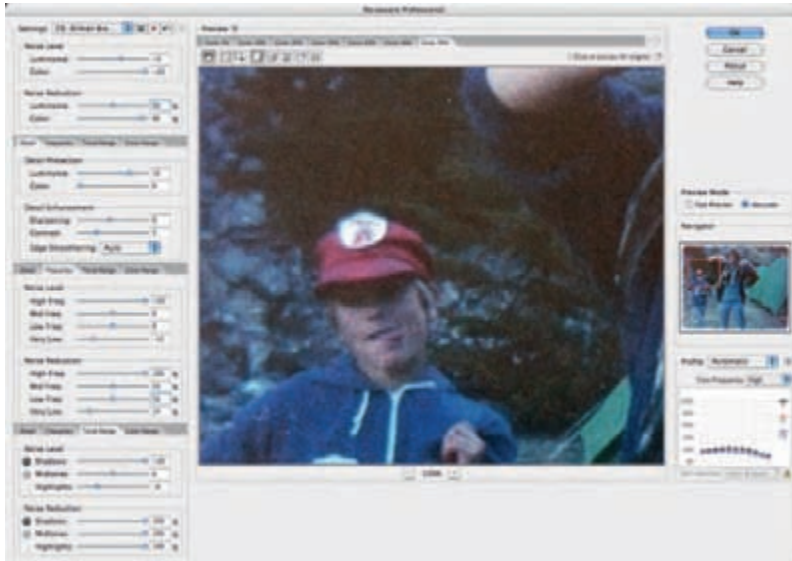
I ran both photographs through the Digital ROC filter with the settings shown in Figure 11-11g. Digital ROC does a good job of restoring color, but in my judgment it increases contrast by too much, so I usually split its effect into two duplicate layers (Figure 11-11h). The first layer is set to Color blend and left at 100% strength. I typically set the second layer to Luminosity blend and dial back the Opacity until I like the overall contrast. Usually that falls somewhere between 40% and 60%. When I'm happy with the result, I merge the effects into a single layer and proceed from there (Figure 11-11i).

At this point, the stories of the two photographs go their separate ways. I went to work on the mountain photograph first. Digital ROC isn't perfect; the photograph had some color crossover, with the highlights being too ruddy and the shadows too yellowish, although the midtones were close to correct.

Fig. 11-11g Digital ROC did a very good job of restoring the overall color on both noise-reduced snapshots.

Fig. 11-11h I have found that Digital ROC does a good job of correcting color, but it increases contrast too much. By applying Digital ROC to a separate layer and then duplicating the results, I can split the filter's effect on color from its effect on luminosity. I set the blend mode on the lower layer to color and left the opacity at 100%. Setting the blend mode on the second filter layer to Luminosity and dialing back the opacity kept the contrast from getting out of hand.

Fig. 11-11i Here are the results of the work so far: a carefully adjusted scan, a chroma noise reduction pass, and color restoration with Digital ROC.

It also lacked a bit of saturation. I added two adjustment layers, one for Curves and one for Vibrance, and made the correction shown in Figure 11-11j. That got me to Figure 11-11k.

There was so little dust and dirt in this photograph that I didn't even bother with clever filtering tricks to clean it up. I just used the Spot Healing brush to eliminate those few dozen defects.
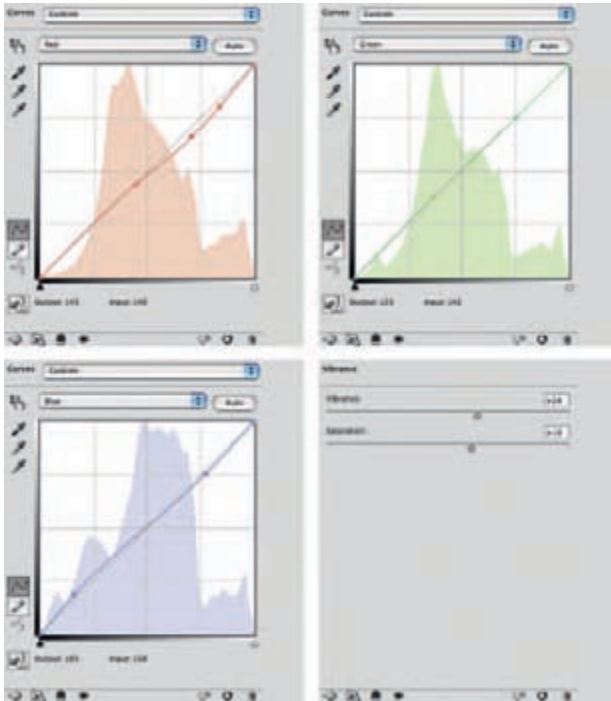
Fig. 11-11j Here are the curves I used in a Curves adjustment layer to fix the color in the first snapshot. These curves settings cool down the highlights, which were too red in color, and make the shadows less blue. The result is shown in Figure 11-11k.

Fig. 11-11k A dose of Curves adjustment (Figure 11-11j) made the color in this photograph a lot better. The red cast is gone from the highlights and the sky is much bluer.

    I could see that the cyan dye fading wasn't uniform (Figure 11-11l, left), so I created a pair of dodging and burning-in masked layers (Figure 11-11m) to correct the problem. I hand-painted the masks with a white brush until the color looked uniform, as shown at right in Figure 11-11l and in Figure 11-11n.

Fig. 11-11l (left) The red channel from Figure 11-11k has light and dark patches that throw off the color in the sky. The dodging and burning-in Curves adjustment layers from Figure 11-11m fixed that, as seen on the right, making the sky a much more uniform blue.
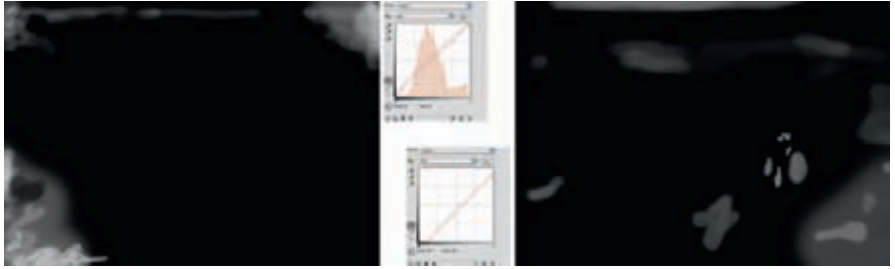

Fig. 11-11m I used these dodging (left) and burning-in (right) Curves adjustment layers to fix problems with the red channel in Figure 11-11k. Along with eliminating the irregularities in the sky, I cleaned up excessive cyan tints in the lower-left corner and some reddish areas on the right. Figure 11-11n shows the improved photograph.

Fig. 11-11n The Curves adjustment layers from Figure 11-11m corrected the colors in Figure 11-11k, as this figure shows. I also used the Spot Healing brush to eliminate the small numbers of specks and defects in the photograph.

I thought that the boy looked dark and flat, so I added a masked Curves adjustment layer (Figure 11-11o) to correct the problem. He also looked overly yellow, so I made a color correction as well. Lightening the figure and making it a bit bluer made the photograph look a lot better, but it remained a bit desaturated and washed out overall. A Hue/Saturation adjustment layer (Figure 11-11p) fixed that, giving me the finished photograph in Figure 11-11q.
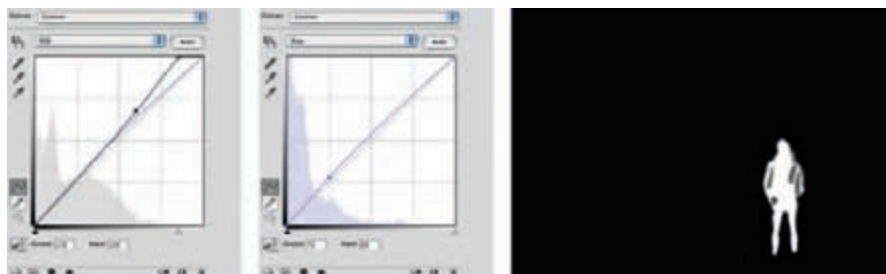

Fig. 11-11o The boy in Figure 11-11n looked dark and flat, so I increased his brightness and contrast and eliminated a slight yellow cast with this masked Curves adjustment layer.
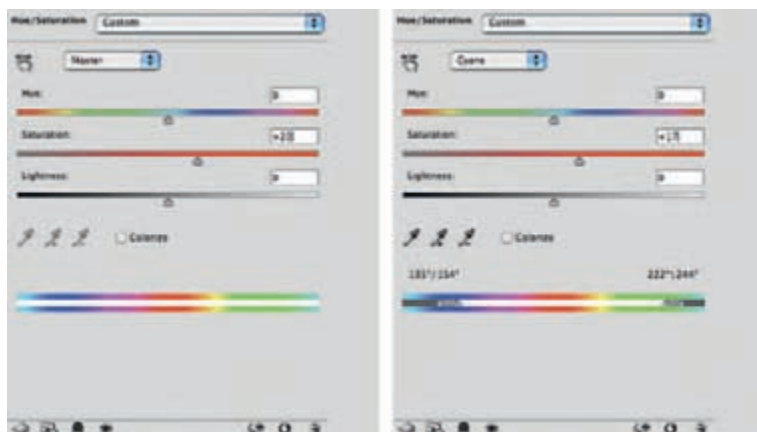

Fig. 11-11p A Hue/Saturation adjustment layer with these settings improved the overall color saturation in the photograph and made the sky a more realistic deep blue, as shown in Figure 11-11q.

Fig. 11–11q The finished snapshot looks as good as the day it was made, thanks to Digital ROC and many adjustment layers.

I could have played further games with this photograph, getting rid of the slight vignetting with a masked Curves adjustment layer and using some of the local tone adjustment controls such as Shadows/Highlights or ContrastMaster to produce richer and more detailed gradation. I decided not to because I wanted to retain the look of a snapshot.

The second snapshot presented me with a different set of problems. There were large areas that were lighter and redder in color, and some faint reddish bands streaked the print. I corrected this with a dodging layer applied to the red channel. Figure 11-11r shows what that layer looked like after I got done working over the mask with the white Brush tool.

Fig. 11-11r The campground snapshot from Figure 11-11i had a lot of problems with irregular faded reddish areas and streaks, so I created this burn-in Curves adjustment layer to repair the red channel.
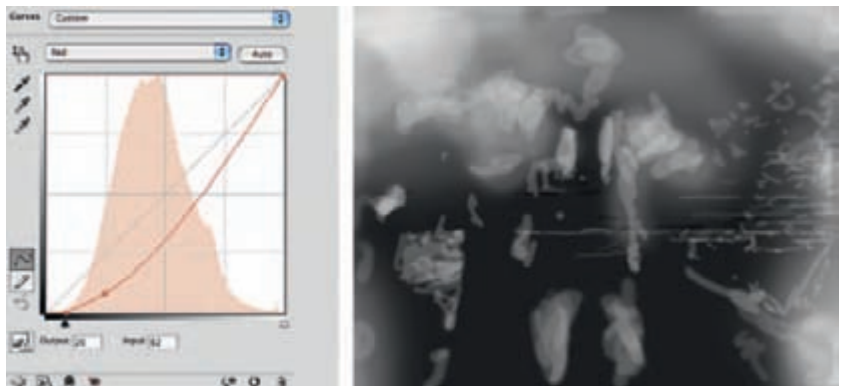
To make the subtle color differences more visible while I did my mask work, I added a Hue/Saturation layer (Figure 11-11s), which functioned as a kind of magnifying glass: It amplified color differences and made it easier to correct the red channel. After I finished painting in the mask, I discarded the Hue/Saturation layer. Figure 11-11t shows the improved photograph; compare this with the version in Figure 11-11i. As with the previous snapshot, there wasn't a lot of dust or dirt on the print, so I just used the Spot Healing tool to clean it up instead of using filters and masked layers.

Fig. 11-11s To make it easier to see the effects of my work while I was creating Figure 11-11r, I added this Hue/Saturation adjustment layer, which acted as a kind of magnifying glass: It amplified slight color differences in the original photograph. After I finished creating the mask, I discarded this layer.

Fig. 11-11t The adjustment layer from Figure 11-11r turned Figure 11-11i into this version. The photograph was dull and low in contrast, but the color was uniform and pretty decent.

I decided it was time to get rid of some more film grain. Looking at the individual color channels (Figure 11-11u) I could see that there was a huge difference in graininess between them. That told me that most of the remaining noise was going to appear as chroma noise, so I applied Noise Ninja to the image with the settings shown in Figure 11-11v. Those settings maximally reduced chroma noise while only modestly reducing luminance noise, which greatly improved the photograph without costing me any detail (Figure 11-11w).

Fig. 11-11u Figure 11-11t is a very grainy photograph, but this figure shows that most of the grain is chroma noise, not luminance noise. By far the noisiest channel is the red channel (left), while the blue channel (right) is almost noise-free. Luminance noise would be much more evenly distributed between the three channels.

Fig. 11-11v I attacked the chroma noise in Figure 11-11t with Noise Ninja. I adjusted the control sliders to strongly reduce chroma noise but only slightly reduce luminance noise. These settings nearly wiped out the chroma noise without losing any detail in the photograph.
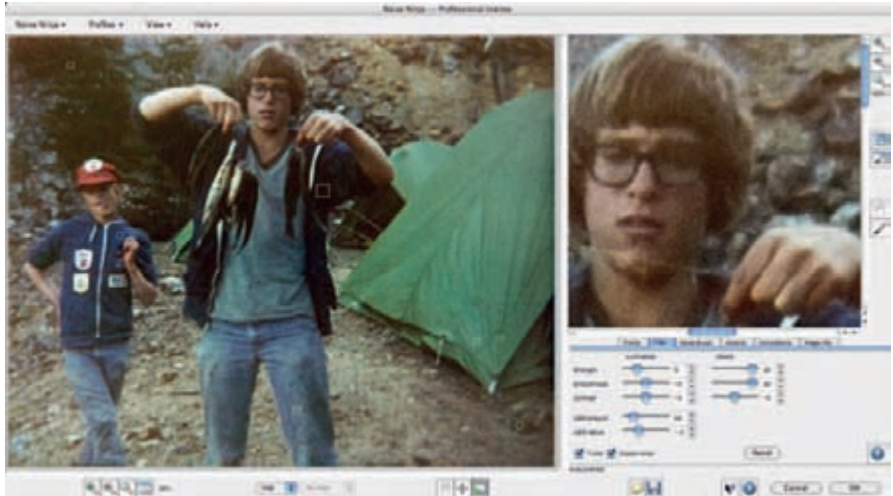
Fig. 11-11w This enlargement shows the photograph before and after applying Noise Ninja. The chroma noise is almost gone, but the subject detail remains intact.

The print looked good enough overall that I felt I was ready to finish up adjusting the tone and color. I did that with a couple of Curves adjustment layers and a Hue/Saturation adjustment layer. The first Curves layer (Figure 11-11x, left) mostly had the effect of burning in the washed-out edges of the photograph. I also used it to clean up the last of the pale streaks in the photograph. The second Curves layer (Figure 11-11x, right) increased midtone contrast, giving

Fig. 11-11x I used this pair of Curves adjustment layers to burn in parts of the photographs that were too light and to increase the overall contrast and brilliance in the midtones, to make the photograph more lively.

the picture more snap and better color saturation. The Hue/Saturation adjustment was a modest 12-point increase in both vibrance and saturation, which improved the overall color rendition, as shown in Figure 11-11y.

Fig. 11-11y After a 12-point increase in vibrance and saturation, here's what the photograph looked like. I wasn't entirely happy with the contrast, but I liked the overall brightness and color.

Fig. 11-11z The Shadows/Highlights adjustment got me to Figure 11-11aa, which had better detail in the faces without compromising the blacks and deepest shadow tones.

I felt the contrast was a little bit harsh, so I used the Shadows/Highlights tool, with the settings shown in Figure 11-11z, to bring out a bit more shadow detail. It opened up the shaded side of the faces very nicely without making the image look washed out (Figure 11-11aa).

At this point the restoration is essentially complete. As a very last step, I decided to do a bit more grain smoothing and subsequent sharpening in the fashion I describe in Chapter 10, Beautification, on page 322, to produce a better-looking output print. For this I used Noise Ninja and FocusFixer with the settings shown in Figures 11-11bb and 11-11cc.

Fig. 11-11aa The Shadows/Highlights adjustment turned Figure 11-11y into this much nicer-looking photograph. This restoration is complete except for some fine-tuning of the grain and sharpness that will produce a nicer-looking print.
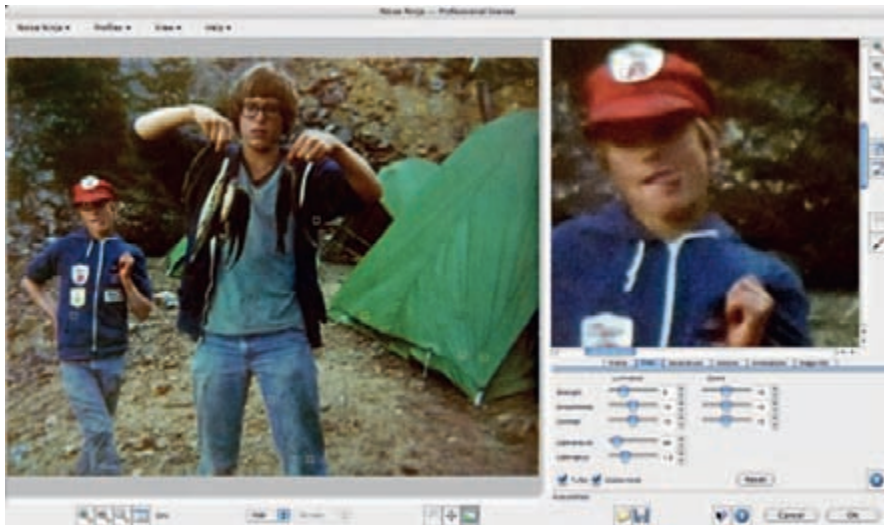

Fig. 11-11bb These Noise Ninja settings softened up the grain in the image but also took away a bit of sharpness that this photograph could ill afford to lose.
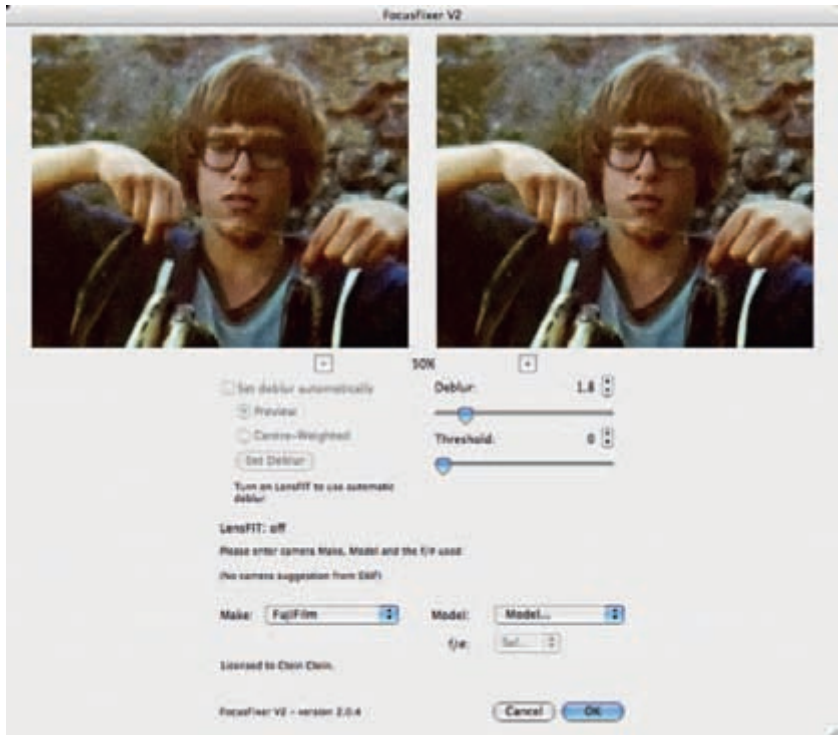
Fig. 11-11cc FocusFixer restored the sharpness that Noise Ninja had taken from the photograph. The combination of noise reduction and sharpness enhancement produced a photograph that was both finer-grained and sharper than it was before I applied these plug-ins.