

BIPC DIGITAL IMAGING STUDY GROUP

ASSIGNMENT 2002-12

SUBJECT: RESTORING OLD PHOTOGRAPHS & DUOTONES, TRITONES, ETC.

Restoring Old Photographs

1. SCAN: Choose the best available original, remove it from any frame or protective covering, and clean it carefully. Then scan it with sufficient resolution to support the biggest enlargement you hope to make. If possible, scan with enhanced bit depth (e.g., 42 bit color), and keep the enhanced depth at least until after correcting the tonal range. Scan even monochrome images in color, then convert to grayscale in Photoshop. Some color channels may be better than others (e.g., yellowing of old paper effects primarily the blue channel; use the red and/or green channels instead).
2. TONAL RANGE: Select a representative portion of the important parts of the picture, excluding major flaws. Use the Levels command to achieve the best tonal range, then Save those settings and Cancel. Now select the whole image, open the Levels command again, Load the saved settings, and apply them. If the tonal range is still not satisfactory, try to see which color numbers are the problem by looking at the Info pallet while you run the cursor around the image. For example, you might find that tones between about 40 and 80 are too dark. Then you can use Curves to correct this part of the tonal range.
3. COLORS: If you are dealing with a color image which has faded, try using the gray eyedropper in the Curves command to select a spot in the image which should be neutral gray. (First choose the eyedropper option to be a 5x5 pixel average so you get a representative sample.) Try several different gray spots in the image and choose the best result. If this doesn't work for you, try using Variations to separately color correct shadows, mid-tones, and highlights.
4. FIXING DAMAGE: Use the Cloning tool to correct damaged portions of the image. For best results, work under high magnification and save you work often.
5. DUST VERSUS SHARPENING: The Dust and Scratches filter will quickly take care of many small flaws in the image, but at the expense of softening the image details. The higher the Radius and the lower the Threshold, the stronger the effect will be. Unsharp Mask can brighten image details, but it will accentuate all the dust spots. The higher the Amount and Radius and the lower the Threshold, the stronger its effect will be. The best compromise may be achieved by applying different filters to different parts of the image. Large areas of the background may look fine slightly blurred, and so can take a heavy dose of Dust and Scratches. People's faces and other critical details will need to be sharper, although you will generally want the skin tones to be fairly smooth. In a portrait, the eyes should usually be sharpest of all.
6. GENERAL EDITING: Any of the things you would do to your own modern photos can also be applied to restored antiques, e.g., cropping, selective lightening, darkening, blurring, etc.
7. ASPECT RATIO: (This can apply equally to your new photos as well.) If you are making custom prints, you can have almost any size and shape you like. But if you are trying to fit a specific frame or special location, you may need a specific print size. The obvious solution is to crop to that aspect ratio. But sometimes you can't crop to that aspect ratio without cutting off

some important part of the picture. In that case, there are two more options to consider. If one edge of the picture is simple enough, you may be able to expand the canvas and create some more image in that direction. For example, if the top edge is clear blue sky, you can create more of it with the cloning tool or by stretching a slice of the sky with the Transform command. Alternatively, you could stretch the whole image to the new aspect ratio using Transform, or by resampling without constrained aspect ratio (in the Image Size command). This usually creates an unnatural effect with people pictures, but many landscapes and other images can be stretched quite a bit and still look fine.

Duotones, Tritones, etc.

An interesting option for rendering monochrome (grayscale) images is to turn them into duotones, tritones, etc. The concept is that instead of printing them using black ink only, they are printed using two different inks (duotones), or three (tritones) or four (quadtones). One of the inks is usually black, and the others may be one of the standard “process” colors (Cyan, Magenta, or Yellow) or any of the hundreds of Pantone colors or other custom ink colors.

The different inks are not necessarily used proportionately. There is a separate curve for each ink specifying how much of that ink is used as a function of the digital grayscale level in the image. For example, the black ink might be used proportionately, but the other ink might come into play only in the darkest or lightest areas of the tonal range.

Although the idea of duotones, etc. comes from a printing press environment with multiple inks, Photoshop does a nice job of simulating them on your monitor and on your ink-jet printer.

You can convert a grayscale image into a duotone under the Mode sub-menu. If you click on Load in the dialog box, you will get a choice of dozens of predefined duotones, etc., each specifying the ink colors and curves. You can preview each of them on your monitor before applying it.

There are a wide range of effects. Some have a strong color cast, and some are very subtle. For different images, different duotones will either bring out or obscure some of the image details. Preview them on screen, then print out a few of those that look best.

Several of the duotones simulate a sepia tone which may look appropriate for antique photographs.

You can also edit any of the duotones, etc., or create your own from scratch. Click on the curves or colors to edit them. Any color can be selected for the standard color models, or from the Pantone or other commercial ink catalogs by clicking the Custom button. Photoshop assumes that overprints of multiple inks combine according to standard subtractive color rules (Cyan plus Magenta make Blue, etc.). However, you can click on Overprint Colors and define them yourself, in case you want to decide that your special cyan and magenta inks magically combine to produce lime green or something else. The possibilities are endless.

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