

## Effective Gray Scale Techniques

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Many people believe that color images will always be more effective than grayscale. I don't agree with that perception. Grayscale can be just as visually powerful as color images when they are properly rendered. As a matter of fact, many of the great masterpieces in photographic history, such as those by Ansel Adams and Cartier Bresson, are grayscale images.

While the trend has been moving towards full color reproduction, printing of grayscale or monotone images will always remain part of the printing process. Therefore, it is of great importance that we understand the process of converting color to grayscale and acquire the techniques to effectively implement it. Because grayscale images do not have the visual effects of color, it is important to apply certain techniques in order that the images project the desired visual impact we require

Whenever I conduct a seminar on Image Enhancement and Color Correction, I always start with a discussion on Grayscale Techniques. Since original materials are now generally supplied in digital RGB format, I ask the participants how they would prepare their grayscale images from these RGB files. Without exception, their answer would be to simply change the mode from RGB to grayscale using Photoshop. I would then load an RGB image (illustration 1) into Photoshop, apply Change Mode to convert it to grayscale and produce an image (illustration 2) where the details have all disappeared into a single tonal value. After the initial reactions of astonishment have subsided, I begin to explain what happened to the image.



Illustration 1



Illustration 2

When Photoshop converts a color image to grayscale, it bases the values of the gray tones on the luminosity or brightness strength of the various color elements in the original image. The problem with this system is that different colors with the same luminosity will tend to have the same tonal value in the grayscale mode. In the sample described above, the elements of the color image were composed of colors with the same luminosity. Converting the image to gray scale resulted in elements with similar tonal value. Thus the image simply disappeared. Another problem is that the dominant primary color will always have the most effect on the grayscale values in any particular area. If this dominant color lacks detail and contrast, the result will be a grayscale image which is likewise flat and

lacking in detail. This is most noticeable in the images of people, particularly Asians with yellow dominant in their flesh tones. The problem with the yellow in flesh tones is that it is strong in value and but lacking in detail. Merely converting a color image to grayscale using “Change Mode” in Photoshop can produce flesh tones that are dark and flat.



RGB Image



Change Mode to Grayscale

In order to address the problems discussed, it is clear that we need to control the strength that each of the colors contributes to the tonal values in the grayscale image.

### Using the RGB Channels for Grayscale Conversion

The quickest method for effectively producing a grayscale image is to simply view the RGB image in its different color channels and select the channel which shows the best grayscale image. Please note that we should work with the file in its RGB mode because in a CMYK image some of the tonal values in the CMY channels have been transferred to the black channel. This is especially noticeable in images with strong black values in the shadow and near shadow areas. The procedure is as follows:

1. Apply auto level if needed.
2. Open the Channel Palette to preview of the grayscale image in each of the RGB channels.
3. Select the channel with the best grayscale image.
4. Convert from RGB to grayscale using the Change Mode command.

**BLUE  
GREEN**

Red Channel

**BLUE  
GREEN**

Green Channel

**BLUE**

Blue Channel



Conversion from Red Channel

## Using the Channel Mixer for Grayscale Conversion

A longer but more precise procedure involves the use of the Channel Mixer tool of Photoshop.(illustration 10) The Channel Mixer allows us to apply different levels of strength from each of the color channels. We can mix the amount that each channel contributes to the tonal value of the grayscale image to achieve the desired effect.



1. Apply auto level if needed.
2. Open the Channel Palette to preview of the grayscale image in each of the RGB channels.
3. Determine the channel with the best grayscale image.
4. Open the channel mixer.
5. The dialogue box defaults to the red channel which corresponds to the cyan printer in CMYK mode.
6. In the Output Channel box, select the color channel which showed the best image in step 3.
7. Click on the monochrome check box. The image will now appear in grayscale.
8. Adjust the RGB sliders in the Source Channel to produce the desired effect. To maintain the original tonal range, the total value for the 3 channels combined should not deviate to far from 100%.
9. Convert the image to grayscale mode using the Change Mode command.
10. Using the info palette, check the highlight and shadow values. For best results the halftone values should range from 5% to 95%.



RGB Image



Change Mode



Using Channel Mixer

It is interesting to note that the above described techniques are similar to the use of color filters by professional photographers during the era of black and white photography. In those days, the proper use of color filters often made the difference between producing an ordinary snap shot and a photographic masterpiece.

### Adjusting the Brightness of the Image

At this point, I would like to emphasize that the brightness of the image should be adjusted by increasing or decreasing the values at the middle tone areas. This will preserve the overall contrast of the image. Use the curve tool and adjust the density curve at the 50% area to achieve the desired brightness.

### Sharpening the Image

An effective tool to increase the impact of grayscale images is the Unsharp Mask. Grayscale images can be sharpened to a much higher level than color images. Sharpening a grayscale image brings out details which were reduced in the conversion from color to grayscale.

1. Select the Unsharp Mask under the filter > sharpen menu.
2. Set the radius value between 1.0 to 2.0. Values less than 1.0 will result in negligible effect. Values more than 2.0 sharpens a wider band of pixels and may produce white spaces between sharpened areas.
3. Set the threshold value between 2 to 10. The threshold value indicates the numerical difference that must exist between adjacent pixels before Photoshop sharpens these pixels. A low value sharpens more pixels; while a higher value excludes more pixels from the sharpening process.
4. Using the slider, set the amount from 100% to 200% until the desired effect is achieved.

Please note that the values above are general recommendations. Final values to be applied will depend on the image being processed and the intended effect of the sharpening process.

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*The author has been involved in color separation as early as 1975, when the process was still photomechanical, up to the present involving digital CtP technology. He is a past president of the Philippine Printing Technical Foundation and a regular resource speaker for the foundation's seminars. Comments may be emailed to philprinting@gmail.com.*

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