

## Grayscale Shootout

by Chris & Trish Meyer, Crish Design (*formally known as CyberMotion*)

### Which is the best effect to convert your color footage to black and white?

Color is wonderful, but every now and then we need an image to appear in black and white - be it for stylistic reasons, or because we need to create a luminance map (range of grayscale values) to be used by another effect. It seems simple enough: simply remove all of the color saturation from an image. However, there are often better-looking alternatives.

#### Where Saturation Fails

We know that it's hard to break habits without a good reason why, so let's start out with an example that demonstrates why you might want to look beyond simply decreasing the saturation to convert a color image to grayscale. The first set of images uses clip NAB111 from the Nature Abstracts collection, which we developed for Artbeats. It is very colorful when used as a background, but you may want to remove those colors and employ just its values - areas of contrasting lightness and darkness - when it is used as a "lighting" layer to treat other footage (see our previous Written Tutorial for Artbeats, Artificial Lighting).

Applying the Hue/Saturation effect in Adobe After Effects and setting the Saturation value to -100 - the process many use - results in a vertical line down the left side of the image where the original image transitions from one color to another. Instead, using the Tint effect set to simple black and white (its defaults) results in a much smoother - and therefore, more useful - grayscale image that also happens to contain more contrast.

*Figure 1: There is a big difference between using Hue/Saturation (b) and Tint (c) when converting this colorful background clip (NAB111 from the Artbeats Nature Abstracts collection) into a grayscale image.*



Figure 1a

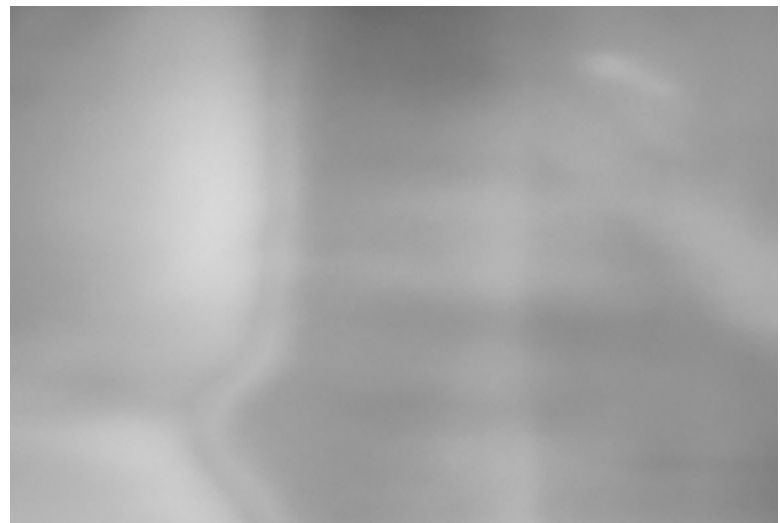


Figure 1b

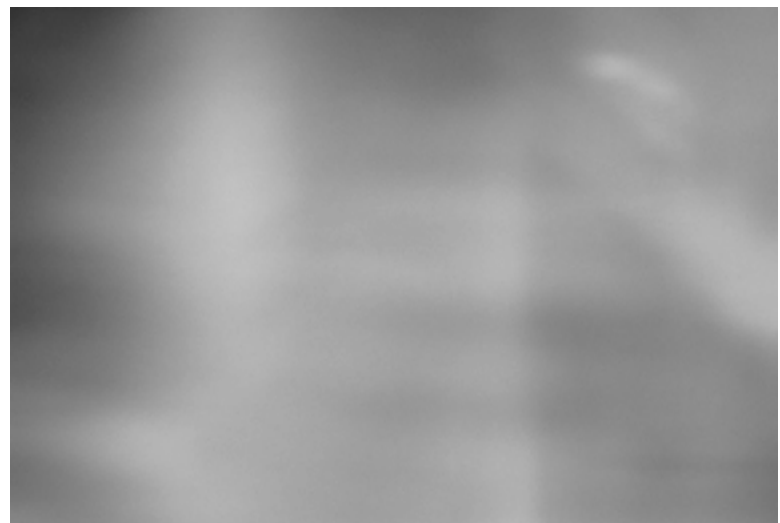


Figure 1c

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Now that we've established that there's a potential difference, let's look at a few other effects to see which ones work well as grayscale filters. Some are tweakable; some work better than others on specific clips – so use the following as just a starting point for your own explorations.

## Grayscale in Adobe After Effects

There are several effects in the Channel and Color Correction categories in After Effects that may be employed when converting a color image to grayscale. If you don't want to mess with any popups, just apply Tint at its defaults. However, if you like to tweak your results, there are other options. Some effects have overlapping capabilities; we'll focus on our favorites.

*Figure 2: It is useful to start out by individually looking at the red (b), green (c), and blue (d) channels of a clip to see which one has the best initial contrast. Several effects can do this, including Channel Combiner (e). (Clip SMA108 from the Artbeats Southwest Monument Aerials collection.)*



Figure 2a



Figure 2b



Figure 2c



Figure 2d

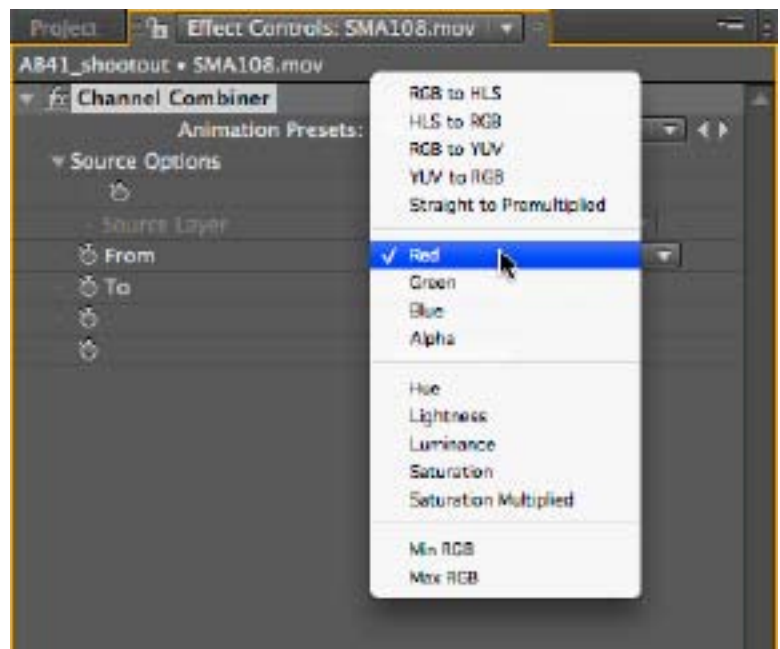


Figure 2e

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The easiest way to get a variety of useful results is to apply the Channel > Channel Combiner effect. Leave the Use 2nd Source switch off, plus leave the To popup at its default setting of Lightness Only. Then experiment with the From choices. The first four options are for other purposes, but after that you get individual access to the red, green, or blue channels, as well as several other options. The Lightness option yields the same result as applying Hue/Saturation and setting Master Saturation to  $-100$ ; the Luminance option gives you a very similar result as applying Tint at its default colors of black and white.

*Figure 3: In addition to quick access to the individual red, green, and blue channels, Channel Combiner provides other useful options including Lightness (b), Luminance (c), Min RGB (d), and Max RGB (e). (Clip NPW106 from the Artbeats National Parks West collection.)*



Figure 3c



Figure 3a



Figure 3d



Figure 3b



Figure 3e

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If you want to tweak in a custom blend of the individual red, green, and blue channels, then use Color Correction > Channel Mixer - but be prepared to have a cheat sheet handy when using it. When you enable the Monochrome switch at the bottom of its effect controls, the meaning of the first four sliders changes: The first three allow you to individually add or subtract the red, green, and blue channels respectively from the final grayscale image; the fourth is an overall lighten/darken slider. The rest of the sliders are ignored.

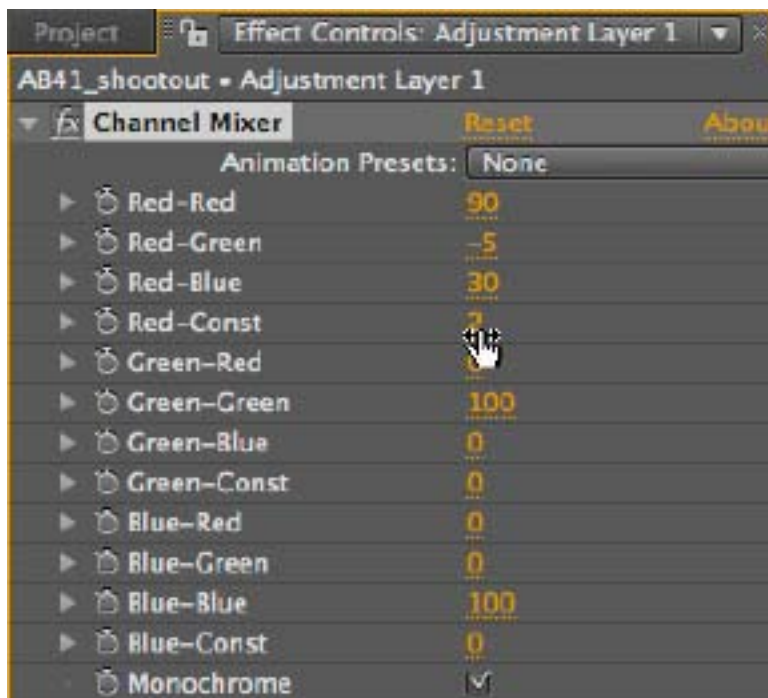


Figure 4: The most flexible grayscale effect in After Effects is Color Correction > Channel Mixer. Enable its Monochrome switch (at the bottom), and the first three sliders provide independent control over the red, green, and blue channels, while the fourth slider acts as an overall contrast control. The rest of the sliders are ignored while in this mode.

## Grayscale in Apple Final Cut Studio

Final Cut Studio contains both the editing package Final Cut Pro, and its motion graphics sidekick Motion. Motion has several Color Correction filters with similar names and functions as those in After Effects - for example, the Channel Mixer effect is virtually identical between the two (with the exception that Motion trades Contrast sliders for Alpha controls). However, other effects with similar names work quite differently. For example, Motion has both HSV (Hue/Saturation/Value) Adjust and Desaturate filters. Motion's Desaturate at its default settings yields quite similar results to After Effects' Hue/Saturation effect with Saturation

set to -100. However, setting the Saturation parameter in Motion's HSV Adjust filter to -1.00 yields a considerably brighter result.

Figure 5: Motion's Desaturate (a) provides quick access to a variety of grayscale conversion options, including extracting luminance based on NTSC, PAL, or Film (c) formats, as well as independent access to the red, green, and blue channels. Desaturate's Luminance options yield quite different results than applying HSV Adjust and turning its Saturation parameter down to -1.00 (d). Starkest of all is Gradient Colorize at its default settings (e), which is available in both Motion and Final Cut Pro. (Clip SCA123 from the Artbeats Southwest Canyon Aerials collection.)

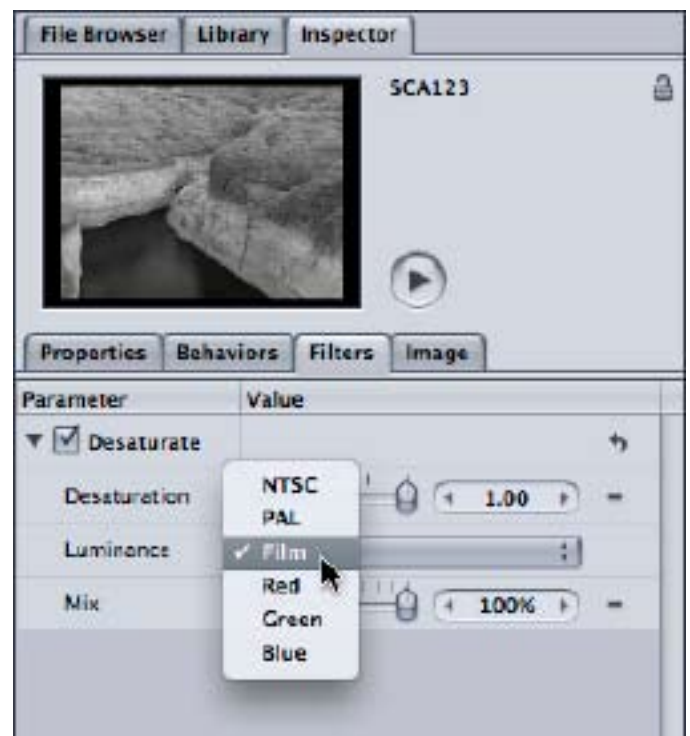


Figure 5a



Figure 5b



Figure 5c



Figure 5d



Figure 5e

Continuing the differences, Motion's Tint is similar to After Effects' Tritone, while Motion's Colorize is similar to After Effects' Tint. If you want a straightforward, set-and-forget black and white conversion in Motion, apply Colorize, edit its colors to be true black and white (their defaults are warm versions of these colors), and save a Favorite with these settings that you can then apply later.

Final Cut Pro actually has more channel and color correction filters than Motion. Among these are Image Control > Desaturate and Channel > Channel Mixer filters which again are your best choices for quick settings and deep tweaking, respectively. If you just want a fast black and white adjustment, apply Image Control > Tint at its default settings.

Both Final Cut Pro and Motion offer a Gradient Colorize effect, which defaults to a black to white gradient. Interestingly, this effect at its default settings provides much more contrast than Motion's Colorize or Final Cut Pro's Tint.

### Zooming Out

Just because you're creating a "black and white" version of the original footage doesn't mean that it can't have any color. Rather than the starkness of a pure grayscale image, you might consider tinting it a slight sepia or orange for a warm, old-time effect, or a slight blue for a cooler feel. In After Effects, the best effect for this job is Color Correction > Tritone: It keeps the black and white points the same, maintaining the original clip's contrast, and allows you to choose a color for 50% gray. Instead of perfect gray, choose a slight tint to lightly colorize the result. In Apple's Motion, the analogous effect is Color Correction > Tint. In Final Cut Pro, instead you want Image Control > Sepia. Keep those two straight; Motion's Sepia and Final Cut Pro's Tint are more limited.

In any case, feel free to follow your result with a Levels effect: Tweak the Input Black and Input White points to maximize the overall contrast, and then play with Gamma to bias the range of grays either lighter or darker. If you have a few moments, it really pays to go beyond just the default results.

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Figure 6a



Figure 6b



Figure 6c

Figure 6: Consider using Tritone in After Effects, Tint in Motion, or Sepia in Final Cut Pro to create warm (b) or cool (c) “black and white” versions of your footage. (Clip SSA101 from the Artbeats Southwest Scenic Aerials collection.)

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Chris and Trish Meyer are the founders and owners of Crish Design (formerly known as CyberMotion), an award-winning motion graphics studio that has created a wide variety of work for film, broadcast, corporate events, and special venues. One of the original development sites for After Effects, they have just released the second edition of the popular beginner’s book, *After Effects Apprentice*.