

Color Correction/Grading Tips

Ever wonder how some movies and tv shows look so good? While they are likely filming with very expensive cameras, a lot of it has to do with coloring the image during post production. It is safe to say that every film you have seen in theaters since the turn of the century has been color graded to some degree in post, and many long before that. This guide will help you figure out how to get the best results out of your image and to what extent your project needs color correction/grading.

Terms

- **Dynamic range:** Measured in EV (exposure value). Refers to the amount of lighting values that you can distinguish in your image between pure white and pure black. The more subtle nuances of lighting your eyes can make out, the more dynamic range you have. The goal is to have the most dynamic range possible, which is why the most expensive cameras have the highest EV numbers.
- **Clipping:** The moment either a shadow or highlight loses detail and just becomes pure black and pure white respectively. This is generally a bad thing, although some entertainment companies (Marvel) will intentionally “crush the blacks” for a gritty and cinematic look. However, the blacks definitely were not crushed during production. Blown out (clipped) highlights are never a good thing. The reason for this is that human eyes have much more dynamic range than cameras are able to capture and thus are thrown off when they are unable to see detail in an area of an image. Human eyes do not really clip so your image should not either (unless you decide to for style purposes).
- **Tint:** A measure of green and magenta (purple) values in your image.
- **Color cast:** Usually refers to a production mistake in which your image has a strong color scheme out of the camera (poor white balance). Color casts should be avoided at all costs during production and only inserted in a controlled environment in post. The most common color cast is the dreaded yellow tint, which results from having an outdoor white balance while filming indoors.
- **Flat:** A type of picture style where your image looks flat, lacking contrast, sharpness and often saturation.
- **Highlights (Gain):** Parts of your image that would be white if you took away all color (skies, bright areas).
- **Midtones (Gamma):** Parts of your image that would be grey if you took away all color, the bulk of your image (anything in the middle of the lighting spectrum).

- Shadows (Offset): Parts of your image that would be black if you took away all color (literal shadows, dark areas).
- Noise/Grain: Those little dots bouncing around your image when you boost the ISO too high. Best to avoid.
- Complementary Colors: Two colors on opposite ends of the color wheel juxtaposed in the same image. The reason this is so common is because complementary colors are appealing to the human eye. The most common one is Hollywood's teal and orange color scheme (watch the Jurassic World trailer and look carefully at the color scheme if you are confused by this concept).
- Color Splitting: Taking two areas of the image (Ex. Midtones and Shadows, Shadows and Highlights etc.) and pulling the color wheel in opposite directions to achieve a complementary color scheme.
- Chroma: Color
- Luminance: Lighting

Color Correction vs. Color Grading

Color Correction: The process of fixing production mistakes such as wrong white balance or a shot that is too bright. It is basically neutralizing the image so that the whites are the right tint and the lighting is reasonable.

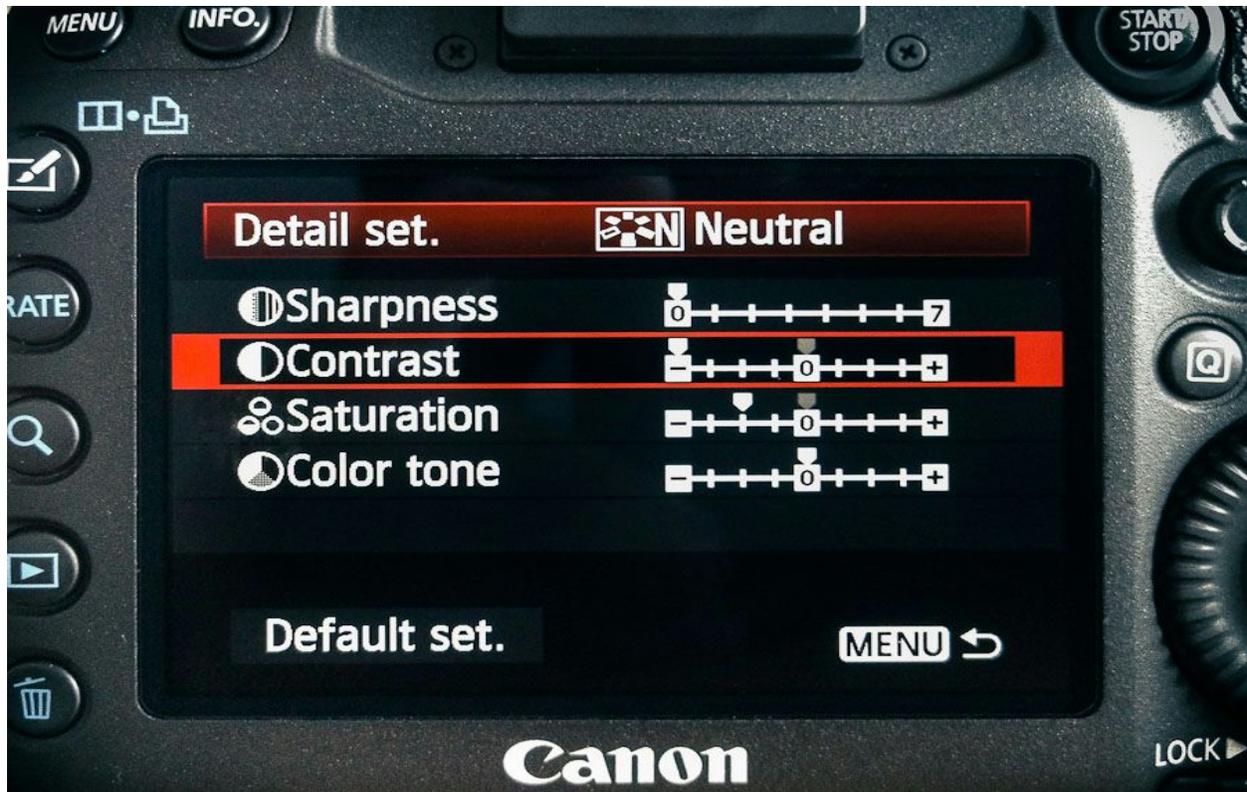
Color Grading: The process of stylizing your image, usually to highlight a specific mood within your scene. This involves giving the image tints after it has been corrected. Examples would be making the images in a dramatic scene more blue or making the images in a romantic scene more red than they were originally shot.

Many people use these terms interchangeably but make sure to complete any necessary correction before doing any grading.

Picture Styles

One of the most common steps before doing any color grading is to shoot your scenes with a "flat" picture style. While there are many variations, the basic idea is to turn down in-camera settings such as contrast, sharpness and saturation. The reason it is called flat is because that is how your image will look when it is filmed. It will be dull and will not have the contrast that you're used to seeing but this is normal. People argue that cameras do a poor job of adding detail such as sharpness or contrast to the image and that once it has been compressed onto your file, you are stuck with it. The standard

picture style that DSLR's ship with is not intended to be corrected and therefore makes many decisions for you, often clipping the shadows so that they are pure black. However, if you shoot flat you will have much more room to fine tune your image in post. There are many downloadable picture styles that people use such as cinestyle but there is an easier way to create a flat image. One picture style, called prolost flat, is achieved by simply messing with some settings in your camera. You would go to menu, picture style, change the selection from Standard/Auto to Neutral and then turn down some settings (shown below).



It's that simple. Now your image is ready to be shot with a flat picture style. For more on the topic: <http://prolost.com/blog/2012/4/10/prolost-flat.html>

The Debate

The idea of shooting flat and then grading later has been debated with two sides to the argument:

- For - More control in post, more dynamic range, easier to stylize, acquire more of a film look, details applied in-camera are of poorer quality than what can be done

in editing softwares, less artifacts in the image due to a lack of in-camera sharpness, retain detail in shadows which standard styles usually throw away.

- Against - More time spent editing, possibility of adding more noise to the image since it has already been compressed, Canon Standard picture style looks good enough to me, different grading/stylistic choices may look different on different types of monitors, better to get the look you want straight out of the camera.

While both of these arguments are correct, it is important to decide which you side with. Color grading takes a decent amount of time and effort, so don't shoot flat if you do not plan to see the process through. However, I would argue that it's the most rewarding aspect of editing.

Color Theory

Many choices that professional colorists make are based on color theory. Color theory attempts to uncover the reasons that we associate certain colors with certain moods, characteristics and items. It is argued that color is a language of itself that helps us navigate the world and make informed decisions about everything that we interact with. Color gives us so much subconscious information that it can be used to inflict certain moods on the audience without them even realizing.

More information on the subject:

<http://www.amazon.com/Secret-Language-Color-Science-History/dp/1579129498>

Premiere Pro vs. Speedgrade

Since Adobe is the most common editing suite at the university, I will only refer to Adobe applications. Therefore, I will discuss the two options for color correction/grading, Premiere and Speedgrade.

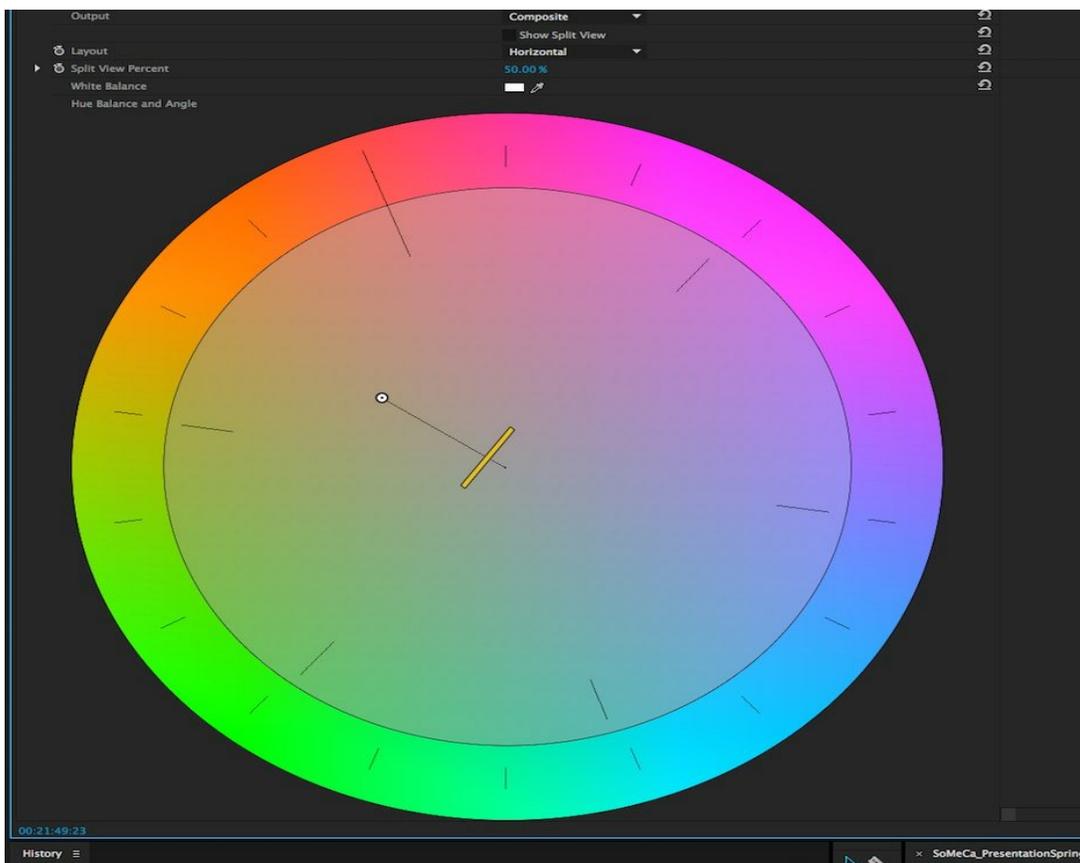
Adobe Premiere Pro: The nice thing about doing color grading within Premiere is that you do not have to switch applications. All of your color effects will be easily accessible within each clip in your timeline. Also, you always have the option to toggle effects on and off to see how your image has changed. While Premiere has fewer color options than Speedgrade, it still has more than you will ever need. I also find the color wheels within Premiere to be superior to those in Speedgrade due to the fact that it is easier to see what you have already done to the image.

Note: Both applications give you the option to command copy/paste effects from one clip to another. Do not try to match a grade by hand from one shot to another within the same location unless copying the effect does not look right due to a light or color change during production.

- Three-Way Color Corrector: The best option for color correction/grading within Premiere. Don't be fooled by the name, this effect is meant for grading just as much as it is for correction. You have control over the tint in the Shadows, Highlights and Midtones separately. For luminance (such as adding contrast back to your image), you will use the input levels slider. On the far left you have your shadows, middle is the midtones and far right is the highlights. Increasing the shadows slider will make your shadows darker, decreasing the midtones slider will make your midtones darker and decreasing the highlight slider will make your highlights darker (and vice versa for each direction). The midtones color wheel and luminance slider will always affect the image more than shadows or highlights. You may also want to play with the saturation levels (dramas tend to have less saturation, dream sequences tend to have more). You can find the Three-Way Color Corrector under the effects panel.

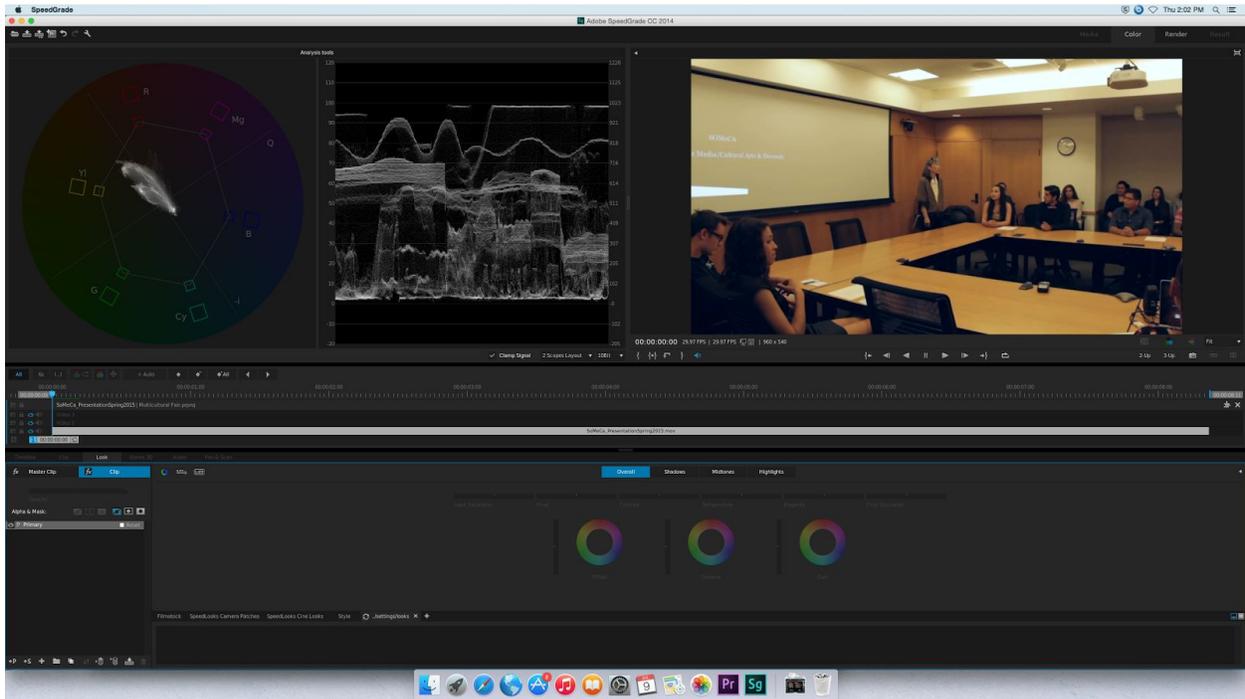


- Fast Color Corrector: Similar to Three-Way Color Corrector except there's only one wheel instead of three. Therefore, the wheel will change the tint of Shadows, Highlights and Midtones upon being pulled. This effect is used more frequently for white balance correction and less so for stylized grading. However, you can definitely grade with it. Everything else is the same.



- Adobe Speedgrade: An extremely strong color grading software that has “round trip” capabilities. This means that you can send your Premiere project into Speedgrade without having to export your project or close Premiere. You simply click file, direct link to Adobe Speedgrade and it will load your timeline into Speedgrade. Speedgrade will give you the three color wheels similar to Premiere, but the whole interface is much less intuitive. Whichever software you choose, I highly recommend watching multiple Youtube tutorials so that you know how to use the tools and get the most out of each software. While almost everything you can do in Speedgrade you can do in Premiere and vice versa,

Speedgrade has a purely color oriented layout. This means that you can't cut clips in Speedgrade, in fact all of your clips are locked so that you don't accidentally make any timeline changes. The entire screen will be dedicated to color and lighting controls whereas Premiere will have a box that fills about a third of the screen with similar controls.



The upper right screen is your preview window, similar to Premiere you can toggle all effects on and off. The upper left window is what's called analysis tools. These are graphs and charts that show you information about the Chroma and Luminance in your image. In this screenshot, I have a vectorscope on the left and waveform on the right. The vectorscope helps to show you color tints whereas the waveform tells me where the range of exposure lies. There are others and I recommend watching tutorials on each of them and how they help you color grade. The bottom portion of the screenshot is the control panel with color wheels and luminance sliders. The color wheels work similarly to those in Premiere except they are much less sensitive and I find it more difficult to tell where and how far the crosshair has been pulled on the wheel. Each area also has a luminance slider that is relatively similar to Premiere except they are separated. Pulling these sliders up will increase brightness in each area and pulling down will decrease brightness. The crazy part about Speedgrade is that you can mess around with three color wheels (each shadows, highlights, midtones) for each category or for overall. This means that you could alter the highlights of your shadows or the shadows of your

highlights, not that this would do much. You can also add a secondary layer and saturate or desaturate specific colors if need be. For example, if someone is wearing an orange jacket that draws your attention too much, you may want to add a secondary layer and simply desaturate the color orange without changing the rest of the image.

Final Notes:

- Take a minimal approach. You don't want to push a color wheel too far and have your image look fake.
- Always toggle on and off to see if the effect is an improvement over the original clip.
- Be patient. Learning everything in each application takes a while but you also don't need to know every tool and every button. Just the essentials.
- If you turn off sharpness in-camera and want to add some back in post, I would recommend the unsharp mask. Be very careful with this tool because it can ruin your image if pushed too high. I would recommend no more than 120 for the amount (which is still a lot), a radius between 1 and 2 and not to touch threshold. However, do this at the very end of the project because it will increase the time needed to render and export.
- Actively try to notice tints while watching movies and tv shows. This way you will see what situations colorists use certain colors.
- Film various items and locations and practice coloring them before you commit to shooting an entire project with a flat picture style.
- Film an item with the standard picture style and then a flat style so that you can compare and see the difference.

Links:

Article with tips:

<https://www.hurlbutvisuals.com/blog/2012/01/7-tips-for-hd-color-correction-and-dslr-color-correction/>

Premiere Brightness and Contrast:

<https://www.youtube.com/watch?v=mRWa7UuurY8>

Premiere Color Correction:

<https://www.youtube.com/watch?v=Q3eB4nnkiAw>

Speedgrade:

<https://www.youtube.com/watch?v=5ZWZ5s10cUw>