Demystify the Bluescreen and Greenscreen Process, and Achieve Professional-Looking Composite Effects

Try These Steps for Setting Up Simple Chroma Keying

by Saro Varjabedian

Embarking on a bluescreen or greenscreen shoot might be a scary proposition. However, with the right preparation, and following these simple steps, you can pull off some composite effects that could rival professional productions.

The first step to the chroma key process is to select the appropriate screen. In theory, pretty much anything can act as a chroma key screen, and in fact, it doesn’t necessarily have to be green or blue in color. However, there are two very good reasons why green and blue are the standard colors used in the industry. In the early days of compositing, blue screens were the first to be used because at the time, all compositing was done on film. Because film renders colors using the primary colors of red, green and blue, there was a process developed which could key out an image placed in front of blue colored screen. Later with the advent of video, it was discovered that video responds better to green screens. The reason being is that these professional systems are chemically balanced to get the purest green or blue color while minimizing the amount of reflectance of the material or paint thereby reducing the amount of spill (more on spill later). So, do not try and go cheap by buying a bed sheet. Rather, spend money on a chroma key formulated screen, and to save yourself a lot of time and angst later in the post process.

Once you’ve acquired your screen, the next step is setting it up and lighting it. If you opted for the paint, you would paint a flat and even wall surface. If you purchased the Muslin, you will hang it up as taught as possible. You may need to iron out wrinkles with a steamer to get it as smooth as possible. Once your screen is setup, you will need to light the screen as evenly as possible. To accomplish this, use soft, even light sources such as soft light boxes, kinos, lights with chimeras or bounced off white cards. You could even place the screen outside and light it under even daylight conditions like behind the shadow of a building. Place the light sources at opposite sides of the screen facing it at 45 degree angles. The colored screen can also be lit from the top and bottom.

Once the screen is lit fairly evenly to the eye, check it using a spot meter which, some video cameras come with the feature of giving you the internal spot meter readings. With the spot meter, scan across the entire screen making sure that the screen comes up at the same exposure level. As you scan the screen, there should not be more than a third of a stop difference from point to point. If you do not have access to a spot meter, you can use the zebra settings in your camera as a meter of sorts. To do this, open up the iris incrementally until the zebra lines first appear. If your screen is evenly lit, the zebra pattern would be displayed across the entire screen. If the pattern shows in spots, then the lighting is hotter in those spots.

The colored screen will also get a lot of spill. Spill is light from the light source hitting the screen and spilling into the area of the subject. If you do not remove this spill, the colors will either not be blue or not be green. So, we need to keep lighting low in the area that we will not be having the subject. To accomplish this, you can change the intensity of the lights on the subject by using ND filters or putting a white card in front of your lights. You can also use an empty or non-reflective material to block the light. If you are on a budget, you can create your own ND filters using a 3D printer or laser cutter. Once the spill is removed, you can then add the subject in the foreground.
areas and will need to be readjusted to balance it out evenly. Now that your screen is lit, the next step is to light your subject. The subject is exposed at the same f-stop as the colored screen. However, in most cases, it should not be lit the same way as your screen. To decide how to light the subject, take your cues from the background plate that will be used. Based on where the key was placed in the plate and whether a low-key lighting or not, you would replicate that in the studio. That is why when recording your plate, take technical notes such as light placements, f-stops, lens focal lengths, or time of day – so that you can more easily replicate those settings. The other thing to consider is to try and place the subject as far from the screen as possible. Even though chroma key screens are designed to minimize reflectance, they still do reflect some of the light that hits the screen. This light carries the screen’s color with it, and if the subject is close to the screen, the bounced colored light will spill onto the subject making it difficult to key them out properly. By keeping the subject further away from the screen, the spill becomes less apparent.

One final note: when planning a colored screen element shoot, take into consideration the type of camera that will be used. The higher the quality of the image, the easier it will be to key out the subject. An HD camera that renders a 4:2:2 color space would make keying out the subject cleanly easier than with a standard def camera with only a 4:2:1 or 4:2:0 color space. That being said, it is still possible to get good colored screen elements with a standard definition camera. The trick is how well you light the green screen and the subject. If you follow the steps listed above, you should be able to achieve good composite effects.

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