General Specialist

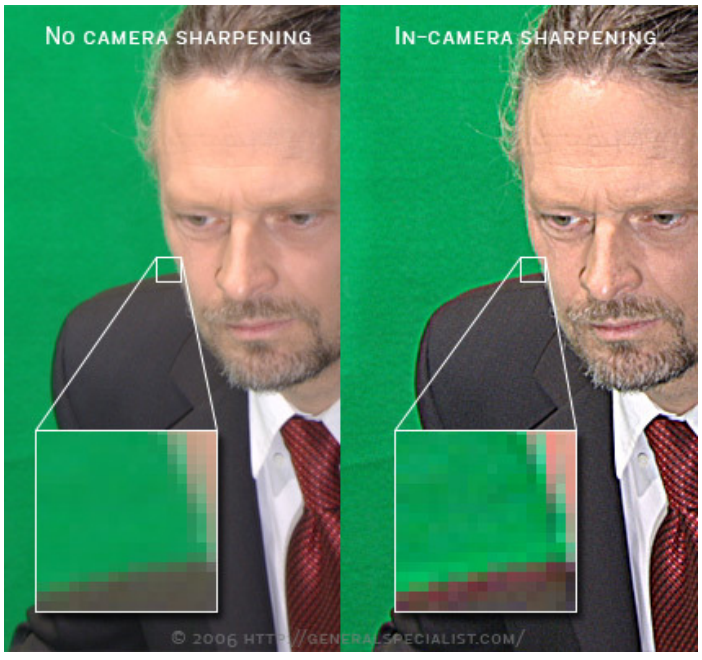
2006-10-30

Greenscreen and Bluescreen Checklist

Shooting for greenscreen or bluescreen? Here's a list of hard-earned experiences from the shoots where I've been vfx supervisor. I don't claim to be a chroma expert, so please post a comment if you have more tips to add to the list!

UPDATE: I've added some info on depth-of-field and motion blur as point number 2.

1. Keep it Blurry in Camera
Turn off all in-camera sharpening! This might make your director of photography (DOP) nervous and it will certainly make it harder for her/him to focus. On Sony cameras, there's usually two settings that need to be turned off: *Detail* and *Skin Detail*.

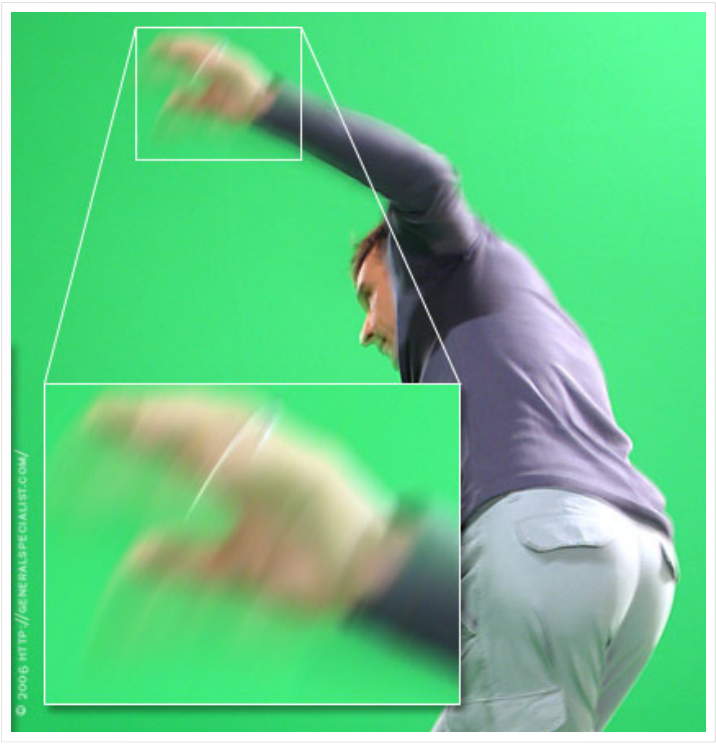


By default, all cameras apply a sharpening filter as a post-process before each frame is committed to tape/disk/memory card. While this makes the image look better, it is makes it so much more difficult to get a good and clean edge between your foreground and your chroma screen. Digital sharpening works by finding adjacent pixels of different lightness values and then increasing the difference, in effect crating a border with much higher contrast. Notice also how the in-camera sharpening brings out noise and imperfections in the chroma screen.

So shoot without sharpening and add it in post instead!

2. Keep it Sharp on Stage

While you don't want the camera to add artificial sharpening, you still want to keep everything in the foreground as sharp and correctly focused as you can. If the chroma screen is blurred in the background will only help to make it more evenly lit and textured, but you want to avoid having to key out blurred foreground, trying to separate it from the chroma.



If the blur comes from a too slow shutter speed or by too narrow depth-of-field, you'll have to tweak the keyer and possible sacrifice other parts just to manage the fuzzy edges. A blurred edge between foreground and background means that you will have to compromise between the edge and despilling settings, and quite possibly have to keyframe these settings to compensate for different levels of blur on different parts of the clip.

Instead, add motion blur in post by using *optical flow* technologies such as ReelSmart Motion Blur and add depth-of-field by layering chroma clips and post-blurring them.

3. Resolution and Framing

You want to shoot with as high resolution as you can afford, to make sure you keep your options open when you get to postproduction. Even if your finishing in SD, try to capture in HD or even 16 mm or 35 mm film. The more detail you can capture, the cleaner key you'll be able to pull. You can always scale down, but you can't get back image data that you haven't captured...

Keep a constant lookout for how the DOP frames the action. Since you'll be working with the shots in post, you can disregard the safe areas that are normally cut off by monitors and TV sets - that's 10% more image data to use!

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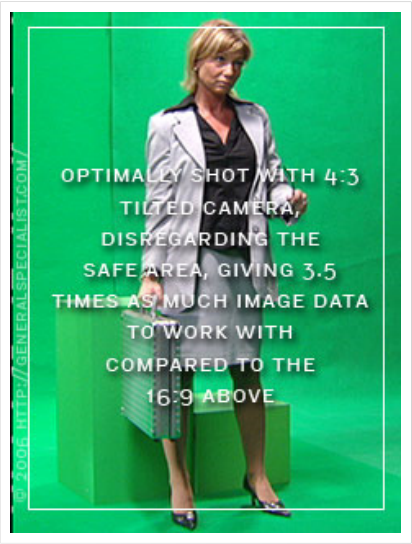
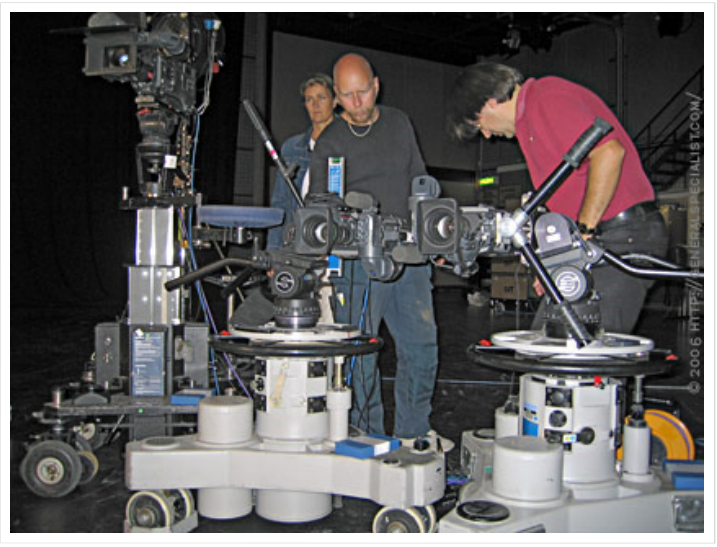
I've found that I often have to keep pushing for tighter framing of each and every shot. To make sure that you and the DOP sees the entire image, set the camera viewfinder and the preview monitors so they are *underscanned*.

Even if you're shooting for a 16:9 production, you'll most likely want the set the camera for 4:3 aspect ratio, unless your shooting something that will fill the entire frame horizontally. Otherwise you'll be sacrificing horizontal resolution, making for rougher key edges.

Another way to squeeze the maximum amount of resolution from your cameras is to tilt them 90 degrees for shots of standing people.



Here's an example of three Sony Digibeta cameras with two of them tilted 90 degrees to capture standing people at maximum resolution.



4. Blue or Green?
What you are trying to achieve is to provide your keyer with a color channel that is as distinct as possible. Since human skin tones and lips tend to be red, that leaves blue and green. So which one to choose? That depends on a couple of things...

Green chroma screens have become more and more popular in recent years, largely because green provides a brighter color channel that tends to have less noise than the blue channel. The relative brightness of green makes it a bad choice for shooting blonde hair though, which is a lot easier to key against blue backgrounds.

The bluescreen has some distinct advantages. When you can't avoid a lot of spill (for example when you have to put the foreground very close to the chroma material) you can take advantage of the

fact that we tend to find blue casts less disturbing than people walking around looking sea-sick with green faces. Also, when shooting for something that will be composited on to outdoor backgrounds and water, a slight blueish cast won't be a problem.

So if you are shooting a blonde with jeans, you'll have to settle for a compromise!

5. Don't Depend on the Crews' Imagination
Good storyboards that can be shown to the entire crew, both before the shoot (so that they can bring the correct gear) and during the shoot. Depending on the complexity of the shot you might need animatics, but at least bring sketches or printouts.

Talk to the crew so that they understand how stuff will be used in post. For example, I have had instances where cameramen have cut off
talents' feet even though I've tried to explain that we needed the whole body.

6. Don't Depend on the Talent's Imagination
If talents are supposed to look at things that will be added in post, make sure they have something (that can be keyed out later) to look at and interact with during the shoot.

7. Get Good Clothes
Make sure you avoid greens, browns and khaki for greenscreen shoots and jeans and other blue clothes for bluescreens. This cannot be allowed to be something you decide on location, it must be planned beforehand.

8. Get Good Props
Make sure you can dull-down shiny stuff so that they don't reflect the chroma color.

The choice of a shiny metal briefcase in the example above is a particularly bad one, considering it had to be rotoscoped in all the shots. The ear-ring was taken care of with an *Inside Mask* in *Keylight*.

9. Match the Lighting As If Your Sleep Depends On It

There's no substitute for good lighting and gaffers that can match foreground and background. You can fix almost anything in post-production, be relighting is among the hardest and least successful things you want to spend your nights with. There's nothing that screams **fake** as much as wrong lighting!

10. Preview Directly On Set

You can't underestimate the value of being able to compare a roughly keyed-out foreground against the background that it will be composited against. Not only is the immediate feedback important for the talent, it is also invaluable when it comes to matching the lighting and perspectives.

If you can't use a real-time keyer with a feed from the camera, like in the image above, at least bring a laptop and a digital still camera and do a quick key until the lighting matches perfectly.

11. Go Easy on the Tracking Markers

If you use tracking markers, make sure you have sufficient number in each shot, without having too many that you will have to paint-out in post. Try using markers with almost the same color as the screen, for example by using chroma tape, so that you can remove them by a second keying-pass.