

Green Screen[™] Production Kit Green Screen Production Workshop

LESSON 3

CHROMA KEYING



Introduction

This teachers' guide provides insight into the proliferation of Chroma Keying technique used in video production.

Chroma Keying Definition

Chroma keying is a visual effects / post-production technique used for combining two frames or images by replacing a color or a color range in one frame with that from another frame.

Chroma is the Greek word for color. Chrominance or chroma is one of the two components of a television signal.

The other component is luma, which represents the brightness in an image (the "black and white" or achromatic portion of the image)

Chroma keying is often used in film industry to replace a scene's background by using a blue or green screen as the initial background and placing the actor in the foreground. The principle behind chroma keying is that the color green is the opposite color of skin tone, so a distinction between the two is very clear, making it easier to select the color without worrying about any part of the actor being included in the selection. The whole green selection is then replaced with another frame as the background.

Chroma Keying Usage

Chroma keying is used in movies to replace a blue or green background with computer-generated or separately-shot scenes during the post-production stage. The selection of blue or green background mainly depends on the effect required and what colors the actors are wearing. This makes it easier to separate the actor from the background. The final result is that the film is made to look like the actor is somewhere other than a studio.

The chroma key process is widely used because it is cheaper to do this than to shoot in expensive or inaccessible locations. It can also be done in real time, making it ideal for weather report or entertainment shows.

Take a look at the history of chroma key:



Hollywood's History of Faking It | The Evolution of Greenscreen Compositing (17 min 29 s)

Class Activity:

Use **Annex 1** sheet to give a Quick Quiz on Chroma Keying



CHROMA KEYING

Learning The Basics

Good chroma key techniques are required regardless of the equipment being used.

There are several techniques in common to all methods of keying, which include:

- Lighting the chroma key wall (paint, fabric, paper or mat) evenly so the color is consistent but not lit too brightly.
- Lighting the talent with three-point lighting.
- Keeping the talent far enough from the screen to avoid casting shadows.
- Clothing must be contrasting to the color of your screen.
- Textures with fine details on the edges like curly hair, loose earrings, and frilly fabric are difficult to key because of the complex variation in contrast and opacity.

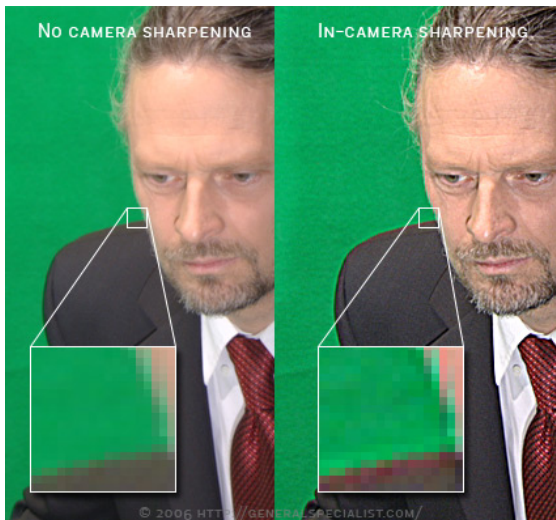
You can create chroma key effects easily, and in real-time using I Can Present software included with the HamiltonBuhl Green Screen Production Studio.

Green Screen Checklist:

Here's a list of tips and suggestions to follow when shooting with a green screen:

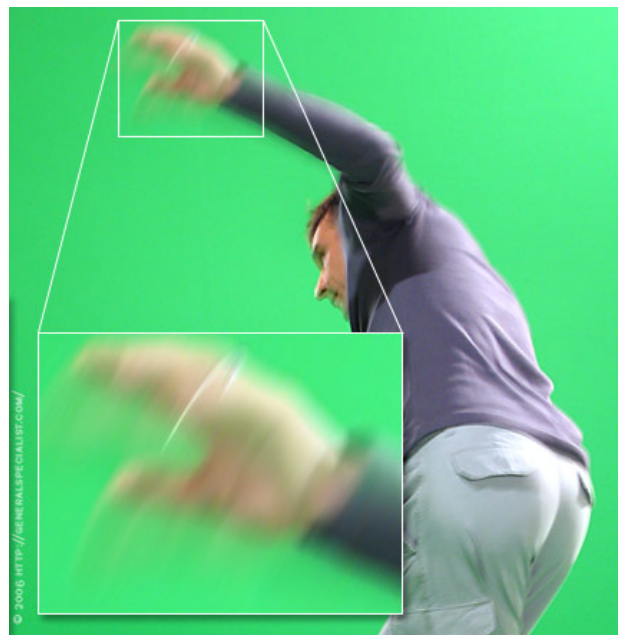
1. Keep it blurry in camera

Turn off all in-camera sharpening. 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 makes it more difficult to get a good and clean edge between the foreground and chroma screen. Digital sharpening works by finding adjacent pixels of different lightness values and then increasing the difference, in effect creating a border with much higher contrast.



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. A blurred edge between foreground and background means that you will have to compromise between the edge and despill settings, and quite possibly have to keyframe these settings to compensate for different levels of blur on different parts of the clip.





CHROMA KEYING

3. Green or Blue Screen?

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.

4. Don't depend on crew's imagination

Good storyboards are invaluable and must be shown to the entire crew, both before the shoot and during the shoot. Talk to the crew so that they understand how stuff will be used and what you need in the shot and the scene.

5. Don't depend on your actors' imagination

A detailed script is a must! Not only should it specify what the actor must say, but also what they are supposed to do, including non-verbal gestures, and where to look. Make sure they have something to look at and interact with during the shoot if it's something that will be added post production.

6. Get good clothes

Make sure you avoid greens, browns and khaki for green screen shoots. This cannot be allowed to be something you decide on location, it must be planned beforehand.

7. Get good props

Make sure you can dull-down shiny props so they don't reflect the chroma color. The choice of a shiny metal briefcase in the example below is a particularly bad one.



8. Lighting is everything!

There's no substitute for good lighting. You can fix almost anything in post-production, but relighting is among the hardest to accomplish. There's nothing that screams fake as much as wrong lighting!

9. Avoid Unnecessary "spills"

Keep the foreground as far away from the chroma screens as possible, since you'll have less spill to deal with. Make sure that all parts of the floor that might reflect chroma color onto the foreground are covered by non-reflective material such as black cloth.

Check that the entire foreground has chroma behind it during the entire take, which is why rehearsal is so important since it gives you the chance to spot potential problems which will force a setup adjustment.


10. Keep it clean

Strive to keep the chroma screen as wrinkle free and spotless as possible, and stop people from walking on it unnecessarily.

Class Activity:

Ask your students to watch the following movie clips and discuss how much of each clip was shot using green screen.

Young Sherlock Holmes - Glass Stained Knight
(1985, 1 min 59 s)

 youtu.be/aKb61j8P4fU

Jumanji
(1995, 2 min 27 s)

 youtu.be/RWwhA2v9UFQ

Game of Thrones: Jon Snow Pets Dragon (clean clip)
(2017, 4 min 4 s)

 <https://www.youtube.com/watch?v=nNV4vywsgsY>

Wonder Woman
(2017, 7 min 21 s)

 youtu.be/MBL15EI6ujI

Jurassic Park - They're Flocking This Way!
(1993, 2 min 19 s)

 <https://www.youtube.com/watch?v=nM-RPO10aPY>



CHROMA KEYING

BASICS OF LIGHTING A GREEN SCREEN

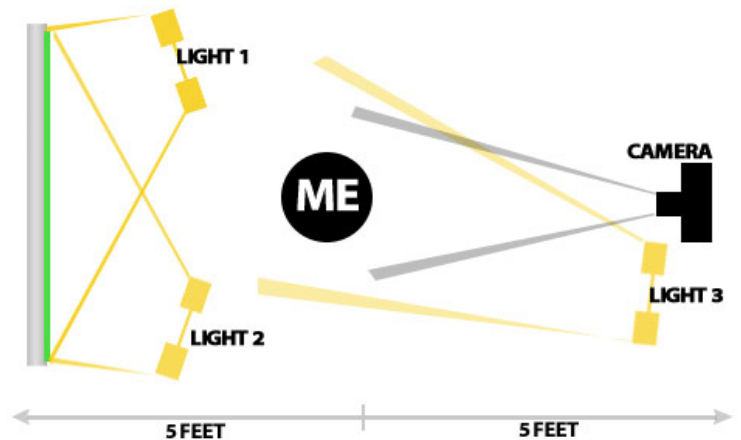
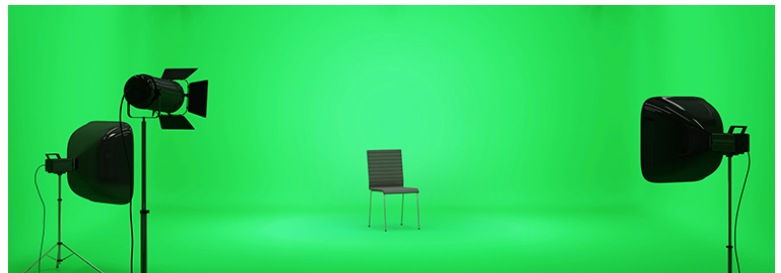
Lighting a green screen is fairly simple from a technical perspective. Unlike traditional film lighting, which is all about finding contrast and mood by balancing light and shadows, lighting a green screen is all about evenness and consistency.

The most crucial thing to remember when lighting your green screen: any area of the backdrop that appears in the frame must be **lit perfectly even and exposed correctly**. If your backdrop is lit properly on one side but underexposed on the other, you will have not achieve a clean key. The same applies to a backdrop that's either over or underexposed. Any attempt to overlay a backdrop that isn't actually reading as green on camera will fail.

- Use big soft light sources.
- Pointing hard light source with no diffusion at your green screen will create a hot spot with gradient surrounding it, giving you uneven light to work with.
- Most simple productions need only two lights to illuminate the backdrop. However for better lighting three lights are recommended, 2 for the backdrop and one for the subject.
 - Place the two lights, one on either side of the green screen, a few feet back on a 45° angle
 - Place the third light aimed at the subject
- Adjust angle of lights to make sure they're not overlapping in the center to eliminate hot spots.
- Use exact same lights on either side of the green screen for consistency. If using two different lights, you will run into exposure and color temperature issues.
- Add more lights on your subject for a more dramatic look.



This image is inconsistently lit. You will have a difficult time keying the darker edges of the frame.



How To Effectively Light Your Green Screen (9 min 32 sec)

<http://youtu.be/MPrvEyw-3mo>



CHROMA KEYING

Individual Class Activity:

Sketch out a concept for your own portrait study (have it approved/checked off prior to shooting). Use one portrait taken with the green screen. Remove the green screen using the learned chroma key and layer mask techniques. Take two additional photos or use two photos from the Internet to create two different moods/ideas/feeling to your shot.

Portrait:

A photograph of a person, especially one depicting only the face or head and shoulders.

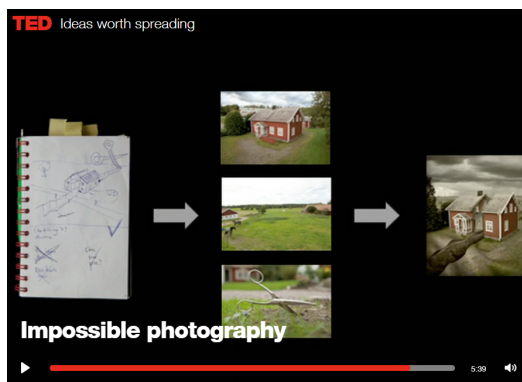
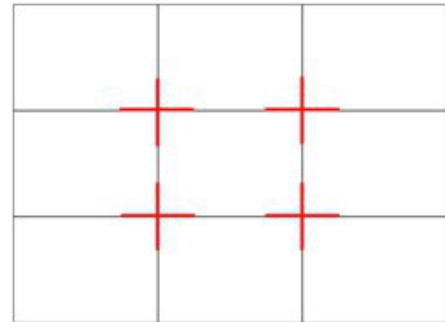
Mood:

- (1) a temporary state of mind or feeling: he appeared to be in a very good mood about something.
- (2) an angry, irritable, or sullen state of mind: he was obviously in a mood.
- (3) the atmosphere or pervading tone of something, especially a work of art.

Rule of Thirds: The basic principle behind the rule of thirds is to imagine breaking an image down into thirds (both horizontally and vertically) so that you have 9 parts. See image to the right.

The theory is that if you place points of interest in the intersections or along the lines that your photo becomes more balanced and will enable a viewer of the image to interact with it more naturally.

Studies have shown that when viewing images, people's eyes most naturally go to one of the intersection points, rather than the center of the shot – using the rule of thirds works with this natural way of viewing an image rather than working against it.



Ted Talk: Impossible Photography
by Erik Johansson (5 min 39 sec)

Use this Chroma Key / Green Screen Portrait Rubric to evaluate and grade student's work.



QUICK QUIZ

ANNEX 1

1. The technique referred to as color keying, green screen, and blue screen are also known as ?

2. Blue and green are considered the colors least like?

3. What is the Greek word for color?

4. What is the Greek word which represents the brightness in an image?

5. Why must clothing be contrasting to the color of your screen?

6. Why are textures with fine details on the edges like curly hair difficult to key?



CHROMA KEY PORTRAIT RUBRIC

ANNEX 2

	EXCELLENT	VERY GOOD	GOOD	NEEDS IMPROVEMENT	MARK %
PLANNING	7+ sketches made to plan background in relation to subject, posing of subject to achieve balanced composition, and subject dominance.	4-6 sketches made to plan background in relation to subject, posing of subject to achieve balanced composition, and subject dominance using Rule of Thirds.	2-4 sketches made to plan background in relation to subject, posing of subject to achieve balanced composition, and subject dominance using Rule of Thirds.	Attempted to sketch to plan background in relation to subject, poor posing of subject to achieve balanced composition, and subject dominance using Rule of Thirds.	25%
CONTENT	Successful framing of overall composition. Optimal use of light. Props well integrated in composition to enhance portrait narrative.	Somewhat successful framing of overall composition. Good use of light. Props integrated in composition to enhance portrait narrative.	Fair framing of overall composition. Fair use of light. Props poorly integrated or missing in composition.	Unsuccessful framing of overall composition. Poor use of light. No Props.	25%
MOOD	A very clear point of view for each mood/idea.	A somewhat clear point of view for each mood/idea.	A somewhat unclear point of view for each mood/idea.	An unclear point of view for each mood/idea.	25%
TIME MANAGEMENT	Student is always on task and working hard.	Student is mostly on task and working hard.	Student gets distracted and should try to concentrate better.	Student is regularly distracted when they should be working.	25%
				TOTAL	/100

What were your two moods/ideas?

What was easy about this project?

What was difficult about this project and why?
