

Topic 022

Lighting floor plan - layout

Combining Lighting on a Set

When you're working out the lighting requirements for an entire scene (or studio set), you'll probably use a variety of lighting equipment and employ differences in hardness and softness of light, and whether it's bounced or not. You can also colorize some lights. Just like a painter, you don't rely on only one type of stroke or size of brush to produce a memorable picture.

Contrast Ratio

The contrast ratio is the difference in brightness between the darkest part of the picture and the brightest part. As a rule of thumb, the video image shouldn't have a contrast ratio greater than 30:1. This means that the reflected light from the brightest part of the picture shouldn't be more than 30 times as bright as the reflected light from the darkest part.

You can detect the various brightness levels across your set by using a light meter, if you like, and it's good practice to learn to use one. But since video cameras have inbuilt light meters, video people often check lighting by looking at the image in a monitor connected to a camera viewing the scene. This shows you hot spots which you won't see with your eyes until you're very practised at lighting.

One trap people fall into with using a monitor is that, when they're using the monitor near bright studio lights, they boost the screen brightness so they can see the image better. But if the screen is cranked up too bright, the lighting person and the director can end up deciding to go with a scene which is actually underlit.

A monitor is only reliable if it's correctly adjusted. So put the monitor on colour bars and adjust the brightness and contrast so the bars are correct, then don't tweak those knobs again.

If you put the camera temporarily into auto iris and check the *f* stop reading, you'll usually get a good idea of whether the lighting is bright enough.

Video is less able to handle high contrast ratios than our eyes are, or, in fact, than film is. In a scene which is too contrasty, you'll have to choose an iris setting which suits the brightest parts, and leaves the darker areas of the picture looking impenetrably black, or an iris setting which suits the dark areas and makes the bright ones bleached out to white. Depending on your production, it may be that neither is an acceptable option.

So it's a good idea to steer clear of known troublemakers. White clothing is extremely reflective of light. Black and navy blue are very absorbent of light. Generally speaking, performers should be advised to not wear white, black or navy blue. Medium tones will work in much better with skin tones to give a good contrast ratio and a pleasing image. (So now you know why the news readers wear 'TV blue'.)

Sometimes you just can't escape the situation. Your studio guest is wearing something white and it's just too reflective for the lighting you want to use. You can cut the intensity of light reaching that part of the picture, by shading it from the light with a piece of card, or a *cutter* or a *black flag*, a *net* or a *gel*. You can also use a *scrim* or *half scrim* in front of the light which is causing the reflection. (A scrim is a wire mesh mounted in a metal frame.)

These methods should bring your contrast ratio into line. If not, maybe you can loan the performer a sweater! If the problem is that there are areas in the picture which are too dark, try bouncing light into the shadows to lift their light level.

Lighting and Depth of Field

The darker the scene, the more open your camera iris will have to be to let in enough light to reproduce the image adequately. The wider the iris opening (the lower the f stop number), the narrower the depth of field. If you want to have a narrow depth of field, you can go ahead and shoot with lower lighting. But if you need clear focus across a broad depth of field, you need to make sure that the scene is brightly lit.

Where this consideration usually comes into play is in videotaping concerts and stage performances. Stage lighting is often dimmer, overall, than TV lighting, and it's almost always much more contrasty. The contrast is the harder aspect to adjust for. If you're trying to videotape someone else's performance, you have three possible paths. The first is to convince the person in charge of the performance lighting to use brighter lights on the night you tape. (But you're not likely to find agreement on this.) Another choice is to convince the show to do a command performance for you, with brighter lights.

The risk with this is that the lack of an audience could cause the performance level to drop.

The most likely situation is that you'll end up taping the performance with the low light situation.

Now, remembering that when you're zoomed in all the way, you also decrease the depth of field, make sure that you get your camera as close to the stage as possible. This way you can work on wide angle lens to maximise your depth of field. Otherwise, you could find that the slightest swaying back and forth of the singer will cause him/her to go in and out of focus. Your image quality will be disastrous.

Adjusting for Mixed Colour Temperatures

If you use a mixture of sunlight and incandescent lights (portable lights), you'll have to address the problem of mixed colour temperatures.

Say you're doing an interview and you've seated your subject next to a window. But the room is so dark that you've decided to lift the base illumination level by using a couple of portable lights. The sunlight striking one side of her face has a bluish tinge and the incandescent lights inside the room, and affecting the other side of her face, have a reddish tinge. If you white balance for sunlight, one side of her face will look ruddy and her clothing colour on that side may be reddish, too. If you white balance to the portable lights, her indoor side will look fine, but the side towards the window will have a strangely alien blueness to it. Ugh!

There are five strategies to consider

- Use a full or half daylight blue *gel*, which is a special transparent coloured sheet which won't melt from the heat of a light. Attach the blue gel to the front of your portable lights, with wooden clothes pegs, and white balance the camera to the portable lights. Now the colour contrast between outdoors and indoors won't be too great.
- Put an amber gel across the window and white balance to the reddish portable lights. Again, both sides will match. But this can be harder because you need the amber gel to be smoothly attached to the window, not torn or wrinkly, so it won't give itself away.

- Try using a large bounce card so the inside fill light will actually be reflected window light, and therefore will automatically be of matching colour temperature to the sunlight.
- Close the drapes.
- Move the shot.

Basic ‘Three Point Lighting’

Some people feel that all you need is **enough** light. So they turn several lamps in the direction of the set and blast the whole area with light. They do have enough. But the problem is the effect is flat. There’s no modelling or highlighting. Nothing in particular draws the eye of the viewer. There’s no sparkle to the scene. What’s more, every segment, every show, will look boringly similar. Understanding a few basic concepts in lighting can give you the tools to begin to control the look you achieve. And vary the mood from piece to piece. Here are the fundamental lighting positions for lighting one person. You don’t have to stick with this slavishly, but it’s a good theoretical starting point.

Key Light

The *key light* provides the main illumination of the subject. It’s often a hard light which helps to model the contours of the figure. The key light is placed to one side of the camera. It’s up to you which side you choose. It shouldn’t be too close to the camera because then it would be shining into the eyes of the performer and cause discomfort (bad for them) and squinting (bad for the video image). Once you turn the key light on, you’ll see that one side of the person’s face is well lit, but the other side now is shaded.

The further to the side of the performer’s face that you set the key light, the more dramatic the lighting and the more texture you’ll reveal on the face. Position the light according to the effect you want, considering the mood of your program.

Fill Light

You position the *fill light* on the opposite side of the camera to the key light. The purpose of the fill light is to illuminate the other side of the performer’s face, lifting the shadow that is caused by the key light. The fill light is often a softer light, and of a lower intensity than the key light.

You can achieve this by placing it further away from the subject, setting it to the *flood* position and/or putting some spun in front of it. You can also use an indirect light or soft light for the fill.

Back Light

The *back light* is placed to the rear and side of the performer, often opposite the throw of the key light. The job of the back light is to separate the image of the person from the background. The back light is a strong, hard, direct light which is limited in its spread by the use of the barn doors. The back light should light just the top and side of the head and the top of the shoulders. Light shouldn’t spill onto the chest or knees of the person. The intensity of the back light varies with the hair colour of the subject. Blonde hair is very reflective, so it needs a less intense back light. With fluffy, curly hair, the back light can be very glamorising indeed.

Background Light

The key, fill and back lights illuminate and model the subject with light, but you may also want that person to be situated in a visible background. For this purpose you use a *background light*, or lights. If all you want is for the background to be seen, it’s sufficient to use one broad soft light placed so its throw of light misses the performer but does illuminate the curtain, flat or wall

behind. If your subject isn't in front of a wall-like backdrop, you can use two or more lights to highlight specific items at different distances away from the camera, giving your shot a sense of depth extending backward.