

Lighting for video

Bernd Porr

Vers.03

1 Lighting basics

I'm going to describe the basic light sources in a film (or photo) shoot.

1.1 Key

Main light which is actually perceived.

- The source which subjectively illuminates the subject
- The source which creates the principle shadows on the subject
- In a realistic setting the key needs to be justified by the light sources, for example, the sun, a ceiling light, etc
- In a studio setting the placement of the key guarantees that the interviewee looks “nice”.
- The key might not be the brightest source, for example when shooting against the sun the back-light is obviously the most powerful light.

1.2 Fill

- Main aim to reduce the contrast of the image
- Usually very soft and shadow-less
- Bounced off a wall, ceiling, reflector, paper lanterns, etc

Key

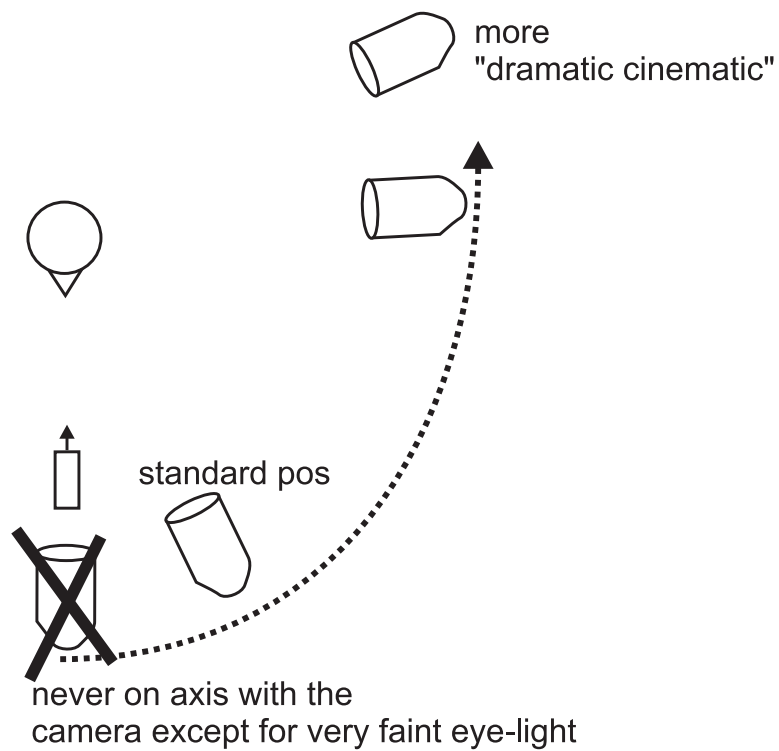


Figure 1: Key light. This position and the brightness of the key light is important to set the tone of the film. Experiment with different angles between camera and key light.

1.3 Back-light

- Behind the subject
- emphasises the hair, rim
- rarely natural indoors, outdoors against the sun
- standard lighting for portraits and in studio interview settings

1.4 Background light

- Creates the overall atmosphere of the room, for example light coming through a window, or a practical light shines on a wall

Fill

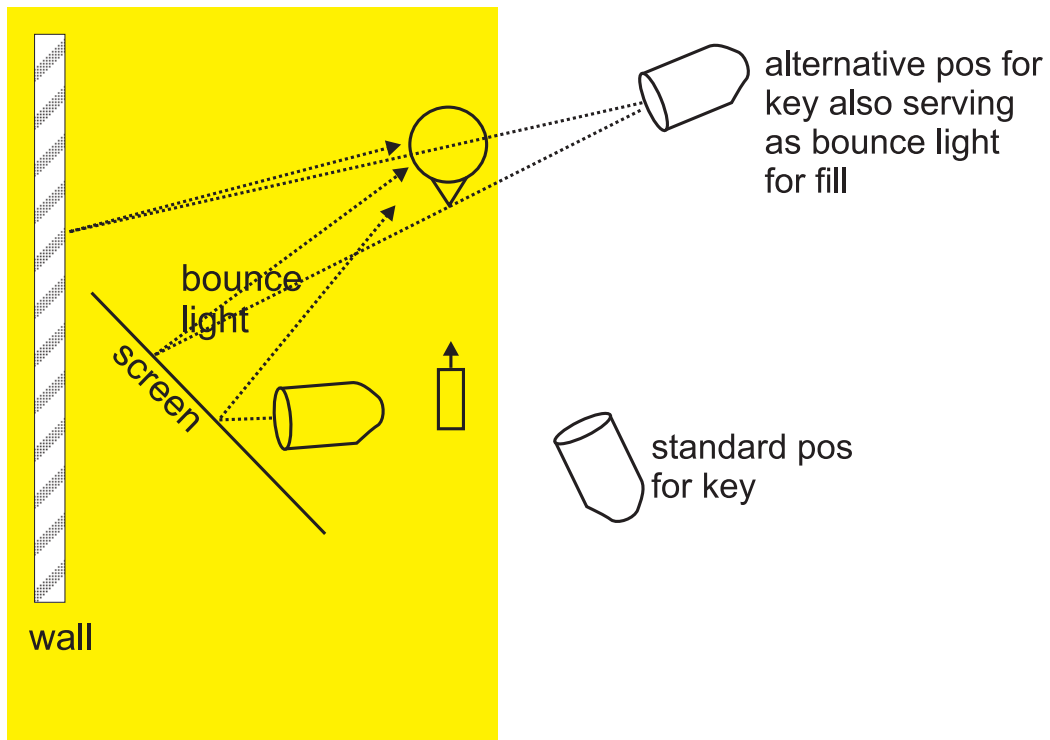


Figure 2: Fill light. The fill light is usually a very diffuse light to reduce contrast. Very often no additional lights are needed but just reflectors or a white wall or ceiling.

- Classical strategy to make “dull” interviews more interesting with the help of coloured gels in the background.
- Be creative. Lighting people with hard light is not very flattering but a book-shelf might look pretty.

2 Quality of light

Depending on the light source the subject will look substantially different. The trend in general goes towards soft lights, especially fluorescent lights.

2.1 Size of the source

2.1.1 Hard light

This is light from point sources or smaller sources such as Red-heads, Blondes, Fresnels or open face lights (MH with reflector).

Use for:

- Back light
- Background lighting
- Night-time shoots
- sometimes as a key (direct sunlight, film noir, ...)

2.1.2 Soft light

This is light from surfaces such as fluorescent lights, bounced light, diffused light, overcast sky or recently LED lights.

- Soft key light (“Hollywood style”)
- Fill light
- as a diffuse base light for interiors (mostly overhead)

2.2 Colour reproduction

The only light source with a smooth continuous spectrum is the tungsten light, so basically something which is heated up and is glowing. This is called black body radiation. Any other light sources, such as fluorescents or gas discharge lamps have usually discontinuous spectra and have not the perfect ability to generate all wavelengths of the visible spectrum. For that reason the so called colour rendering index (CRI) has been introduced which compares the light from a tungsten bulb (100% CRI) to the light of other sources. The highest CRI is that of a traditional xenon flash of nearly 100% CRI. The worst is sodium street lighting with a CRI of 0% because it emits only yellow. Normal mercury street lighting has 50%. For filming a CRI of %90 or above is needed. This can be achieved by HMI lights (90%), MH lights (> 90%) and by special 3 phosphor fluorescent lights, for example,

Osram Daylight 954 with a CRI of $> 90\%$. Be warned of normal fluorescent lights in offices. If white balanced against tungsten they will look green! There are special gels which remove the green cast (called minus green) of standard fluorescent lights or you can add a green gel to your light sources (called plus green).

3 The camera

3.1 White balance

Every light source has a different spectral distribution which is measured in the colour temperature. Tungsten light bulbs have about 3200K (red-ish) and daylight has about 5500K (blue-ish) colour temperature. You need to tell the camera what is white by filming a white sheet of paper (with no zebra pattern in it!) and pressing the white bal button. Decide before you shoot which colour temperature you are going to use. If you have daylight coming into a room this needs to be matched with the colour temperature of the film lights. Use gels to adjust the colour temperature. These gels are called full “colour temperature orange” (to convert from daylight to tungsten) and “colour temperature blue” (to convert from tungsten to daylight). So, for example you could tape full CTO onto the window to convert it to tungsten or you could clip CTB on your tungsten lights to convert it to daylight. Note that you lose about 50% of your light so it’s probably more economical to reduce the incoming daylight which is usually too bright anyway. Fluorescent tubes are usually daylight sources but with that annoying green cast (see above).

3.2 Aperture

The aperture defines how much light arrives at the image sensors. Adjust it so that there won’t be any zebra patterns (100%) in the viewfinder. If the contrast is too high, add more fill light.

Avoid automatic aperture because the most cinematic shots are shot very often against bright backgrounds or strong backlight which will make your subject looking very dark. The most important aspect is the face and that needs to be properly exposed and that exposure should not change. Alternatively you can switch the camera to 75% zebra and adjust the aperture in a

way that the skin appears as a zebra pattern. This, however, might be quite irritating when also watching facial expressions etc.

3.3 Focus

In order to focus zoom into the subject, for example on their eyebrows and then zoom out again. If the subject is moving during the shoot, zoom into the two different positions and note down the two distances on the focus ring or on the viewfinder. While shooting ask your assistant camera person to adjust the focus (so called focus pull).