

## The art of mixing light.

We can mix light sources, and by that I mean like a flashlight and tungsten light. In this exercise I will mix light sources for two different purposes. In the first exercise I use it to create attention to a certain product or area, in the next exercise I use it to produce a certain effect - motion.

I will describe to you the first exercise, the brief is as follows:

- The shape of your photograph is portrait.
- It will contain coffee beans, a coffee percolator, and a mug.
- Everything is photographed against a white background, the coffee percolator will have a black outline to offset it against the background.
- The coffee beans will have a yellow, golden glow on the top of it; it must be backlit by tungsten light.
- The top right-hand side of your photograph will contain nothing, which is where we will put the advertising text later on.
- The coffee beans and the mug must be reflected in the coffee percolator.

To break down this exercise in various segments so it is easy to progress step by step in a logical order, we analyse the image as follows:

- We have to create a white background, and because the coffee percolator is highly reflective, we have to surround this with white surfaces in order to reflect white back onto the coffee percolator.
- If we want to highlight the coffee beans with a yellow light, we must use a tungsten spotlight projected from the back onto the beans; therefore we cannot use a solid white background because we have to use the space behind the coffee percolator to place the light.

Execution;

On the left and the right hand in front of the coffee percolator we have to place white panels, so it will reflect white back onto the coffee percolator. If we have translucent material to do this we can place our flash units behind the white material to shine through the white material in order to make it look white. (If we had a white tent, that is a box with seamless sides from materials that let the light through, translucent, we could have placed the coffee percolator inside the light tent, the only problem we would have is that the backlit coffee beans would not really be very yellow as we have to project our backlit yellow light through the material, that light will diffuse the backlit area too much, everything in the back will be tainted yellow.)

Our second consideration will be the position of the camera, if we place it slightly above the mug and almost level with the top of the coffee percolator it will create a certain roundness of the coffee mug (we can see the opening/top of the mug) and we can see substantially more of the coffee beans because we look down on them, if we were level with the table height on which these products were standing they would not have seen much of the coffee beans at all.

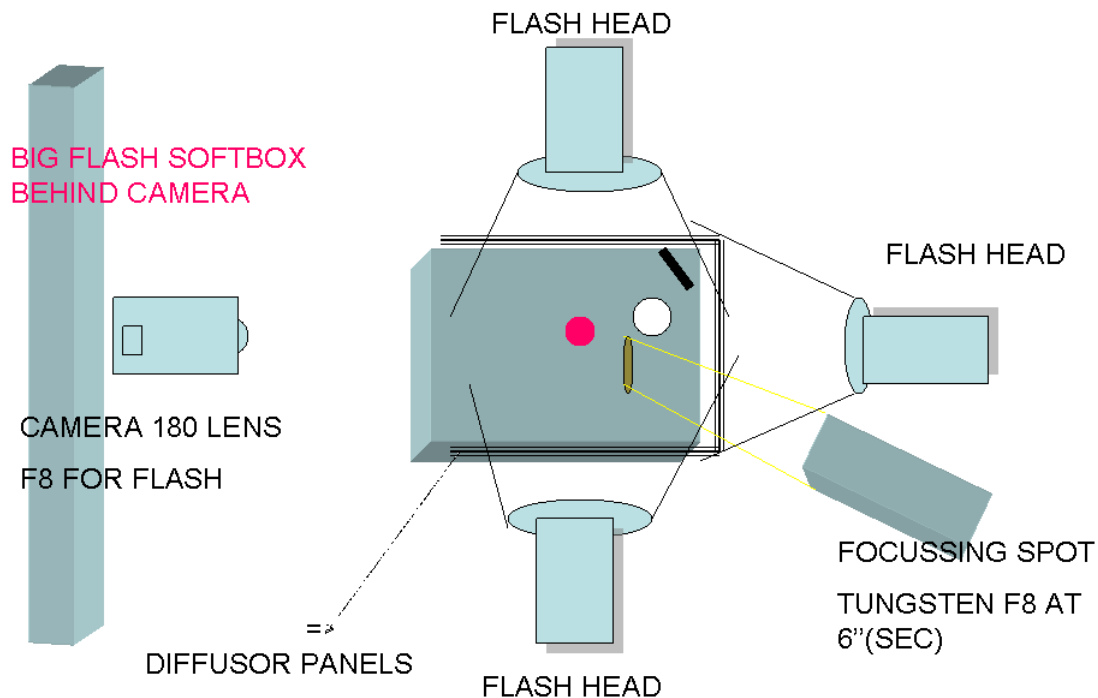
We have now established items on product table, camera view, and viewing angle so only now we can start arranging the lights.

I forgot to mention our choice of lens, I did select a long lens, if we were using a 120 film camera like the Mamiya RZ 67, my choice would be a 180 millimetre lens. If you are shooting digital choose a long lens for the same effect. My reason for this is the narrow angle of view, I want to control my background and foreground in a very small space, as much as I can. A wide-angle or standard lens will see too much of the surroundings, so my background area will be too big to be comfortable. Choose the longest lens possible for this purpose.

This image requires light from four sides, a white back(background), the left and the right-hand side are white, and the front is white. Place one light behind the coffee percolator, one light on the left, one light on the right, and one light in the front, and one effect light with a tungsten bulb in the back, you can see my lights in the diagram that I have provided.

Diagram:

### TOP VIEW OF COFFEE BEANS PERCOLATOR



A photograph of the setup on the next page might give you a better idea. To make it obvious for you where the lights are coming from I created the left and the right light source not purely as white but a grey so you can see where they (the reflections) are in the coffee percolator. The table on which it sits is a different colour, and you can see in the middle of the coffee percolator a black area and on top of the black you see something white again, and that white on the top is the other front light source to illuminate the front of the percolator and the table on which it stands. The black on the front of the percolator is the black floor between table and front light.

Like in the previous exercise with the glasses, we know now how to create black edges on the edge of something reflective, we place on the correct angle of reflection a piece of black card to reflect black back onto the coffee percolator, you can see it (black edge) clearly on the edge of the snout. You can also see the black card in the photograph of the light set up. I was lucky that I had a black handle on the coffee percolator on the opposite side; I did not need another black card.

About light metering this situation:

Take an incident light meter reading at the coffee mug, point the dome of the light meter towards

the camera lens and this will be your working aperture, F-16. Take three other readings, to the left, right and back, they all should give you approx F11 – F16 to create an even light distribution. Since the yellow backlight on the coffee beans is an “effect”, it is an additional light source and we have to measure it as such. The aperture on the camera is F16; I cannot change that, it is my main light.



When I take a light meter reading with the dome of the light meter pointing towards the yellow filtered tungsten light source, I will take a reading and then scroll down with the up or down button until I see a corresponding time exposure listed with the aperture of F-16. In my case that was two seconds. Since the beans are very dark brown, and will absorb some light, and I definitely wanted the effect of the yellow tungsten light to be visible, I made the exposure six seconds long for the tungsten light.

Because tungsten light creates an orange glow when you are using a daylight balanced film with flash as the main source of light, I would not have a **yellow** backlit coffee bean. Therefore I placed a yellow cellophane sheet over my tungsten spotlight. The deliberate overexposure of 4

seconds takes into account that tungsten light is one stop slower than daylight (it contains more red - when you are using film this matters, digital sensors have not got this problem. Tungsten light loves overexposure on film, especially when it is longer than a few seconds, even a 10 second exposure would not make a hell of a difference, try it!

So now I had the exposure correct for the coffee percolator, the mug, and the beans. Next I had to make sure that the background was white, and since this was a contrast meter reading I used my light meter in the reflection mode and measured without the dome over the light meter lens the white material behind the coffee percolator. If that cloth measured three apertures above F16 it would be photographed as white. It did!

The next step was to create the image, and that was easy - just push shutter button, after all, all the hard work was done. Focussing was done at 1/3 from the front of the image, at the back rim of the mug. This left 2/3 of the image behind the rim in focus, it included the percolator and the beans. If you focus at the very front edge of the shot, 1/3 of the depth of field will fall in front of your image - and there is nothing there but white space - so it is wasted and the beans will fall outside the 2/3 area, so only the mug will be sharp. This is a general rule for focussing; it does not apply when you get extremely close up.

Summarising: Positioning the mug and the coffee beans and a coffee percolator was only possible once I had set up my camera on the tripod. The position of the camera determined all the reflections.

Once the three elements were in position, I could position my reflectors around it. After the reflectors were in position I could start my lighting.

After I finished positioning the lights, I could start to take light readings.

To create a better photograph I should have used a very big white table to reflect an even white light back onto the coffee percolator, but for this exercise I thought it was quite good to see exactly where the reflections are coming from.

## Mixed light to indicate “Motion”

In this exercise we will use the mixed light sources for a different effect, this time it will show up as a motion. My intention is this time to highlight the effect of motion in a photograph. I will give you the following brief:



Photograph sunglasses on a model: The sketch of the art director indicates that the face was moving from the right to the left, and at the very edge of the left-hand side of the photo frame was

the face with the sunglasses. Towards the right of the face there was only a blurry image of yellow of hair. The background behind the face is black. Sunglasses must reflect a lightbox shape on lenses.

When we analyse this type of image we have to work out what actually is happening inside this image.

First of all we have to work out the motion effect.

When you fire the shutter in your camera you will fire the flash immediately when the shutter button is released.

When you take an image during a time exposure which we need in this case, the shutter opens, the flash fires, and for the remaining time of the exposure the face and the hair will blur inside of your image moving towards the desired spot. The moment the flash fired, it will create a sharp image of the face, the sunglasses and the hair. The remainder of the time exposure is used to blur the hair.

If we are using film or digital, it leaves us no option to start our image but in reverse. Here is why: We set up our camera, the model, the sunglasses all in the correct position in the viewfinder according to the sketch, and leave enough space on the right-hand side for the blurry movement.

Supposedly, if we now take the image with flash light, we expose the face in the correct position according to the sketch, and we have to ask the model to move her head backwards to create the illusion of movement.

Some people might suggest that we can use a different synchronisation speed, the one that fires the flash at the end of the exposure. (It is called rear synch flash) This would mean that we do not have to reverse our motion, we could actually start the model in a normal fashion with her movement towards the left-hand side of the viewfinder frame.

But the problem is that we will not be exactly sure where the face will be at the end of the time exposure.

To have accurate placement of the model's face in the viewfinder at the correct position as per sketch, we have to do this in **reverse**.

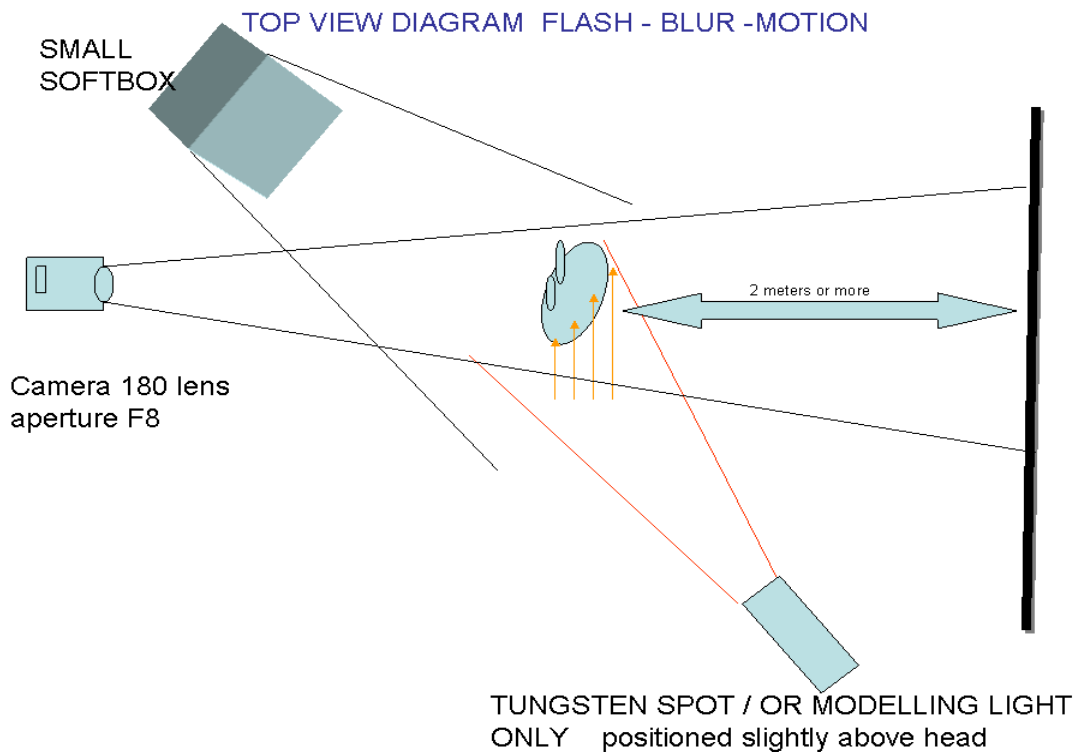
The movement can only be illustrated after the flash has fired, imagine the model has been perfectly illuminated with the flash, and where the face and hair was not in the viewfinder, we photographed the black void behind the model. This black area is our playground to place the movement of the hair in.

If we had a white background behind the model, the flash exposure would have exposed the white background, therefore the film would be exposed in that area and nothing can be placed over white, the film or the pixels have already been illuminated.

We will use a tungsten light source from such a position that it will not shine on the models face, only on her hair.

The best position for this tungsten light source is slightly behind the model; in a way you could say we are backlighting (through) her hair.

The diagram on the next page shows you the set up.



We do not really know how much time we need to create the movement to fill out the blank space behind the face in the viewfinder, but a dummy run will establish that it possibly will take about two seconds with slow movement to cover the area that is otherwise black, the background behind the model.

We start now our light metering to determine the mixed use of light:

The flash exposure is our main light source; we need to have the correct exposure on the face with the sunglasses, it is our main image.

We take an incident light meter reading of the face with the dome of the light meter facing the lens camera, it receives enough light to put an aperture of F8 on the camera lens, ok. We cannot change this, this aperture we must use in this combined time flash mixed light exposure.

Next place the light meter in an incident light meter mode over the models hair, point it towards the lens/camera and take a light reading of the modelling light of the flash unit. What ever combination of shutter speed and aperture you will see displayed on your light meter, scroll down until you get the aperture F8 showing with the corresponding shutter speed. If it shows two seconds, we are in business.

Otherwise move the light source closer or further away until you have a two seconds exposure. (Film users, please take note that tungsten light is containing more red then daylight, therefore it is recommended that you measure tungsten light at an ISO reading of 64 instead of 100, this will make up for the red content of the tungsten light - we are using a 100 ISO film for the flash exposure.)

Before you proceed to take the photograph, go through all the steps before actually exposing the film. When you are using a digital camera you are not wasting film and I can imagine you will take a few shots to work out if your exposure readings and timing is correct. This is where digital cameras come in very handy, but if you are using film, it is definitely saving money to test out this trial movement before committing the final shot to film.

If you prefer to make this tungsten time exposure a little bit different, why not use a coloured gel over the tungsten light source? That way the hair will be the same colour as the colour gel, you may be able to use the same colour as the colour of the sunglasses for instance. In our example we have used no gels over the light source, just blonde hair exposed with tungsten light.



If the model had black hair, a slightly backlit tungsten light source would have created enough colour to reflect of the black hair, you may have to increase your exposure slightly to make up for the loss of reflection of the tungsten light on the black hair.

In conclusion, you can see that you can achieve totally different effects by combining mixed light sources. Tungsten light is very effective to create effects like motion and colour, flash is mainly a light source for correctly exposing your objects, your modelling lights are an additional resource to play with.

In our first example with the coffee beans the tungsten light did not produce any visible effect of the yellow light on the white background. It actually could not do anything more as the white background was already fully exposed, only the dark beans did not reflect that much light and therefore could receive an additional exposure of yellow tungsten light to reflect the tungsten light source.

Creating time exposures and movement are always best executed with a dark background, you can place any different action or another image over black, a white background will stay white whatever you do. A grey background will create a ghostlike impression

[Please do experiment](#), I have giving you these examples to illustrate possible effects of light combinations. There is an endless variety of different mixes possible; in the near future I might give you some other interesting examples to play with.

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