

Light Painting Notes

With many thanks to Gordon Battaile for his presentation on February 5, 2024, and this summary of key concepts for experimenting with light painting.

Light Sources

Flash

Flash has one advantage: it can be used during daylight by setting the camera shutter speed to the flash sync speed. A sync speed (typically 1/200 or 1/250) reduces ambient light but does not affect flash exposure. Even when using the sync speed, you may need the flash close to the subject to overpower very bright ambient light, like sunlight.

To get a star effect on the flash, cover the end of the flash with a piece of black paper or cereal box cardboard with a hole punched in it, point it at the camera, and use a small aperture.

Flash with Diffuser

Diffusers usually attach to the flash, creating a small white tent about 8 inches across that softens the edges on shadows. Ideal for work with smaller subjects up close outdoors, like flowers.

Flashlight

I use a compact "5 mile flashlight" that recharges by USB and cost about \$30. Plenty bright for most uses. If you have a reflective subject, lighting it without producing hot spots in the reflections may be difficult.

EL wire (EL = Electroluminescent, i.e., glowing)

I use a 6 ft. battery driven EL wire kit from Ellumiglow. They used to have a walk-in store on the east side of Portland but now it looks like you have to order online. Caveat Emptor.

Fiber Optic Brush

Mine came from lightpaintingbrushes.com. Its main use seems to be generating a fire-like effect. Lighting portraits with it is tough.

Light Tube

The one I got from lightpaintingbrushes.com is about 20 inches long. These tend to have two bright areas: right next to the flashlight and at the very end. You can mitigate this by adding colored transparent gift wrap in the lightest areas, or adding it everywhere on the tube but using the darkest colors in the otherwise bright zones.

Laser Pointer

Lasers are intensely bright but create a very small spot. They generally work best when used to define a surface by making parallel stripes across it.

Light Table

Wired or portable, light tables provide a broad light source that is useful for very reflective subjects, on which flash and flashlight would create highlights.

Steel Wool

This is generally done by putting a pad of steel wool inside a whisk or some sort of wire cage on the end of a short rope, lighting it, and starting the exposure as soon as you have it spinning. It's a beautiful effect, but it comes with two big caveats:

1. It makes a mess because steel wool doesn't burn up-- it just melts into globs. Wool spins effectively take a pad of steel wool, tear it up into pieces, and throw it all over: it's littering. Be prepared to sweep it up afterwards, which means only using it someplace where you can do that, like a concrete corridor.
2. Molten steel burns skin on contact: wear long sleeves, gloves, and a wide-brimmed hat

General Pointers

Remote triggers are VERY useful; especially when you're light painting a large area, having to run back to the camera for every shot takes a lot of time and makes the whole process more difficult.

Turn off autofocus: if you start the exposure in the dark with autofocus on, the camera may choose an inappropriate focus point (like the minimum focus distance)— which you probably won't discover until you open up the images in Photoshop. Use manual focus and make sure you're focused on your subject.

If possible, use short exposures (like 30 seconds) and combine them as needed in post processing. Long exposures increase the amount of noise because the sensor heats up.

Be careful not to move the camera between shots. When you're stumbling around in the dark, it's surprisingly easy to lose track of exactly where the camera is, and either kick it or knock into it when you're reaching for it. If you're doing a series of exposures that will need to be aligned and combined in Photoshop, moving the camera means starting over.

Pay attention to the histogram when shooting at night: otherwise you'll end up with very dark images. This is because in a dark area, even dramatically unexposed images look like they are well-lit on the back of the camera.

Shoot separate images for each color. If you plan to add color to your image in post processing by changing the color balance of the area you've lit, it's very useful to handle each color zone as a different image.

For almost any subject, don't light paint from next to camera. That's the equivalent of on-camera flash and is almost always unappealing lighting. This is probably the biggest mistake that people make when they're starting. Moving the light source away from the camera to create side light or even backlight will almost always makes the lighting more compelling.

If you need to point the light source back at the camera, make sure you do it from a spot that you can mask out in post processing: don't show the light source to the camera if it's in front of something you're painting, because you can't mask that out.

To avoid getting your silhouette in images, don't stand between the camera and whatever you're painting. (You don't want to do that anyway because it's front light!)

Make sure you have everything you need before moving to another shot. When you're lighting a scene, it's amazingly easy to overlook an area and not discover it until you're doing the processing, at which time it's too late.

You can photograph a static scene in ambient light, wait until it gets dark, and then (without moving the camera) use light painting on some or all of a subject; then in processing, darken the subject in the ambient exposure and add in the light painting exposure, effectively re-lighting it.

Processing

Creating a stack:

To create a stack of layers from the original images, you can use either of these approaches:

A) File -> Scripts -> Load Files into Stack

or

B) Open the files in PS (generally by opening raw files in Adobe Camera Raw) and then use Drag Layer to add image B as a layer on top of image A:

- Click (and hold) on image B
- Move the cursor to the image A tab
- Wait for image A to appear
- Drag the cursor back onto image A
- Release the click.

That should drop image B on top of image A as a new layer. This is much faster and easier than copying B and pasting it onto image A.

The latter is quick but the former is easier for more than a couple of layers.

For processing a series of light painting images on the same subject (without having moved the camera), turning on Photoshop's Snap feature will make image alignment easy: you just need to move each layer so that it snaps to the edges. (View -> Snap)

Blending Modes:

The Lighten Blending Mode is the key mode for combining multiple light painting layers. In this mode, Photoshop compares the R, G, and B values for every pixel of A) the layer you're looking at, and B) the composite value for the layers below it. The result is whichever value is lighter for R, for G, and for B. If the RGB values of the top layer are all brighter, it picks those. If the RGB values of the top layer are all dimmer, it uses the values from the lower layer(s). If the R value is higher on the top layer but the G and B values are higher from the lower layers, it will take the R from the top layer and the G and B from the lower layer: the result will be a shift in color.

The Subtract Blending Mode is useful for light painting in one specific scenario: you're light painting in an area that has constant ambient light sources that light up areas you want to be dark. In this case you can take a photo of just the ambient light, put that at the top of your stack of layers in Photoshop, and change the blending mode of that layer to Subtract: PS will subtract the light from that layer from the stack below it. This will work if you haven't moved the camera and the exposure of the ambient is the same in all layers. If the ambient light is changing it won't work very well, and if the ambient light is lighting areas that you also light paint, the results may not be ideal.

Clipping:

To change the color of a pixel layer, (for example, to make the light red), create either a Hue/Saturation layer or a Color Balance layer just above the given layer. Then in the properties for that new layer, click the Clipping control: it's the left icon on the bottom row, the one that looks like a white box with a crossed-out arrow coming out of it. That will cause the effect from that new layer to affect only the pixel layer below it.

Use the same approach with clipping for any type of adjustment layer that you need to modify a pixel layer. Different light painting images on a subject are frequently of differing brightness, so it's normal for each pixel layer to have an adjustment layer clipped to it to control brightness or contrast.

Mirroring:

If you are creating light "sculptures", i.e., images that consist only of the movement of the light source, the results can be very complex. If you mirror all or part of an image in post-processing, the addition of symmetry effectively simplifies an image and can make it more effective. Mirroring would be a final step, after completing the basic stack and saving that as a master file. You would then flatten the stack,

Typical Stack Structure:

The typical stack of layers for a light painting image might look like this, with two adjustment layers for each pixel layer:

9. Color Balance adjustment layer to control color of layer 7 (Clipping turned on) (Top layer)
8. Curves adjustment layer to control brightness of layer 7 (Clipping turned on)
7. Pixel layer for color C
6. Color Balance adjustment layer to control color of layer 4 (Clipping turned on)
5. Curves adjustment layer to control brightness of layer 4 (Clipping turned on)
4. Pixel layer for color B
3. Color Balance adjustment layer to control color of layer 1
2. Curves adjustment layer to control brightness of layer 1
1. Pixel layer for color A (Background layer)

The attached image shows this stack.



