

# LIGHT PAINTING

A photographic technique using a hand-held light source to paint a subject with light (pointing light away from camera – light painting) or creating light trails (pointing the light source towards to camera – drawing with light) while keeping the shutter open for an extended time. Both techniques require working in a completely or near dark environment. A combination of painting and drawing in the same image can also be used to good effect.

## EQUIPMENT

- Camera with Manual control
- Lens with Manual focus
- Tripod – needs to be sturdy and suitable for the camera weight
- Cable Release/Remote/Self timer
- Timer (If longer than camera set times) – phone/stopwatch etc
- Light Source - Torch/LED Light Panel/Phone or Tablet/Light sticks/Flash Gun etc

## LENSES

Any focal length lens will work for this technique. Generally outdoor scenes are best shot using a wide angle lens and indoor still life in the 40-90mm range. However, do experiment with using different focal lengths to see what works best.

NB: Some lenses have vibration reduction (VR) or image stabilization (IS) – **TURN THIS OFF when the camera is on a tripod.**

## Remotes/cable releases/self-timers

You need to avoid touching the camera when releasing the shutter to avoid any camera movement. You can use a wireless remote, a cable release or the self-timer. Ideally a wireless remote is the best way of releasing the shutter as you can work away from the camera (although you may need to return to the camera to check the LCD to make sure image is OK). If using a cable release you have to be near the camera, which can be a disadvantage. Using the self-timer allows you to get in position before the shutter opens. Using the self-timer & a wireless remote allows you even more control as you can release the shutter from anywhere and give yourself a visual countdown using the self timer.

For ultimate control and feedback it is possible to have the images transfer to a laptop or tablet as you shoot, allowing you to review the images full screen as you go. This is achieved by using, either a WIFI connection or a cable connection (tethered). You will need a WIFI card in the camera or, if connected via a cable, suitable software that allows this. Many cameras have their own software to do this (usually an extra purchase) or you can use Lightroom. Shooting directly to a laptop is an excellent way of shooting indoors. Outdoors it tends to complicate matters!

## Mirror Lock Up

Most SLR's have an option of locking up the mirror just before the exposure to avoid any vibrations in the camera, which could cause a less sharp image. If you have this option then it will give the best results – especially when using full frame SLR's & medium format cameras, as these generally have large mirrors that can cause this

problem. Using the mirror up function adds another stage in the process so can complicate matters!

## LIGHT SOURCES

Anything that gives off visible light can be used as a light source. Generally, some form of torch is the primary tool used for light painting, although LED panels, phones and tablets can also be used. All light sources have a colour temperature that the image sensor will record as different colours. With the camera set to Auto/daylight white balance LED torches have a neutral/blue colour and tungsten lights have a warm/yellow colour. Colour gels can be used to alter the colour of the light source. The light source can be considered as soft or harsh. Direct light from a torch is generally quite harsh and will emphasis texture & shadow in the subject. Softer light from a diffused source will give softer shadows and subtler textures. Using a combination of different light sources in one shot will allow great control over the different looks each light gives. **To get the best results you need the right torch for the job.** The power, colour, width of the beam all need to be suited to the subject in hand. Too powerful a torch will be overpowering in a small still life setup and will not allow for very subtle painting – similar to using a wide brush to create details in a painting. Too weak a torch will not give you enough light to effectively cover larger outdoor subjects e.g. trees. Some torches have an adjustable beam width and also some control of their power setting – this gives you great variety using only one torch. The light can be modified in many ways by adding masks around the light or shooting through a diffuse material. These modifications will alter the beam width and change the softness of the light – both giving very different looks. The key to better light painting is the understanding of how different lights give different effects and the different looks that can be achieved with different applications of the light. Experimentation and practice will give you more control over your results.

## THE TECHNIQUES:

**The golden rule for shooting any type of light painting is NOT to move the camera during the exposure/s.** Between multiple exposures it is possible to check the image on the LCD and also alter the ISO if need be – be very careful not to move the camera when doing this or your images won't line up with each other when combining them later.

## TECHNIQUE - INDOORS

1. **SETUP** still life
2. **COMPOSE** – with camera on tripod (use remote/cable release/self-timer) – TURN OFF VR/IS & LONG EXPOSURE NOISE REDUCTION
3. **SET ISO** to lowest setting (usually between 50-200) - (turn off auto ISO)
4. **SET** camera to **MANUAL exposure**
5. **SET aperture** to f8 (as a starting point – may need to adjust to get depth of field required) – **will also depend on ISO setting**
6. **ADJUST SHUTTER SPEED** to get correct exposure with lights on.
7. **FOCUS** – use auto then switch to manual or use just manual focusing
8. **DO A TEST SHOT** with light ON to check for composition/focus/any movement in camera/tripod and depth of field

9. **SET speed** to 15 seconds (as a starting point for single exposures or 4 or 8 sec if multiple exposures)- **will also depend on ISO setting**
10. **RE FOCUS (use manual - AF off!)**
11. **AT THIS POINT DO NOT MOVE CAMERA OR SUBJECT**
12. **TURN OFF LIGHTS** and practice how you will light subject with torch (lighting plan).
13. Open the shutter and **TAKE the shot & paint with light.**

## TECHNIQUE - OUTDOORS

1. **SETUP** – find subject (during daylight hours)
2. **COMPOSE IMAGE** – with camera on tripod (use remote/cable release/self-timer) TURN OFF VR/IS & long exposure noise reduction - then focus image
3. **SET ISO** to lowest setting (usually 50-200) - (turn off auto ISO)
4. **SET** camera to **MANUAL exposure**
5. **SET aperture** to f8 (as starting point)- **will also depend on ISO setting**
6. **SET SPEED** to give correct exposure for existing daylight (ambient light)
7. **DO a test shot – check composition/depth of field/focus**
8. **SET speed** to 15 seconds (as a starting point for single exposures or 4 sec if multiple exposures) – **will also depend on ISO setting**
9. **Wait for it to get dark – usually at least 30 mins after sunset**
10. **FOCUS – use manual focus (use torch to light area to be focused on)**
11. **AT THIS POINT DO NOT MOVE CAMERA OR SUBJECT**
12. **PRACTICE** how you will light subject with torch (lighting plan).
13. Open the shutter and **TAKE the shot & paint with light.**

## CHECK result & adjust as follows:

*If the subject is not lit enough then light the areas for longer, move nearer to subject and/or use a more powerful torch. As less perfect options you can also widen the aperture to f5.6 but this will decrease the depth of field. You can also increase the ISO (but this will increase noise).*

*If the subject is lit too much then light the area for less time (shorter shutter speed), move further away from the subject and/or use a less powerful torch. You can also narrow the aperture to f11 or f16 – which will also increase the depth of field. NB: It's best not to alter the aperture over a series of shots that will be later combined, as the focus may shift between frames.*

*If the image is not sharp you either didn't focus the image correctly initially or the camera/tripod or subject has moved during the exposure. Zoom in on the LCD to check for critical sharpness.*

## **FOCUS**

Either use manual focus or auto focus to get focus lock and then **switch to manual**. If left on auto focus it may not be possible for the camera to focus in the dark. Manual focusing can be aided by shining a torch on the subject to get the lens in focus. Once focused the focus ring can be taped down to avoid any accidental movement.

**Focusing should be the last thing you do before opening the shutter** as touching the camera to adjust other settings can move the camera, causing an out of focus image.

## **SHUTTER SPEED – SINGLE OR MULTIPLE EXPOSURES?**

The shutter speed determines how long you have to do the light painting and also the brightness of the ambient light in the scene (that is any existing light in the scene other than your torch). The painting can be done in one single exposure – usually between 15 & 30 seconds or as a series of shorter exposures of around 4 & 8 seconds, which can be later combined to create a single final image. The advantage of using a longer time is that it keeps things simple (one exposure instead of many) and it is easier to keep track of where you have applied the light. The disadvantage of using a longer shutter speed is the noise/grain will increase & quality will reduce the longer the shutter is open – you will get a better quality image from multiple 4 second exposures combined than a single 30 second exposure. Multiple exposures allow you to concentrate on lighting each section in turn; allows you to discard any exposures that don't work and also edit individual exposures in the software when compiling the final image. In single image shots or shots with only 2 or 3 separate images any mistakes will be harder to correct later.

The shutter speed will also determine the brightness of any ambient light (moonlight/ street light/building light/ etc) in the scene (especially outdoors). The shutter speed does not control the torch light exposure, but how long you have to paint your subject. Best to control exposure using aperture (see below) & torch brightness/ distance.

## **APERTURE**

Controls the ambient light & also how long you have to apply the same light at the same distance from the subject to get the same exposure. Very importantly, the aperture also determines how much of the image is in focus (the depth of field). Generally, a good starting point is to use f8 and adjust as necessary – brighter torches & closer light sources will require smaller apertures – i.e. f11 /f16. NB: Small apertures of f11 – f32 will create a starburst effect from any point light sources i.e. street lights. To obtain maximum quality it is best to avoid using the smallest aperture i.e f22 as this will reduce the image quality due to diffraction.

## **ISO**

Always set to the lowest setting i.e. 50/100/200 (whatever your camera goes down to) – this will allow longer exposure times & give you the best quality in terms of noise/grain. When shooting multiple exposures it is possible to alter the ISO between shots if certain areas need more light than others – A classic example is when trying

to get a good exposure for the stars. To avoid motion blur in the stars you need a relatively short exposure, which means increasing the ISO significantly to around 3200 ISO to get a suitable shutter speed. The ISO in this case can be set to 3200 just for one shot to get the stars exposed correctly. The ISO can then be reset to the lowest setting for the other shots. If you find the areas you are lighting are too dark/ under exposed (usually due to the torch not being powerful enough or lighting too far away from the subject) then you can increase the ISO slightly to effectively make your torch brighter. The higher you set the ISO the more noise you will get – so I wouldn't go above 400 ISO for most DSLRs except when shooting stars as above.

## **COLOUR/WHITE BALANCE**

Set camera to Auto White Balance (which will generally give pretty good results) or better still set the white balance to the colour temperature of your torch). All light sources will record as different colours. LED sources are white/blue, Tungsten sources are yellow/warmer, Street lights are usually very red/warm, Colour gels/ panels can be any colour etc. By combining different light sources (colour temperatures) great effects can be achieved. NB: When shooting in RAW format the white balance can be adjusted later if necessary – when shooting in JPG it will be very hard to change the white balance later, so you will need to get the white balance as required in camera when you shoot.

LED colour temperature varies from torch to torch but most are close to daylight colour balance and so give natural colours when the white balance is set to daylight in camera. This works well when you are combining ambient light such as the sky with LED as they both have a similar colour balance and so the colours should be natural across the whole image.

## **JPG or RAW?**

Shooting JPG is the simplest approach and can give good results, but gives you minimal control over final quality and editing – for best quality & post processing options shoot RAW.

Shooting RAW demands a longer work flow as the images need converting to Tiff files before combining in the software – however the advantage is one of increased quality and full editing control over white balance, sharpness and noise reduction. Another option is to shoot RAW & JPG – this allows you to do a quick preview of how the image might look just using the jpgs – the final image can then be created using the converted RAW files.

## **LIGHTING PLAN**

Whether you are shooting a single exposure, or multiple exposures, it is a good idea to have a plan of how you are going to light your subject. It may be sufficient with a single exposure to keep this plan in your head, but with multiple exposures it is a good idea to draw a plan out on paper when you are setting up the shot in daylight. Having a plan to work to means you will not miss lighting certain areas of the image – its easy to get confused as to what you have already painted – especially when you are shooting over 10 separate images!

## HOW TO PAINT WITH LIGHT

- Keep light source moving to avoid hot spots & get the light even
- Choose a single direction of light or multiple directions – different looks
- Changing the angle will have a big effect – effects shadows & textures
- Distance of light will determine brightness on subject & also the width of the beam – so try with light at different distances from subject to get different effects. Some torches allow you to adjust the beam width.
- Consider if the background needs lighting as well
- The longer you paint an area the brighter it will become.
- Try to avoid pointing light towards camera to avoid light streaks
- Try to avoid painting yourself
- **Most Importantly!...Make sure the camera doesn't move during the exposure** – lack of sharpness due to camera movement is the most common problem & will ruin an image! If doing a series of images to be combined, any movement between exposures will mean the images won't align later in the software and will give you a blurry effect.
- Use multiple light sources and/or variable torch settings to give variety
- Avoid too much front lighting – use top/side/back light as well as low & high angles
- Try and avoid dark pockets/areas in the image with no light
- Be careful to avoid glare from shiny surfaces

## INDOORS OR OUTDOORS?

Effectively they both use the same technique with some slight differences.

When light painting indoors we have control over all aspects of the image making. We can control the ambient light, we can eliminate subject movement & we can turn the lights on & off as necessary.

Outdoors we need to work when it's dark so we are limited to a certain time of day.

Outdoors you may get subject movement in trees/clouds etc due to the long exposure – especially if it is windy. Also the moon will blur if in shot. It may not be possible to control the ambient light (street lights/houses) and generally you need much more powerful light sources than you would indoors.

Weather conditions also have an effect. Condensation on the lens can be a problem when moving outside to a colder space – let your camera balance the outside temperature before shooting.

One of the trickiest aspects of shooting outdoors is that you are working in the dark with generally only a torch to see by. This can make it difficult to compose shots initially as well as making it difficult to use the camera settings. To avoid these issues it is best to set up the composition before it gets dark & also to become very familiar with the camera controls so you can operate them easily in the dark.

Using a head torch is recommended for outside work as you have both hands free & you always know where your torch is – just remember to turn it off before starting the exposures! I also attach a fluorescent strip to my camera bag, as it can be difficult to see in the dark.

## **TIME OF DAY**

When indoors it is possible to shoot light paintings at any time, as long as you can blackout the room. Outdoor painting must be shot after sunset, when it gets dark. The best time for outdoor light painting is generally during twilight when the sky is not fully dark but a blue colour. If you include the sky in your image you generally need some colour in it so start shooting as soon as you get a decent sky exposure with the shutter speed/aperture combination you have set for the light painting – if you start shooting too late you will end up with a black/very dark sky. It is a good idea to shoot a few skies early on before the light painting starts as you can combine them later in photoshop. If the sky is not in the image then any time after sunset would be good. NB: A full moon will cast some light on the scene at 30 second exposures or thereabouts – so take this into account. The moon and stars will blur with long exposures, so consider this if either is in shot. When shooting a series of images outdoors it generally looks good to record a few sky shots early in the series. Capturing the sunset as it fades to blue over a series of shots will give you later choices as to which looks best to use in the final image. Make sure when capturing these early sky shots that all other parts of the scene (other than the sky) that will be light painted later are completely black – do this by using the shutter speed to under expose the sky to give a good silhouette.

Our shooting times outdoors are dictated by when the sun sets. Below is a rough guide to the sunset times throughout the year.

### **ROUGH GUIDE TO SUNSET TIMES (MID MONTH SOUTHERN ENGLAND)**

JAN – 4.30pm  
FEB – 5.15pm  
MAR – 6.00pm  
APR – 8.00pm  
MAY – 8.45pm  
JUN – 9.15pm  
JUL – 9.00pm  
AUG – 8.15pm  
SEP – 7.15pm  
OCT – 6.00pm  
NOV – 4.15pm  
DEC – 4.00pm

### **PEOPLE - moving subjects & flash**

Any subject that moves during the exposure/exposures will be blurred if lit with a continuous light source i.e. a torch. Generally light painting does not include moving subjects due to this limitation. It is possible to use flash to expose just the moving subjects/elements and thereby freeze their motion and combine this with the conventional light painted background. People can be lit with torches if they can keep still long enough during the exposure/s. Usually it is best to add the people as the last elements to the image once the other light painting is complete. To aid people in keeping still it is usually best to give them something to lean/rest on for support. Light the face first as this is where the most movement is likely. Again it is possible to use flash to light just the people in the shot as this will freeze any motion. When adding

the people layers to Photoshop you may have to create a black mask behind the person to stop any other light from the other layers coming through.

## SHOOTING AS MULTIPLE IMAGES

Light painting can be achieved in a single exposure, but is often achieved using a combination of multiple images to create a final single image. The advantage of using this method is being able to use shorter exposures (4 seconds or so) and control the noise. Having multiple images means you can light the same area a number of times and select the best one before combining in software – this allows much more creative control over final image. The images can be combined manually in Photoshop using each layer in lighten mode or an easier way is to use StarStax software (designed for combining star trails but great for light painting). You just load all the component images and the software combines them into a single image (works with jpg & RAW files - good way to get a fast preview of how the images will blend).

## LIGHTROOM

- Select all images to export
- **Menu:** Photo, Edit In, **Open as layers in Photoshop** (this will open all the layers aligned in Photoshop). Or just export files and process through starstax – see below.
- Select all layers in Photoshop
- Set blending mode to Lighten for all layers
- Adjust individual layer opacity if necessary (never below 50%)
- Erase unwanted areas from each layer if necessary using layer mask
- Flatten & Save image
- Continue global editing in Lightroom or Photoshop to finish

## PHOTOSHOP

- **The best way to import the images is to use the scripts menu in the file menu (Photoshop) and using load files into stack command – this will load aligned images (if checked on import) into layers. Set to lighten mode as above & adjust & flatten.**
- NB: If using an early, lighter sky layer then it will need to be set to **screen** mode and placed at the top of the layer stack.

## **ADOBE BRIDGE**

- Select all images for export
- Go to Tools, Photoshop, Load files into Photoshop layers
- Proceed as above

## **STARSTAX**

- Move all your JPGS or converted RAW files (Tiffs) to a single folder
- Simply load all images into the software and click the combine button
- Each image can be switched on & off independently and recombined
- Save final image

## **FINISHING - tonal/colour adjustments**

Tonal & colour adjustments can be made at the Lightroom stage before exporting the layers to photoshop. A good starting point for adjustments is to create your own presets in Lightroom which can be applied to a series of different light paintings to achieve consistency.

All adjustments can also be made at the final stage of the process after the layers have been blended and flattened in Photoshop.

My personal workflow would be to shoot directly into Lightroom then applying my tonal/colour adjustments as a preset I have already created. I then fine tune the image/s in Lightroom ready for exporting to Photoshop as layers. Once exported to Photoshop I save the blended & flattened image as a master version (16 bit Tiff or PSD). This can then be further edited in Photoshop or exported back to Lightroom for final editing.

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