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How to... Exploit shutter speed



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■ [Main] Night-time and longer exposures: This shot of Tower Bridge was taken using a very long exposure of around 25 seconds. A low sensitivity (to keep noise to a minimum) and use of a tripod and remote camera release helps prevent camera shake. If your camera has it, use its mirror lock-up function to stop that from vibrating as well



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Moving still

Controlling shutter speed to **help create** special effects, from **freezing motion** to controlling **creative blur**, need not be a pain with some **basic guidelines**. Doug Harman **explains** everything you need to know



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Shutter speed – one simple phrase that every photographer knows and one that describes something utilised by your camera

every time a photo is taken to help get a 'correct' exposure. So, why take control of shutter speeds?

Whether you want to photograph stunning star trails at night-time using very long exposures, or freeze the fleeting motion of a bird in flight to reveal the detail of its beating wings, learning how to control those shutter speeds is key. »

Shutters and shutter speeds

Cameras have within them a device called a shutter that allows a timed and finely controlled amount of light to enter the camera. It can take the form of a focal plane shutter, such as that found in DSLRs, or a more simple leaf shutter, as found in most compact digital cameras.

The shutter is usually positioned in the camera body behind the lens and in front of the sensor as with DSLRs, where it can be clearly seen when you swap a lens. This is a focal plane shutter. Or it can be inside the lens (the leaf shutter type) as with compact digital cameras. Whatever the case, as the shutter travels it reveals an open slit to the outside world that allows focused light to enter and hit the sensor. The velocity this swath of light crosses the sensor is the shutter speed.

Flash and shutter speeds

Including a puff of flash at any shutter speed your camera is capable of using (the flash synchronisation speed) can add greatly to an image's impact. Using a burst of flash by forcing it to fire – even if it is not needed in daylight – can lift shadows, help add sparkle to a shot or freeze an action due to the fleeting duration of the burst of flashlight. It can also make your subject stand out against the background to add emphasis.

When combined with slower shutter speeds, flash can help you create neat blurring effects combined with sharply defined action, such as when you combine a slow shutter speed (and, so, very shaky) with a low ambient light exposure, but include flash to help produce a motion-freezing burst of flash. You'll get a funky, fill-in flash effect, where the main subject is frozen and is sharply rendered by the brevity of the flash, but seemingly pinned against a blurred and fuzzy background of ambient lighting.

Shutter speeds and focal length

There is a direct relationship between the shutter speed and focal length you use when taking pictures and, once you get a grasp of it, it means you can reduce the risk of camera shake. Simply put, always use a shutter speed that is the reciprocal of the focal length in use. If you shoot using a zoom lens set at 100mm, then also ensure you use a shutter speed of 1/100sec. If you use a lens focal length of 200mm, then a shutter speed of 1/200sec is required, and so on. This will help you get sharp shots even if the camera is not supported on a tripod, though, of course, a tripod is preferred to help with camera stabilisation.



► There are other aspects of shutter speed control you can take advantage of, such as the relationship between focal length and shutter speed, which can help to reduce camera shake. Plus, there are ways of using shutter speeds for specific effects using 'rules' that apply across every type of photographic style or technique.

On a basic level, the most important element of shutter speed control is simply to help ensure an image is correctly exposed. If the shutter speed is too fast, you risk underexposing the picture and vice versa. Also, if you have a more creative bent, controlling shutter speeds will help you freeze that fast-moving action to crisply render every detail or, conversely, you might want to allow the very same motion to be revealed within a shot to deliberately add blur. The slow shutter speed conveys the feeling of the true speed and power of a subject or event.

Most high-end digital cameras, and certainly DSLRs, will provide control over the shutter speeds at their disposal. The exact range of control on offer will vary from camera make and model, but expect to find a range of shutter speeds starting at around 30 seconds to 1/4,000 sec.

Some cameras may have a Bulb mode where the shutter can be set to remain open for as long as the shutter button is pressed; some may not and others will offer even

■ **[Above] Deliberate blur:** Freezing action can be great where detail is paramount and you want everything to be sharply rendered in a shot. However, by using a slower shutter speed, you can help emphasise the power and grace of fast-moving subjects
Shot details: Konica Minolta Dynax 7D with Konica Minolta AF f2.8 300mm APO lens at 300mm and f2.8; 1/45sec, ISO 100

■ **[Right] Slow shutter for creative effects:** This shot uses a burst of flash, long-ish focal length and a slow shutter speed. Flash has kept the happy couple sharply defined – despite some camera movement – while the slow shutter speed used helps convey the emotion and atmosphere of the happy moment
Shot details: Nikon D70 with Sigma 70-200mm zoom lens at 70mm and f2.8; 1/6sec, ISO 200

faster shutter speeds too. But of those that offer shutter speed control, all will provide a good level of control.

If you have a camera that provides full shutter control, be it via shutter priority (where you control the shutter speeds and the camera automatically picks an aperture to get a properly exposed shot) or through full manual control (where you can change both the apertures and shutter speeds as needed), then you have total power over how motion – or the lack of it – in your composition is recorded within your images.

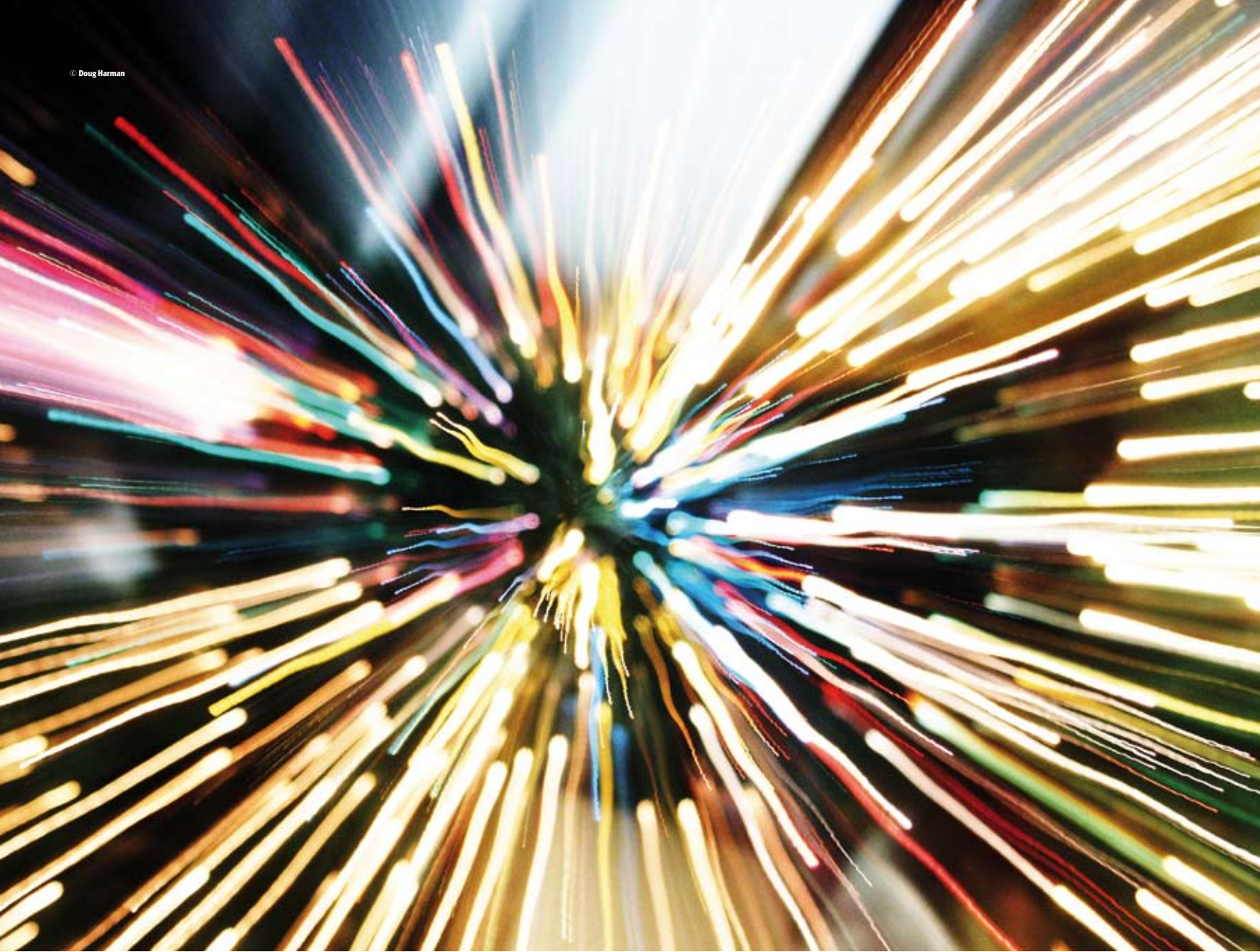
In essence, the faster the shutter speed you use, the less motion will be evident in any shot; the more the image will appear to be frozen and, bear in mind, the faster the action being snapped, the faster the shutter speed you'll need to use in order to freeze it. This usually involves a lot of trial and error.

However, as shutter speeds get faster, less light is allowed to reach the camera's sensor, so larger apertures will need to be employed – or increasing the camera's sensitivity (the ISO setting) will become necessary – in order to ensure enough light is captured for a properly exposed shot.

The intuitive response to using very slow shutter speeds in bright daylight is that the shots will overexpose. If you have control over apertures on your camera, then you can close the aperture down to, say, f22, reducing the amount of light entering the camera and ensuring the shot is not overexposed.

This technique lets you include motion blur for creative effects, such as capturing passers-by as ghostly blurs, making waves on the seashore become smooth velvet blankets or rendering creatively blurred waterfalls.

“As shutter speeds get faster, less light is allowed to reach the sensor, so larger apertures will need to be employed in order to ensure enough light is captured”



© Doug Harman

However, if employing this technique, watch out for brighter backgrounds, which can lose detail by becoming too bright. To help prevent this leaching of detail, use an accessory filter called a neutral density filter; it will help even out the range of brighter and darker areas without affecting the colour temperature or white balance of the shot.

Another tip is to use lower sensitivities, say ISO 50 or ISO 64, in order to reduce the light processed by the camera and get even slower shutter speeds on tap. On the upside, you'll be able to retain slightly more control over the apertures used – depending on the sophistication of your camera and the flexibility of its ISO settings; you'll also get less image noise too. On the downside, you'll probably have to support the camera on a tripod to stop unwanted blur from camera shake.

A camera with aperture priority control only (typically most mid- to high-end compact digital cameras), where you control the aperture values and the camera automatically chooses the 'correct' shutter speed for a properly exposed picture, is going to be much less flexible than being able to employ direct

■ **[Above] Deliberate blur:** Slow shutter speeds can offer up some very neat creative effects such as this 'zoom burst' technique. This was shot with a slow shutter speed of 1/3sec, but combined with zooming the lens during the exposure to create this dramatic effect

Shot details: Konica Minolta DiMAGE 7Hi with lens at 22.1mm and f3.4; 1/3sec, ISO 200

shutter speed control. However, you can deliberately use a specific aperture to get a slower or faster shutter speed.

For instance, use a small aperture to force the camera to pick a slower shutter speed, and vice versa. It is worth bearing in mind, however, that this technique has an impact on the depth of field; the smaller the aperture the greater the depth of field will become. Moreover, using slower shutter speeds on any camera may mean you need to support the camera using a tripod or monopod to help minimise the risk of camera shake.

So, what happens if you have a camera that lacks shutter speed control? The more basic digital cameras out there provide little or no control over their shutter speeds; often, point-and-shoot models will have an all-auto program setting where the camera does everything for you barring press the shutter release.

These cameras usually have a set of subject (or scene) modes and while these predefine the way the camera behaves for specific subjects, such as portraits, night scenes or sports subjects, you can take advantage of them too, as there will be an



■ **[Main] Faster shutter speeds to freeze action:** This shot was taken using a relatively fast 1/420sec shutter speed to help freeze the motion of the backlit fountain's water droplets to help create this quite dramatic effect
Shot details: Fuji FinePix S20 Pro with 18-70mm zoom lens at 42mm and f8.0; 1/420 sec, ISO 200

Shutter speed tips

- Use a fast shutter speed to freeze a fast-moving subject. The faster the action, the faster the shutter speed needed to freeze it.
- Use slow shutter speeds to creatively blur your subject, be it a waterfall or waves on a beach, to convey the feeling of motion in a subject.
- Using flash can help freeze motion as well as a fast shutter speed.
- Use a neutral density filter if you have problems with detail bleaching out when using longer exposures in daylight.
- Always use a shutter speed the reciprocal of the focal length in use to help reduce problems from camera shake.
- Bump up the camera's ISO sensitivity to help get faster shutter speeds at your disposal.
- If using slow shutter speeds, always support the camera with a tripod or monopod.

» element of automatic shutter speed control you can turn to your advantage. For example, in bright daylight, where you want to use slower shutter speeds, use the camera's night scene mode (crucially, without flash) to force the camera to use a slower-than-normal shutter speed. This could be ideal when snapping fast action, particularly if you want to include some creative motion blur.

Obviously, this mode is usually used in low light or at night with or without flash, and used in its 'proper' fashion, it enables you to shoot an ambient light exposure using a slow shutter speed and the burst of flash will help illuminate any foreground subject.

Used during daylight, the night scene mode with a burst of flash or the camera's fill-in flash mode – if it has that setting – can help create a fill-in effect, lightening the shadows. The short duration of a burst of flash can also help freeze motion, so it can be worth turning on wherever you want an extra crisp result.

Alternatively, use the camera's landscape mode to force the camera to bring into play a smaller aperture (smaller apertures ensure greater depth of field, ideal for landscapes) and this will then drive the camera to use a slower shutter speed. Conversely, try using the camera's sports mode – here the aperture used will be much bigger to get at those faster shutter speeds – and use the sensitivity (ISO) to your advantage by increasing the ISO to help freeze the action.

In essence, however, because there's no direct control over the shutter speed and you're subverting the camera's mechanisms to help get an effect, trial and error is the key.

Try practising using the 'wrong' setting for special effects and see what happens. But watch out for unwanted or odd effects, such as the wrong white balance setting being used, which could skew colours in a shot. However, once you've an idea of how the camera behaves (or misbehaves), you'll be able to predict – to some degree – what mode to use for a specific result.

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