

Just as variations in depth of field can make a photograph look more or less three-dimensional, motion can be used to assert or disguise the fact that a photograph captures only a tiny slice of time. Allowing a moving subject to blur during an exposure “stretches” time a bit, emphasizing the subject’s movement. “Freezing” the subject emphasizes the camera’s ability to “grab” an instant of time and hold it still. Each approach can be very effective. Neither is exactly lifelike, however, because your eyes record movement as a series of instants (the way a motion picture does).

THE SCIENCE OF BLURS

An object in a photograph will appear blurred if it moves while the shutter is open. If the object moves across only a very small portion of the image area, it will seem only slightly blurred. If it moves over a large portion, it will blur considerably.

How far an object moves through the image area depends on three things: its speed, the speed of the shutter, and the angle of view.

The **angle of view** can be imagined as a triangular or funnel-shaped wedge extending from inside the camera out into space. The edges of



A limited amount of blur can add sparkle to a simple gesture, making a photograph more lively and expressive. (Student photograph by Sonja Gray.)



A fast shutter speed (or flash) will “freeze” a subject. Some flash set-ups can even freeze a bullet in mid-flight. In this photograph of a dove, the wings are allowed to blur just enough to suggest movement. (Student photograph by Darrel Miers.)

this wedge are the boundaries of the camera’s “sight.” Whatever is inside the boundaries will show up on the film. Whatever is outside won’t.

The longer a lens is, the smaller its angle of view will be. (This will be explained in more detail in the next chapter, when we discuss perspective and interchangeable lenses.) If a lens has a narrow angle of view, an object won’t have to move very far to create a blur.

The reason for this is that a lens

with a narrow angle of view—a 200mm telephoto, for instance—selects only a small part of the total image in front of it. It effectively crops in on a small fraction of the total scene, just as you might do when editing a print. The narrow angle of view enlarges that fraction to fill the image area.

Let’s say you’re photographing a car driving along a road that crosses your field of view. A 200mm lens might cover only a few feet of the



Is this bird photograph less “correct” than the previous one? It all depends on what you want to convey. Allowing a subject to blur almost to the point of becoming unrecognizable can be a very effective way of conveying movement. It generally takes several trial-and-error shots to get it just right. (Student photograph by Cheryl Plumb.)

road. In $1/60$ of second, the car might move 10% of the distance from one side of the frame to the other. This would be enough to produce a very obvious blur when the photograph was enlarged.

If a lens has a large angle of view—such as a 28mm wide angle—much more of the road will fit into the image area. That same car, shot at the same shutter speed, at the same distance, moving at the same speed,

would cross only a tiny fraction of the field of view, perhaps 1%. It will therefore produce virtually no blur at all.

The same principles apply to the distance between the camera and the object being photographed. If the camera is very close to the object, any movement of the object will cover a fairly large area of the image area at a moderate shutter speed. A visible blur will result. If, instead, the object

is relatively far from the camera, and the same lens and shutter speed are used, the movement will cover a smaller area and be less visible.

You can also control the amount of image area affected by a moving object by increasing the shutter speed. Quite simply, the faster your shutter speed, the less time an object has to move. If the shutter is fast enough, even an object that is moving very quickly will seem to be stand-



Panning will at least slow down a moving subject. Used with a slow shutter speed it will blur the background, producing an effective impression of motion while retaining the subject's clarity. (Student photograph.)

ing still. This is often referred to as "freezing."

There are other ways to avoid blurred movement. You can choose subjects that aren't moving, of course, or wait for a moving one to stop. You can also make a subject slow down by moving with it. The most common way to do this is called **panning**. To pan, you stand in one place and swing your camera to follow the movement of your subject while you click the shutter. If you're

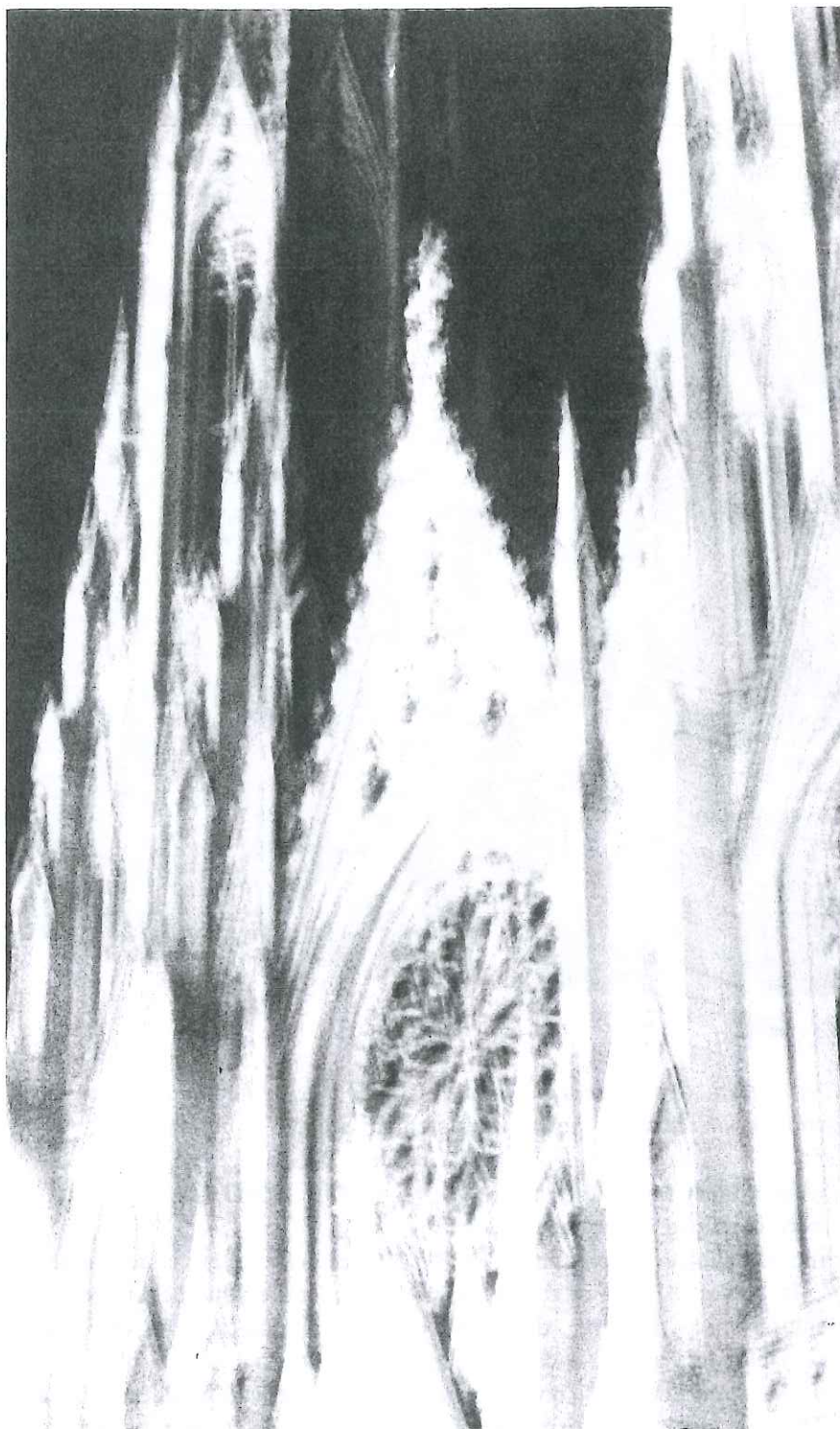
using a fairly fast shutter speed, you may be able to freeze even a quickly moving subject by panning.

If you're using a relatively slow shutter speed, however, the subject may blur less or not at all, but the background may blur considerably. This will result in a fairly crisp image of the subject, but it will seem to be moving very quickly, due to the streaks of the background.

STOP AND GO

Once again, there is no "right way" to shoot everything. Sometimes you'll want a subject to be very blurred. Sometimes a slight blur is best. Sometimes you'll want no blur at all. The important thing to recognize is that this is an aesthetic decision, and that you have several ways of putting your decision into effect.

In most cases, you don't want any blur when you're photographing im-



Blurred motion can even be used effectively with immobile objects, as in this impressionistic image of St. Patrick's cathedral, created by hand-holding the camera for a long exposure. (Student photograph by Mike Bracco.)

mobile objects—buildings, rocks or furniture, for example. If you try to photograph a building with a 200mm lens at 1/8 of a second, you'll produce the disturbing impression of a major earthquake.

You may or may not want some blurring when photographing objects that move occasionally or slowly: tree leaves, people walking, or flowing water. In this case, you'll want to choose the distance, lens and shutter speed that best produce the motion effect you want.

Finally, you're most likely to want blurring when photographing objects that tend to move quickly and often: racing cars, galloping horses, a basketball team in action. In this case, a long lens and/or a slow shutter speed may be in order.

As you notice moving subjects during future assignments, take a moment to consider your options. How many ways of creating blurred motion can you recall? How many can you recall to prevent blurring? The sooner all your options come to mind automatically, the sooner you'll be able to control motion effectively and creatively.

EXERCISE

Blurred Movement

Assignment: Experiment with various ways of illustrating motion by using slow shutter speeds.

Goal: Use blurred motion with a clear purpose and with a clear result. In other words, try to get a shot in which the blur really *expresses* motion.

Tips: Set your camera at f/16 and 1/15 to start. Once you get going, experiment with shutter speeds as low as 1/8. You'll find the assignment easiest on a gray, overcast day, since you don't want too much light. Alternatively, you might use a neutral density filter, which cuts down the amount of light entering the camera.

You may shoot in one of three ways:

1 > Aim your camera so your subject is moving into the frame. Begin following your subject's movement and then release the shutter. Keep moving with the subject as the shutter opens and closes. This will produce a blurred background with your subject more or less "frozen."

2 > Mount your camera on a tripod or find some other way to hold it very steady. Aim so your subject is moving into the frame and release the shutter. This will produce a steady background with your subject moving across the frame as a blur.

3 > Attach a zoom lens to your camera, then mount it on a tripod or find some other way to hold it steady. Focus on the subject with the zoom at its maximum focal-length (i.e. 200 on a 75-200 zoom). Pull back on the zoom lens and immediately release the shutter. This produces a pattern

Student photograph by Jeffrey Parker.

of lines radiating out from your subject.

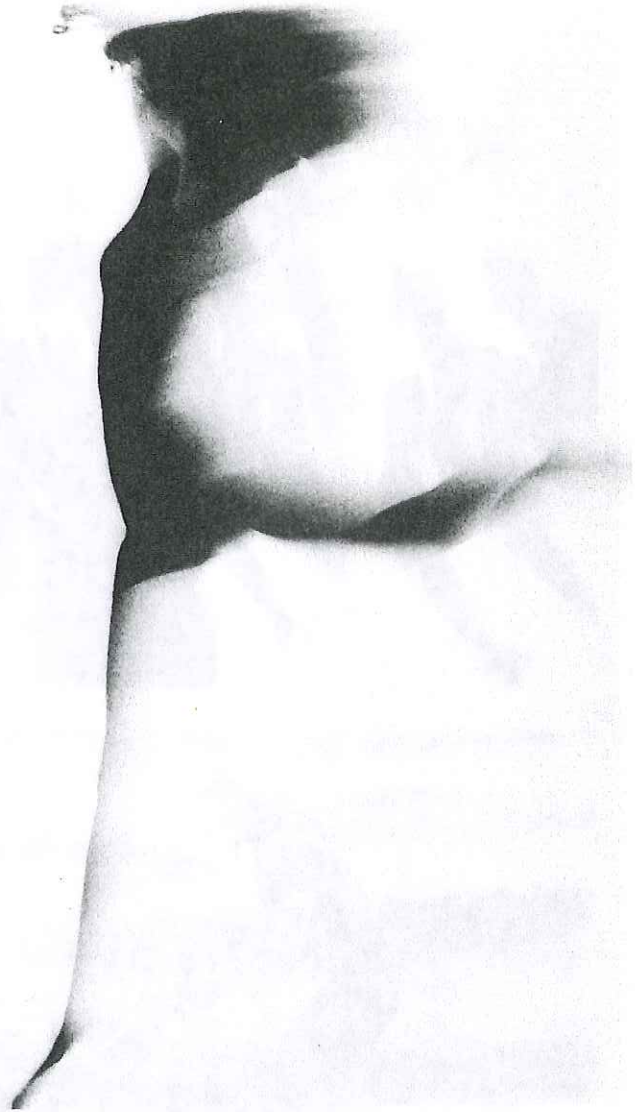
Note that you'll have to find something to focus on, or guess the distance, before your subject moves through the frame.

Possible subjects include runners; almost any sports activity; motorcycles, bicycles and other vehicles; a person or a group of people jumping, twirling, swinging, dancing, etc.

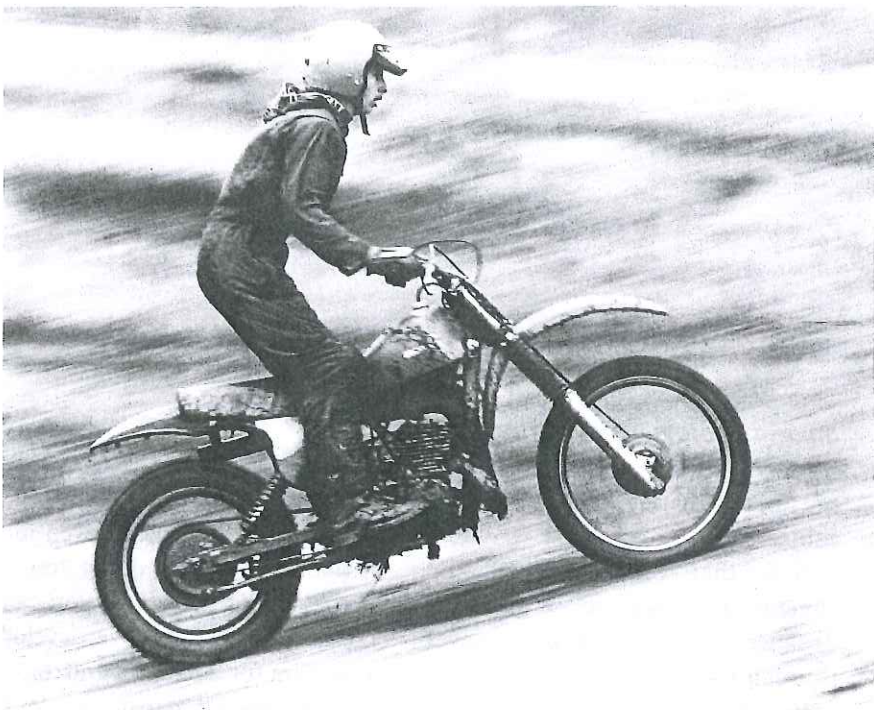
Your subject should contrast with the background (light on dark, dark

on light). If it already blends in, the blur will make it blend even more.

(Note: If you are doing your own processing at this stage, you can increase contrast by overdeveloping your film for 2 minutes and/or using a high-contrast paper—grade 4 or 5—for printing.)



Student photograph by Charles Stuart Kennedy III.



Student photograph by Marciano Pitargue, Jr.