There are four primary elements that affect the picture produced in the camera. First, there is the light that exists even before it enters the lens. This light can be natural, artificial, or a combination of both. Second, there are color filters and nets, usually placed behind the lens, to control the color and change the quality of the light. Third, there is the size of the lens itself. Fourth is the lens stop, which determines the amount of light that will pass through the lens onto the film. There are other factors—the angle of the shutter, the negative stock, and so forth. But these four basic elements will suffice for now.

The most fundamental photographic choice I make is what lens to use for a particular shot. Lenses vary over an enormous range from 9 millimeters to 600 millimeters and beyond. Technically we refer to the lenses on the lower millimeter range (9 mm, 14 mm, 17 mm, 18 mm, 21 mm) as wide-angle lenses and to those from 75 mm on up as long lenses. I hope I can help make this clear with the following drawings:

The distance from where the image reverses itself to the recording surface (the film) is what determines the millimeter count of the lens. In drawing A, notice how much more room there is above and below the photographed object than in drawing B. The 35 mm lens (A) takes up a significantly larger area than the 75 mm lens (B). The wider-angle lens (35 mm) has a much larger “field” than the 75 mm lens. The 75 mm lens has a long tube drawn on it because it needs more distance from the recording surface. Theoretically, given all the space one needed, one could achieve the same size of any photographed object using a longer lens by simply backing the camera up. But changing lenses for the amount of information the lens gathers (its “field”) is only a partial use of a lens. Lenses have different feelings about them. Different lenses will tell a story differently.

Murder on the Orient Express illustrated this very clearly. During the body of the picture, various scenes took place that would be retold at the end of the movie by Hercule Poirot, our genius detective, using the retelling as part of his evidence in the solution of the crime. While he described the incidents, the scenes we’d seen earlier were repeated as flashbacks. Only now, because they’d taken on a greater melodramatic significance as evidence, they appeared on the screen much more dramatically, forcefully, etched in hard lines. This was accomplished through the use of different lenses. Each scene that would he repeated was shot twice—the first time with normal lenses for the movie (50 mm, 75 mm, l00 mm) and the second time with a very wide-angle lens (21 mm). The result was that the first time we saw the scene, it appeared as a normal part of the movie. Viewed the second time, it was melodramatic, fitting in with the drama of a solution to a murder.

Lenses have different characteristics. No lens truly sees what the human eye sees, but the lenses that come closest are the midrange lenses, from 28 mm to 40 mm. Wide-angle lenses (9 mm to 24 mm) tend to distort the picture; the wider the lens, the greater the distortion. The distortions are spatial. Objects seem farther
apart, especially objects lined up from foreground to background. Vertical lines seem to be forced closer together at the top of the frame.

Longer lenses (from 50 mm upward) compress the space. Objects that are lined up from foreground to background seem closer together. The longer the lens, the closer the objects seem, both to the camera and to one another. These distortions are tremendously useful. For example, if I were doing a tracking shot or dolly, or simply panning from right to left, I could create the illusion of the photographed object traveling at much greater speed by using a long lens. Because it seems closer, the object seems to travel past the background at a much greater speed on a long lens. The foreground object (a car, a horse, a running person) seems to be covering more ground faster. Conversely, if I wanted to increase the speed of an object moving toward or away from me, I would use a wide-angle lens. This is because the object seems to be covering greater distances as it is approaching or leaving us.

The lenses have another characteristic. Wide-angle lenses have a much greater focal depth of field—the amount of space in which an object moving toward or away from the camera stays in focus without changing the focus of the lens mechanically. Again, this can be put to tremendous use. If I wanted to get rid of as much background as possible, I’d use a long lens. The background, even though it seems closer, is so out of focus that it becomes unrecognizable. But with a wide-angle lens, although the background seems farther away, it will be sharper and therefore more recognizable.

Sometimes, when I need a long lens but want to keep the image sharper, we’ll pour in more light. The more light, the more focal depth, and vice versa. The added light will give us a greater focal depth, compensating somewhat for the loss of depth that the long lens created.

It gets even more complicated. Since light affects the focal depth, the stop (the amount of light allowed to pass through the lens) is very important. The stop is created by opening or closing a diaphragm mounted in the lens. We call it opening up (letting in more light by setting the diaphragm in its most open position) or stopping down (closing the diaphragm so it allows the least amount of light to reach the film). Whew!

The purpose of these boring technical discussions is to convey that the basic photographic elements-lens, stop, light, and filters-are wonderful tools.” 76-81