Chapter 3: The Shooting Modes

So far, I have discussed setting up the camera for quick shots, relying on features such as Auto mode for taking pictures with settings controlled mostly by the camera's automation. As with other sophisticated digital cameras, though, the Coolpix P900 has a wide range of settings available, particularly for shooting still images. One of the main goals of this book is to provide clear guidance about this broad range of features. To get started, I will turn my attention to the P900's several shooting modes, which provide you with many options for your photography.

To record still images, you need to select one of the available shooting modes: Auto, Program, Shutter Priority, Aperture Priority, Manual exposure, User Settings, Special Effects, Landscape, Night Portrait, Night Landscape, or Scene. So far, I have discussed the use of the Auto and Program modes. Now I will describe the others, after some review of the first 2.

Auto Mode

The Auto shooting mode is a good choice if you need to have the camera ready for a quick shot, maybe in an environment with fast-paced events when you won't have much time to fuss with settings. For example, in Figure 3-1, I used this mode to grab a quick shot of a colorful line of flowers in the local botanical garden. In this shooting mode, the camera does not try to figure out what kind of scene it is photographing, though it will detect human faces and focus on them if possible.

Figure 3-1. Auto Mode Example

To set this mode, turn the mode dial, on top of the camera to the right of the viewfinder, to the green camera icon, as shown in Figure 3-2.

Figure 3-2. Mode Dial at Auto

With this mode, the camera makes several decisions for you and limits your options in some ways. For example, you can't set ISO or white balance to any value other than Auto, and you can't choose the metering method, use exposure bracketing, or use the Picture Control settings to alter the appearance of your images. In addition, you cannot select continuous shooting.

There are still a few settings you can control, however. For instance, you can choose any options for Image Size and Image Quality, you can use exposure compensation, and you can select any of 5 available modes for the built-in flash (if you have raised the flash unit). You also can select macro (close-up) focus or infinity focus (but not manual focus), and you can use the self-timer, remote control and Smile Timer options. My recommendation is to set Image Size to the maximum of 4608 x 3456 pixels and Image Quality to Fine, and use the other available settings (such as exposure compensation and flash mode) as needed.

Program Mode

Choose this option by turning the mode dial to the P slot, as shown in Figure 3-3.

Figure 3-3. Mode Dial at Program

In this mode, the camera evaluates the light and selects both shutter speed and aperture so as to produce an exposure that the camera's programming considers to be normal. The Program shooting mode lets you control many of the settings available with the camera, but not shutter speed and aperture. However, even though you can't directly set those 2 values, you can override the camera's automatic exposure to a fair extent by using exposure compensation, the Flexible Program feature, and exposure bracketing.

I discussed exposure compensation in Chapter 2, and I'll explain exposure bracketing in Chapter 4. Flexible Program is the name Nikon uses for what is often called "Program Shift" for some other cameras. This option lets you adjust the values the camera selects in Program mode for shutter speed and aperture. For example, if the camera selects, say, 1/60 second at f/4.5, the Flexible Program feature will find equivalent combinations that result in the same exposure, such as 1/50 second at f/5.0, 1/40 second at f/5.6, or 1/30 second at f/6.3. To use this feature, when the camera is in Program mode, aim at your subject and turn the command dial (the wheel at the top right corner of the camera's back) to find an equivalent pair of shutter speed and aperture values.

When the camera is using one of these equivalent match-ups of settings rather than the originally chosen settings, it displays an asterisk at the upper right of the letter P that signifies Program mode in the upper left of the display, as seen in Figure 3-4.

Figure 3-4. Flexible Program Indicator on Display

To cancel Flexible Program, turn the command dial back to reset the original shutter speed and aperture, select a different shooting mode, or turn off the camera.

The Flexible Program feature is useful in several situations. For example, you may want to see what the "normal" settings are and then see if you can use a wider aperture to achieve a blurred background, or a faster shutter speed to stop the action or prevent blur from camera motion. And, when you're experimenting with the camera to see what it is capable of, it can be helpful to try various combinations of aperture and shutter speed to see which combinations give you the best results in different situations. With a digital camera, there's no added cost for trying these different approaches, and Flexible Program is a useful way to experiment.

One way to look at Program mode is that it greatly expands the choices available through the Shooting menu. You will be able to make choices involving white balance, ISO sensitivity, metering method, autofocus mode, continuous shooting, and others. I won't discuss all of those choices here; if you want to explore that topic, go to the discussion of the Shooting menu in Chapter 4 and check out all of the different selections that are available to you.

Shutter Priority Mode

Select Shutter Priority mode by setting the mode dial to the S indicator, as shown in Figure 3-5.

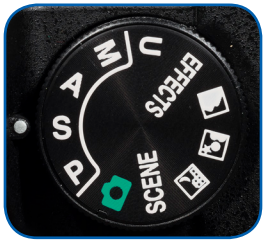

Figure 3-5. Mode Dial at Shutter Priority

In this shooting mode, you set the shutter speed and the camera will set the corresponding aperture in order to achieve a proper exposure. In Shutter Priority mode, you can set the shutter for intervals ranging from 8 full seconds to 1/4000 of a second, although the camera has built-in limitations on the use of the fastest and slowest shutter speeds. For example, if the ISO is set to 800, the slowest shutter speed available is 2 seconds, and if the aperture is set to f/2.8, the fastest shutter speed available is 1/2000 second. In addition, the zoom range of the lens has a limiting effect on the availability of the fastest shutter speeds. For example, the fastest shutter speed available when the lens is zoomed fully in to the telephoto position is 1/2500 second. The chart in Table 3-1 sets forth some of these limitations.

Table 3-1. Limits on Shutter Speed Settings

Slowest Shutter Speed	ISO Value
8 seconds	100
4 seconds	200 or 400
2 seconds	800
1 second	1600
0.5 second	3200 or 6400
Fastest Shutter Speed	Aperture Value
1/4000 second	f/8.0*
1/2500 second	f/8.0**

* At wide-angle zoom setting

** At telephoto zoom setting

If you are photographing fast action like a baseball swing or a race at a track meet and you want to stop the action with a minimum of blur, you will need a fast shutter speed, such as 1/1000 of a second. In other cases, for creative purposes, you may want to use a slow shutter speed of one second or more to achieve a certain effect, such as leaving the shutter open to capture a trail of automobiles' taillights at night.

Figures 3-6 and 3-7 illustrate the effects of different shutter speeds for 2 shots of the same subject, a fountain spurting upward from a large pond. For Figure 3-6, I set the shutter speed to 1/2000 of a second. In that image, you can practically see individual droplets of water, as the fast shutter speed froze the action of the fountain. In Figure 3-7, where I set the shutter speed to 4 seconds (and used a dark filter over the lens to allow the long shutter speed), the water is smoothed out into a continuous flow, with no individual drops visible.

Figure 3-6. Shutter Speed 1/2000 Second

Figure 3-7. Shutter Speed 4 Seconds

To set the shutter speed on the Coolpix P900, turn the command dial—the ridged dial at the top right of the camera's back, below the power switch. (As discussed in Chapter 7, you can switch this function to the multi selector dial with the Toggle Av/Tv Selection option on the Setup menu.) The LCD (or viewfinder, if selected) will display the selected shutter speed inside a yellow rectangle at the bottom center of the screen, as shown in Figure 3-8.

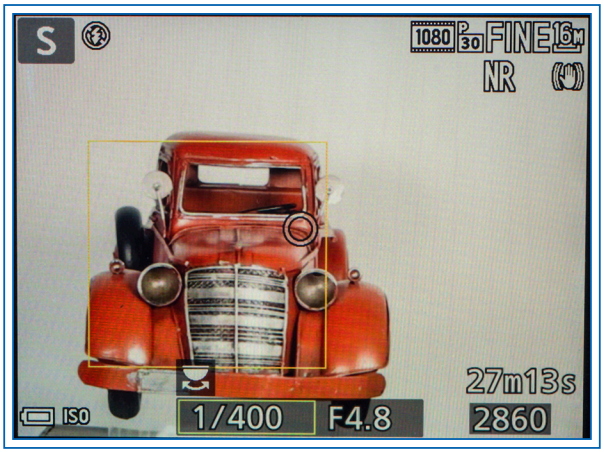

Figure 3-8. Shutter Speed on Display

As you point the camera at scenes with varying lighting, the camera will select and display the appropriate aperture (such as f/4.8 in this example) to achieve a proper exposure.

Once you've pressed the shutter button halfway, watch the shutter speed number on the screen. If that number blinks, that means proper exposure at that shutter speed is not possible at any available aperture, according to the camera's calculations. For example, with a shutter speed of 2 seconds in a well-lighted room, the shutter speed number may begin to blink, indicating that proper exposure is not possible. The camera will still let you take the picture, despite having blinked the number to warn you. The camera is saying, in effect, "Look, maybe you shouldn't do this, but that's your business. If you want an overly bright picture for some reason, help yourself." (This situation is less likely to take place when the camera is in Aperture Priority mode, because in that mode, there is a wide range of shutter speeds for the camera to choose from—a range from 8 seconds to 1/4000 second in some situations, depending on factors such as ISO, aperture, and continuous-shooting settings.)

When you are setting shutter speed, the fractions of a second are easy to read because they are displayed as standard fractions, such as 1/5 or 1/200. Some of the longer times are a bit harder to read; the camera displays them using quotation marks. So, for example, 2 seconds is displayed as 2", and 1.3 second is displayed as 1.3."

One feature of the shutter speed display on the Coolpix P900 is a bit confusing, at least to me. Some of the camera's shutter speeds are displayed as fractions whose denominators are decimal numbers, such as 1/1.3. I would have trouble understanding that number without doing some arithmetic, so Table 3-2 provides a brief chart that converts these few values into terms that may be easier to comprehend:

Table 3-2. Shutter Speed Equivalents

1/2.5	= 0.4 = 2/5 second
1/1.6	= 0.625 = 5/8 second
1/1.3	= 0.77 = 10/13 second (0.8 sec)

Finally, there is one other limitation on available shutter speeds. When you have selected one of the continuous-shooting options from the Continuous item on the Shooting menu, that setting imposes a restriction on what shutter speeds can be set. For example, if you have selected Continuous H, which causes the camera to shoot in a rapid burst, the slowest shutter speed available is 1/30 second.

Aperture Priority Mode

Aperture Priority mode, represented by the A setting on the mode dial as shown in Figure 3-9, is the inverse of Shutter Priority.

Figure 3-9. Mode Dial at Aperture Priority

In this mode, you select an aperture value and the camera selects a corresponding shutter speed to achieve a proper exposure. The camera's aperture is a measure of the current width of its opening that lets in light to create the image. This width is stated numerically in f-stops. For the Coolpix P900, the range of f-stops is from f/2.8 (wide open) to f/8.0 (most narrow), though this range is limited in some circumstances, as discussed below. The amount of light that is let into the camera to create an image is controlled by the combination of aperture (how wide open the lens is) and shutter speed (how long the shutter remains open to let in the light).

For some purposes, you may want to control the width of the aperture, but let the camera choose the corresponding shutter speed, so you can control the depth of field. Depth of field is a measure of how well a camera is able to keep multiple objects or subjects in focus at different distances. For example, say you have 3 friends lined up so you can see all of them, but they are standing at different distances—5, 7, and 9 feet (1.5, 2.1, and 2.7 meters) from the camera. If the camera's depth of field is shallow at a particular focal length, such as five feet (1.5 meters), then, if you focus on the friend at that distance, the other 2 will be out of focus and blurry. But if the camera's depth of field when focused at 5 feet is broad, then it may be possible for all 3 friends to be in sharp focus in your photograph, even if the focus is set for the friend at 5 feet.

The wider the camera's aperture is, the more shallow its depth of field is at a given focal length. So in the example discussed above, if you have the camera's aperture set to its widest opening, f/2.8, the depth of field will be relatively shallow, and it will be possible to keep fewer items in focus at varying distances from the camera. If the aperture is set to the narrowest, f/8.0, the depth of field will be greater, and it will be possible to have more items in focus at varying distances.

It is hard to illustrate this effect with a camera like the Coolpix P900, for a couple of reasons. First, the image sensor, where the light is gathered to form the image, is relatively small, which results in the depth of field being relatively deep at all apertures. Second, the largest aperture available is f/2.8, whereas some compact cameras have lenses that open as wide as f/2.0, or even f/1.4. With such cameras it is easier to achieve a blurred background, because the depth of field can be quite shallow at such a wide aperture. With the P900, the widest aperture you can shoot with is f/2.8, and that aperture is available only when the lens is zoomed back to its extreme wide-angle setting, where depth of field is greater. If you zoom the lens in to a telephoto setting, the maximum aperture decreases steadily. At the maximum zoom range, the widest aperture available is only f/6.5, which is not far from the narrowest aperture of f/8.0.

Despite the difficulty of demonstrating the effects of using different apertures, the images in Figures 3-10 and 3-11 illustrate these effects to some extent with 2 images taken at the same time and in the same location. For both images, the lens was zoomed out to its full wide-angle setting of 24mm. The first image was taken at an aperture setting of f/2.8, the widest possible setting; the second one was taken at f/8.0, the narrowest aperture setting. In both cases, I focused on the flower in the foreground

Figure 3-10. Aperture Set to f/2.8.

As you should be able to see, in Figure 3-10, with the wider aperture, the background is noticeably blurred because the depth of field is relatively shallow at that setting. In Figure 3-11, on the other hand, the background is in sharper focus because the depth of field is greater at the narrower aperture setting.

Figure 3-11. Aperture Set to f/8.0.

If you want to have the sharpest picture possible, especially when you have subjects at varying distances from the lens and you want them all to be in focus, then you may want to control the aperture and make sure it is set to the highest number (narrowest opening) possible. It also helps to have the lens zoomed back toward its wide-angle setting and to be somewhat distant from the subject.

On the other hand, there are times when photographers prize a shallow depth of field. This situation arises often in the case of outdoor portraits. For example, you may want to take a photo of a person standing outdoors with a background of trees and bushes, and possibly some other, more distracting objects, such as a swing set or a tool shed. If you can achieve a narrow depth of field, you can have the person's face in sharp focus, but leave the background quite blurry and indistinct. This effect is sometimes called "bokeh," a Japanese term describing an aesthetically pleasing blurriness of the background.

To achieve the greatest blurring of the background, you should try to use a wide aperture, zoom the lens in