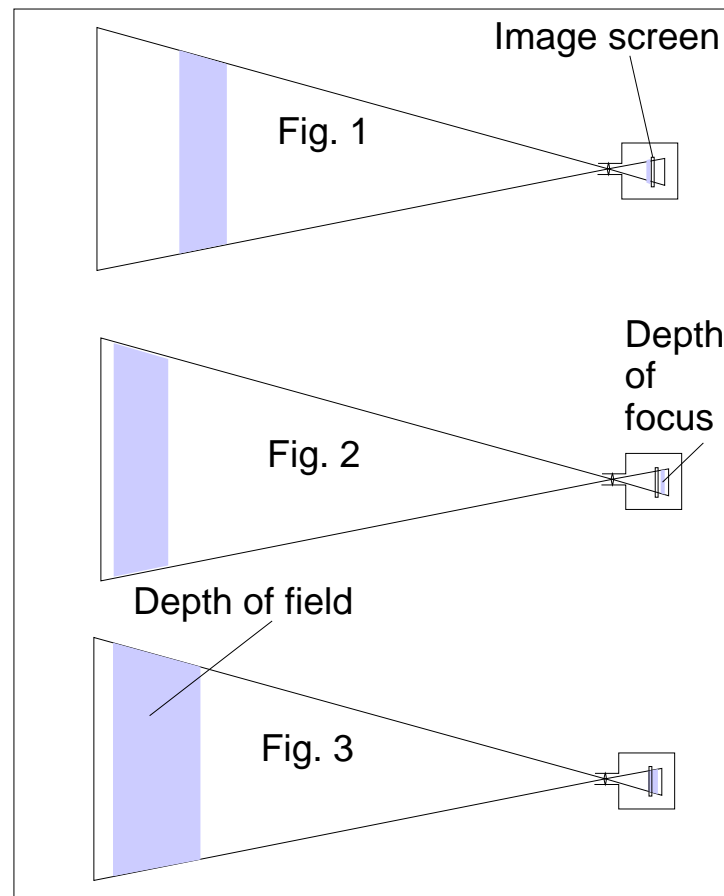


Part two, Digital Cameras Tutorial

by Don Butler

Before we go further with specifics, it might be good to deal with some fundamental optical phenomena, things that actually apply to all of photography, digital or not. In another thread I alluded to “depth of focus”. Let’s deal with that right now.

In the graphics at right there is a representation of a camera, lens and focusing screen. The triangle reaching out to the left indicates the scene covered by the lens and the smaller one inside the camera shows how the image is cast onto the screen (the term “screen” here refers to where the image is focused, whether a light sensitive chip or film). The blue areas inside the triangles are the areas of sharpest focus. In the first two the depth of field and focus are shallow, in the third, the depth is greater. What causes the depth to be greater or smaller is something that can be controlled by changing the “aperture”. That’s usually a part that can have it’s opening changed.



In analog (film based) cameras that was often a control right on the barrel of the lens. In digital cameras it’s not that apparent, but you can still effect change one way or another. Note that in Figures 1 and 2, the exaggerated diagram shows the sharpest focus inside the camera missing the screen. That would be the result of a large aperture and a focusing error. Focusing errors are something we just have to deal with, even with autofocus. The area of sharpest focus in the beam behind the lens isn’t sharply defined and either human or electronic controls can miss the exact point where it would be in perfect, sharpest focus. What can overcome the problem is using a small aperture which has the effect of increasing the depth of focus so the screen falls within the good part of the beam.

How does that happen? Consider an illustration in which you’re trying to see small print in dim light. The effort to bring it into focus may be so difficult that you fail to make it out. Bringing a light source to the subject, however, brings it into focus nicely. It’s not just easier to see because it’s brighter. It’s also easier to see because the aperture of the eye (the Iris) has gotten very small with the increase in light and the depth of focus inside the eye has become greater, making it easy to focus.

Notice that the area in front of the camera is called the “field”. That makes it easier to understand which area you’re talking about, at the subject (field) or at the focusing screen.

How do you make the aperture in your digital smaller? Depending on which camera you have, there may be a control that sets the camera for aperture priority or shutter priority. If you choose to have aperture priority the automatic exposure control will then adjust the shutter speed to compensate for the aperture you’ve selected.

What If your camera doesn’t allow that control? You can still effect change, but not with camera controls. For a smaller aperture, you alter the circumstances in the “field” (in front of the camera) so there is greater light. That means, using flash mode, or moving the subject out in the sun, or turning on and/or moving room lights, whatever means possible to get more light on the subject. Then the camera “sees” that and adjusts the aperture to a smaller opening.

OK, that's as technical as we're going to get in this installment. Let's move on to other matters in particular for the digital camera user.

Some cameras have a selection wheel somewhere on the camera body that allow you to decide how the camera is to be used. Here's some of those choices. Different brands will have variations on this theme.

OFF - This speaks for itself.

Auto - So does this. It's full automatic operation.

Small stick figure that looks like it's running - This is for moving subjects like cars, runners, team sport games, etc.

Head and shoulders figure - use this setting for portraits of people or subjects in the same sort of focus range.

Drawing of Mountains - For landscape pictures and subjects at a distance (like the sky, for example)

Picture of a flower - Close ups. Read the manual for the usable closeup distance.

And some cameras will have a little picture on the selector wheel that looks like an old fashioned movie camera. That's for short video clips.

Using the Action setting.- Use this, but understand how the camera is adjusted to do this. It is effectively in shutter priority mode. using the fastest shutter it can given the amount of ambient light.. What's to know?

Fast shutter means large aperture. As discussed on page one, that means shallow depth of field. Be sure the focus is correct or the subjects may drift in and out of the sharp focus area without your knowing it. You may not even notice fuzzy focus on the review screen. But it may show up when you see it on the computer screen.

Even though the shutter is fast, don't count on that to "freeze" the subject. You should be "panning" the camera (moving to keep the subject centered in the viewfinder. If you can elect to use the eyepiece instead of the LCD screen on the back of the camera, do so. It's easier to accomplish panning that way.

Using the Portrait setting. - For this you should be using the LCD preview screen so you know for sure your subject's head isn't cut off. But pay close attention to the review image. Sometimes you'll think you "got the shot" only to see that something is wrong. That's especially true if you handhold the camera. Use a tripod in this situation and you'll usually "get the shot".

In taking portraits, try to avoid using the flash. Most cameras will permit shutting it off. The reason is that "on camera flash" is, in my opinion, the number one worst way to take pictures of people. It's OK for candid shots at a party or something but not for face front portraits. The flash hits the face straight on and they'll have that "moon face" look. No shadows, no modeling of features. For the most pleasant portrait try to have the strongest light high and to the side and another "fill" light near the camera. The fill light should be about half the brightness of the main light.

Practice makes perfect and that's especially true with portraits. Most of your subjects will claim they don't like the picture and that's probably not a criticism of your photography as much as it is self-criticism. Few people actually like their own photos. Learn to live with it!

We'll deal with other camera controls in the next edition. In the meantime, practice, practice, practice. Don't print your experimental images unless you're particularly pleased. As long as you keep it digital with no printing, it costs you only for batteries. If you have rechargeables, you're home free. Go crazy! Make hundreds of images. This is your chance to get to know your camera intimately at no cost.

Until next time,

Don