

Digital ...

A monthly column by Harry

This month is about exposure and is for beginning photographers. Send questions for future columns to harry.iris@usa.net.

What does “exposure” mean?

Getting the correct exposure in the camera is critical to achieving a high-quality final image. I started with the same sentence last month. This time, though, we will talk about the four fundamentals which happily are straightforward and easy to understand.

Exposure is a bit like sunbathing for a white-skinned person. The sensor needs enough light to get brown but not so much that it gets sunburn.

Technically, exposure refers to the amount of light that falls on the camera sensor. It’s used in a precise way in photography. It refers to the data that the camera reads from the sensor when an image is recorded.

The sequence of events when an image is recorded goes like this:

- Photographer sets up the camera
- Camera gets itself ready
- Photographer presses shutter button
- Sensor is activated and receives light
- Light causes a signal to be built up at each pixel in the sensor
- Sensor stops receiving light
- Camera reads the data from the sensor.

Opposite to white-skinned people, the sensor starts off pure black and goes to white as it receives light. Too little light and the sensor stays black; as it receives more light it goes lighter and lighter until it gets to white. At that point, more light has no effect on the sensor. It doesn’t actually come to any harm but it results in “burnt out” images, like an over-enthusiastic sunbather.

There are four factors, or “players”, in this game of photographic exposure:

- Light intensity entering the lens
- Size of the lens aperture
- Time the sensor is collecting light
- Sensitivity of the sensor.

Getting the right exposure is a balancing act between these four factors. Essentially, you multiply all four together to get the final exposure. So, if you decrease one factor you have to increase another to keep the overall exposure the same.

The time is probably the easiest to understand — it's just like how long the sunbather stays in the sun — so I'm going to start with that.

If you set your camera on full auto it will adjust everything for you but it may not give you exactly the kind of picture you want. How does the exposure time value affect the kind of picture you get?

On the Club Flickr site (above), there is a snapshot of a seagull taking food from Iris' hand. There is also a part of the same image at high magnification. Notice that Iris' hand is sharp but the seagull is a bit "soft". It's because Iris' hand is fairly still while the bird is moving fast.

The exposure time was 1/1600 of a second. Iris' hand didn't move appreciably and so her hand looks sharp. The bird did move just a bit, even in that short time, and so it looks a little blurry.

On auto, the camera wouldn't use such a short exposure time, but I told it to use this value because I wanted to capture the fast-moving bird. If left to itself, even in a "sport" or "child" mode, the camera probably would not have caught the seagull in mid-air like this.

Look to see if your camera has a shutter priority mode (most do). Here is where you can set the exposure time and let the camera figure out the rest.

You should experiment. Play with your camera and try different exposure time settings with a flower blowing in the wind or a waterfall. You may find problems like graininess (called noise) or only part of the image is sharp (called small depth of field). These are the due to camera trying to balance the four exposure factors. I'll discuss these issues in future beginner's columns.