Control the BLUR

Some Q&A Regarding

Depth of Field

Depth of Focus?

Q. How does Depth of Field relate to Depth of Focus?

A. Depth of Field happens “ahead” of the lens (in the field you are viewing), whereas *Depth of Focus* happens “behind” the lens. They are both optical effects governed by the same factors.

   However, Depth of Focus is a very thin zone in which images are formed by your lens *inside* your camera. Your camera sensor needs to be in the depth of focus zone for your camera to work properly. Depth of Focus is more of a lens/camera design and quality issue and not a creative tool you can use when taking pictures.

Size of Sensor?

Q. How does sensor size affect Depth of Field?

A. This is an interesting issue, but the short answer is the sensor size does not affect Depth of Field. Depth of Field depends solely on the lens' focal length and aperture, and the subject distance. These factors occur "ahead" of the sensor.

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Size of Sensor (cont'd)?

However, sensor size does affect "Field of View", i.e. the amount of the scene recorded on the sensor. A smaller sensor captures a smaller portion of the field of view coming through the lens. So it *appears* to have a magnifying effect which gives the illusion of using a longer focal length.

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Size of Sensor (cont'd)?

This is also known as the "crop factor" because the smaller sensor is effectively cropping the field of view coming through the lens.

Since the cropping happens "behind" the lens (inside the camera), it cannot affect the actual optical focal length of the lens and therefore cannot affect the Depth of Field.

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Size of Sensor (cont'd)?

Having said that, the photographer with the smaller sensor might try to compensate for the crop factor by moving further away from the subject. This will capture more of the original scene on the smaller sensor.

The greater subject distance will have a greater Depth of Field! However, this increase in Depth of Field is not directly due to the sensor size.

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Size of Sensor (cont'd)?

Some DoF calculators take sensor size into account on the assumption that fields of view must be the same for comparable calculations. This can be misleading and it is something you need to find out about your DoF calculator before you rely on it.

Here is an excellent demonstration of DoF vs. sensor size.

- http://www.youtube.com/watch?v=dchVtTWyVw4

Effect of a Teleconverter?

Q. How does a teleconverter (or tele-extender) affect the Depth of Field?

A. A teleconverter simulataneously increases the focal length and reduces the aperture of the lens. The Depth of Field is based on the final equivalent focal length and aperture.

   E.g. a 200mm f/2.8 lens with a 1.4x teleconverter has the optical properties and DoF of a 280mm f/4 lens.

Thank You!

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