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The Study of What is *Not* In Focus:

BOKEH

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*There is a fifth dimension,
beyond that which is known to man.
It is a dimension as vast as space,
and as timeless as infinity.
It is the middle ground between light and shadow,
science and illusion. . .
This is the dimension of imagination. . .*

Introduction to “The Twilight Zone”, an
American television program in the late 1950s

At one time or another, you have probably been impressed by an image with a large blurry or totally out-of-focus area that added mood or intrigue to a subject in focus. Or made you wonder what was actually there. This is the appeal of bokeh. Specifically, ***bokeh*** is defined as the quality of the blur or haziness of a purposefully out-of-focus area of an image. Pronounced as *bouquet*, the word is derived from the Japanese “boke” meaning “blurry.”

While not a household word, the notion of bokeh has become increasingly familiar to photographers since 1997 when Photo Techniques magazine featured articles publicizing the concept. Since that time, photographers have been discussing bokeh on Internet forums, while it is occasionally explained in books on technique.

What may first come to mind as an example of bokeh is close-up portraiture in fine focus composed against a vaguely rendered, obscure or semi-defined background, adding drama to the image. Bokeh can vary widely, at one extreme leaving an impression so hazy it is left completely to the imagination; on the other hand, background may be only slightly out-of-focus (although a number of commentators consider this “bad” bokeh, reasoning that it is a halfway measure that only muddles the image.) Between

these two poles, the out-of-focus area may include gelatinous shapes, some barely recognizable, some not; some lighter and some darker; some that may be circular, others polygonal (multi-sided). Round balls or globes of light may appear if the lens (aperture) is wide-open (when light sources or reflected light sources are out-of-focus (e.g., a night scene focusing on people close-up with street lamps or festive lights in the background). Multi-sided forms of light may show if the aperture is stopped-down.

It should be kept in mind that some situations clearly call for a large area of an image to be out of focus, whether or not an artistic effect is desired. Not only may close-focus situations be mandated by very limited depth of field, but having a background in soft or indecipherable focus is an excellent way of placing most attention on the subject, by reducing background distraction.



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This image of railings in the Georgetown neighborhood of Washington DC was photographed using a 90mm telephoto lens wide-open at $f/2$, with the objective of illustrating a graduation to blur (and, it was hoped, a quality or pleasing sense of bokeh) beginning with a segment of railing in sharp focus, moving to background of weak focus and with further background out of focus. In discussion of bokeh, it is presumed that out-of-focus areas are intentionally included in a composition by the photographer, either for artistic effect or by technical necessity.

Quality of Bokeh

Bokeh has been analyzed and its features assessed from a variety of perspectives, some purely aesthetic (e.g., what is pleasing to the eye) but others from a technical standpoint utilizing mathematical formulae (i.e., relationship of out-of-focus areas to optical design and shutter characteristics). The diversity of approaches to bokeh can be readily seen by googling the term and perusing the commentary and tutorials.

A point of limited consensus previously noted is that out-of-focus areas of images should be largely so—with barely recognizable shapes, or without any discernable objects—in order to effectively complement the main subject without distraction.

Other observers analyze the quality of the globes or polygonal spheres that may appear. If such a globe of light has a solid ring around it, the effect is considered “bad” bokeh by some commentators. According to this school of critique, bokeh is considered “neutral” if the globes are of solid color without separate borders, while “good” bokeh occurs when globes are both of solid color and blend hazily into the image without any distinct borders. In my view these are rather subjective critiques!

How to Achieve Bokeh

How do you take a photograph with either the background or foreground largely if not completely out of focus? The wider the aperture opening and/or the longer the focal length of the lens (telephoto is best) the easier it becomes to make large areas of an image blurry for lack of focus. In plainer English, the lens should be wide-open or at low aperture number (e.g., $f1.4-4$, although this is not always necessary if using telephoto lenses) while the subject that is placed in sharp focus should ideally be either in the close foreground or infinite background.

Using totally automated (“point-and-shoot”) digital cameras, shooting for bokeh usually means switching to manual operation—manual focus and aperture setting—in order to counteract most camera operation programmed to achieve optimal focus throughout an image (i.e., aperture is automatically stopped-down to maintain depth of field, while autofocus may have been set to achieve optimal focus of all areas in an image). Under manual control, aperture can be set wider-open than usual (an incidental benefit of which is faster shutter speed) which together with manually focusing the lens at either the close-in foreground or distant background will markedly blur the other.