

Photography Terminology

Definitions and Terms



Brent Russell Paul

brentrpaul@hotmail.com

amwestphoto.com

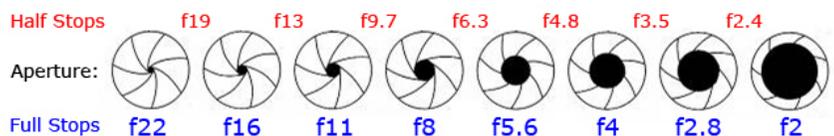
Definitions and Terminology

This is not an all inclusive list of terms, just a list of terms that I get the most questions about in my seminars and on photo safaris. It's difficult to read most photo magazines, camera manuals, or books as a beginning photographer because the terminology isn't clear. If you have a particular question about a term, e-mail me directly and I will help you in understanding it (of course, I have to understand it first.....). The lexicon used inside the photography world is constantly growing, with terms changing and being redefined, and new phrases being added and used by different authors. I hope this list helps.

Actions Actions are shortcut commands that can be created by the user in Photoshop CS programs. To show the Actions Palette, go to Windows, and select Actions (Alt + F9). All tool palettes are shown under Window. Actions can be recorded and saved that will perform a series of keystrokes instantly, thus speeding up your workflow. You go to my JPEG Processing PDF for steps on creating actions.

Ambient Light The available light falling on a subject. This term does not include light added to a scene via flash, reflectors, or other additional light sources.

Aperture The camera lens has an iris that opens and closes, much like your eye. The aperture is the opening through which light passes. Different aperture settings, from largest (like F2.8) to smallest (like F22), control depth-of-field and are called f-stops. Old lenses have an external ring that can be rotated to change the aperture setting, while new cameras require those older lenses to be set to f22, and then the camera body controls the aperture size. New lenses have no external aperture ring and are completely controlled via the camera body. In Nikon, the brand I shoot, one letter is used to denote this: "D" lenses are older lenses with aperture rings, while "G" lenses have no aperture ring.



Archive A webpage or blog page that has a collection. It could be a history of updates, a collection of blog posts, etc.

Artifacts This word refers to image damage commonly called "noise". It can be from image compression, ISO selection, or image processing. It appears in an image as blotchy areas of light and color that is strong enough to draw the viewer's attention. Artifacts are most evident in areas of an image that has smooth or continuous tones.

- Auto Exposure Mode** Usually represented by a green box. I call this the “idiot” mode. The camera makes all exposure decisions including ISO settings.
- AWB** Auto White Balance. The camera’s sensor decides the point of white balance in a scene, thus balancing image colors given the color of existing light.
- Barrel Distortion** Distortion caused in a lens where there is bowing and edge bending in an image. Every lens has some degree of barrel distortion. When shooting in raw mode one tab of tools in Adobe Camera Raw (ACR) allows you to fix that distortion by applying a lens profile, which corrects it.
- Bit Depth** Bit Depth refers to the number of levels of brightness in an image. A jpg image has 256 levels of brightness, while a raw file might be a 12 bit file (4,096 levels of brightness), 14 bit (16,384 levels of brightness), or 16 bit (65,536 levels of brightness). Higher bit depth is better in processing images because it creates smoother changes among many more levels of brightness.
- Blogosphere** The community of folks who blog online.
- Bokeh** The blur in the out-of-focus areas of an image. Better lenses with high quality glass and engineering produce smoother Bokeh. Thus, there is good Bokeh and bad Bokeh. Images benefit from a smooth out-of-focus background that causes the viewer to see the subject quickly, and remain looking at it.
- Bracketing** Taking a series of images with slightly different exposures settings in order to maximize the chances of getting a near perfect exposure. In Canon cameras you will find AEB on the second menu screen from which the number and exposure difference can be set. In many Nikon cameras there is a button that says BKT from which you can set the number of images to be bracketed, and the exposure difference between each image.
- Bulb Setting** This is a setting found in the Manual Mode setting of a D-SLR camera. After setting the camera in the M mode, rotate the Command Dial that controls the shutter-speed, as the shutter-speed slows it will finally arrive at the Bulb setting. This setting allows the shutter to remain open for as long as you are pushing the shutter-release button or the trigger on a remote triggering device or cable release.
- Burst Rate** The number of photos a camera can take while in high-speed motordrive mode before the camera’s buffer fills and the camera stops shooting. As the buffer moves images through the processing/saving mode space becomes available to shoot further images. My Nikon D3s will shoot about 30 raw images before it “buffers out.”
- Center Weighted** The camera’s meter evaluates the center of the image area in order to produce a correct exposure setting. Many cameras allow you to adjust the size of that central area when shooting in center-weighted metering mode.

- Chromatic Aberration** This type of image distortion is caused when the camera focuses the spectrum of light (RGB - Red, Green, Blue) at different points resulting in color fringing.
- Color Space** Most D-SLR cameras have two color space options: sRGB and Adobe RGB. The profile is attached to a photo's EXIF header. Adobe RGB has more colors, but sRGB is the color space of the web.
- Compact Flash Card (CF)** This is a removable mass storage device used as a memory card where the digital camera saves the photographs to. This larger card comes in varying capacity sizes. My Nikon D3s can hold two CF cards, and will overflow images into the second card when the first card is full. I shoot high-speed pro cards and I'm currently using two 16-GB 400x Lexar cards. When shooting in the raw quality mode, I can get about 810 images on each card – 1620 total images without having to change cards.
- Crop Factor** Most consumer grade cameras and some pro models have a smaller sensor called a DX (CMOS-C) sensor. My Nikon D2x had a DX sensor with a crop factor of 1.5 – when I'm shooting my 500mm lens its view is that of a 750mm lens. Some Canon cameras have crop factors of 1.4x and 1.6x, while Nikon's is 1.5x. A larger sensor, in traditional 24mm x 36mm format, is referred to as a FX sensor.
- Depth-of-Field** Abbreviated as DOF, it is a measurement from the closest object that appears sharp to the farthest object that appears sharp, in an image. The aperture setting controls DOF, with small f-stops like providing more sharpness in an image, and large f-stops providing less. The focal length of the lens you are using, the distance to the subject, and the distance to the background all can affect apparent DOF.
- Digital Resolution** In Digital Photography, resolution describes the image size as the number of pixels it contains. A 6 megapixel (mp) sensor might be described as having 3000 pixels of width by 2000 pixels of height. The abbreviation for this is ppi (pixels per inch).
- DX** See Crop Factor above. A camera sensor usually measuring 16mm x 24mm.
- Dynamic Range** The perceptible range of light (luminance range) from the lightest to the darkest as measured by doubling or halving the amount of available light. Lab tests state that my Nikon D3s has a sensor dynamic range of about 12, from white to black. The sensor's dynamic range is higher at low ISO settings, like 100-1200.
- EXIF Data** Data saved to the image file that usually includes the camera make, lens info, exposure info, white balance, exposure mode, etc. In Adobe Photoshop Elements and CS programs this information can be accessed by going to File >> File Info.
- Exposure Compensation** Represented in short hand by eV. There is a button (+/-) or menu selection that allows you to adjust the camera's exposure (in Program Modes like P, A or

Av, S or Sv) given a certain subject and/or lighting situation.

- Extension Tubes** A tube that goes between the camera body and the lens that allows the lens to focus closer than its normal minimum focusing distance. They come in different sizes that result in different degrees of magnification. This is a popular method to begin doing macro photography without buying an expensive macro lens.
- Fast (Slow) Lenses** This term is generally applied to lenses that have a very large initial f-stop, like f-2.8 on wide-angle and telephoto lenses, and on long telephoto lenses f4 is considered fast. Variable f-stop lenses should be considered fast or slow based on their smallest f-stop, thus a variable f-stop lens of f3.5-5.6 would be considered a **slow** lens. Consequently, fast lenses are usually expensive and considered **professional** lenses, while slow lenses are considered **consumer** grade lenses. There are many benefits to fast lenses: a brighter viewfinder, faster shutter-speeds in low light, coated glass to reduce diffraction, and a generally higher quality build.
- Fill Flash** Using either a built-in pop-up flash, or a flash attached to the hotshoe or via a cable or TTL cord, to light a subject whose back is to the sun or another bright light source. The flash is used to fill the shadow side of the face. All modern cameras can easily perform this function.
- Flash Synchronization** Timing in the exposure process so the shutter inside the camera is completely open before the flash fires. There are types of slow sync, and high speed sync in many newer camera models.
- Focal Length** The angle of view of a lens as measured in millimeters (mm). The actual definition of this is daunting, with a great deal of mathematics. Lets just say that a focal length lens below 50mm is considered a wide-angle lens (moderate to very wide), a 50mm lens is considered normal, and anything above 85mm is a telephoto lens. Thus, my 500mm lens is equivalent to a 10x set of binoculars. (500mm divided by 50mm = 10 power)
- Focus Lock** A camera feature that allows you to lock the camera's focusing mechanism at a certain point so it doesn't change between images.
- FPS** Frames-per-second taken by a camera's motordrive.
- F-stop** A particular size opening in the Aperture. See Aperture above.
- FX** See Crop Factor above. A camera sensor measuring 24mm x 36mm.
- Global Changes** Image Processing changes that effect the entire image. Thus, if you apply sharpening to the entire image, that would be a **global** change to the image. The opposite of **global** changes are **local** changes - changes to a selected area within the image.
- Golden Hour** The light before and during sunrise, and before and after sunset. The light has

a very warm, golden tone that many people like to see in their photographs.

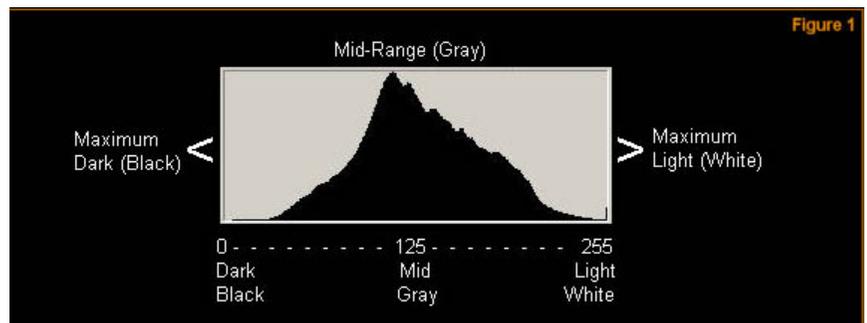
Gray Card A gray card can be an aid in finding the correct exposure for a subject under natural light conditions. A gray card reflects 18% of the light, which is a camera's sensor's exposure standard. They are usually 8x10 inches in size and can be purchased online or in most camera stores. I keep one in my bag.

HDR High Dynamic Range. A method for taking photographs of a subject using multiple images, taken at different exposures, and then combining them to achieve an image with high dynamic range – greater than a single image could encompass. There are software programs that specialize in combining images to produce this effect, like Photomatix, Photoshop, and others.

High Key An image taken where primarily light tones are used.

Highlight This normally means the brightest area of an image. Many photographers “expose for the highlights” in order to protect the image highlights from being over-exposed and thus the highlights burning out.

Histogram A visual presentation of pixel numbers at each level of brightness, ranging from black (left side), middle tones (middle), and white (right side) in the graph. Narrow histograms have less contrast, while wide histograms that go edge-to-edge on the graph have greater contrast. While the histogram shows the pixel numbers as if the image is a jpg (256 levels of brightness), there is much more data in a raw file that is not visually shown in the Histogram. An image that is underexposed shows a histogram leaning to the left side with no whites, while an overexposed image shows a histogram leaning to the right side with no blacks.



Hyperfocal Distance The hyperfocal distance is a point in front of the camera where at a particular f-stop (like f16), using a particular lens (like 24mm), the greatest amount of the image is sharp from front to back. Using the above parameters, on my FX sensor Nikon D3s, the hyperfocal distance is 4.02 feet. That means that if I focus at 4.02 feet my DOF will be 2.84 feet to Infinity. Wow. A great smart phone app to calculate this is DOFMaster.

- Image Stabilization** Is found in newer cameras and lenses and used to reduce image blur by reducing vibrations. Called “IS” in Canon nomenclature, and “VR” for Vibration Reduction in Nikon nomenclature. Best used when hand holding your camera.
- Image Saturation** How deep the hues are in an image. I process images to reflect the saturation of colors I saw at the time I took the image.
- ISO** International Standard for rating sensor sensitivity to light. Higher ISO settings amplify image data (higher gain) but lower quality. Lower ISO camera settings require more light, thus slower shutter-speeds if you are using Aperture Priority in setting the exposure. Higher ISO camera settings require less light, lead to higher shutter-speeds, but reduce the quality of the image. Modern digital cameras with the newer ISO technology sensors can record at higher ISO settings with lower noise than in older model cameras. Back in the days of film cameras, the sensitivity of the film was measured using the ASA scale. I shot a lot of images on Kodachrome 64 and Fuji Provia 100 – both the 64 and 100 are ASA film speeds.
- JPG** This file extension meaning *Joint Photographic Experts Group*, shortened to JPG or JPEG. This type of photo file is commonly used in digital point-and-shoot, D-SLR cameras, scanners, and other photo taking devices. It is a *lossy* compression technique that reduces file sizes so more images can fit on a camera’s memory card. The compressed data is discarded.
- Kelvin (K)** See also White Balance. The color of light is measured in degrees Kelvin. Usually ranging from 2400-10,000. Typical daylight is measured at about 5200 degrees kelvin.
- Key Light** The main light in a scene. Usually applies to the main light being used in a studio setting to light the subject.
- Kicker Light** A light source placed behind a subject to give a bright edge to the hair or head. Sometimes called a hair light. Generally used in a studio when multiple light sources are being used.
- Large Format** A film camera that shoots sheet film 4x5 inches and larger. Ansel Adams shot a large format camera.
- LCD** Liquid Crystal Display. The viewing screens on the back and/or at the top of the camera body.
- Lens Flare** Stray light that comes into the lens and causes distortions in the image, usually shaped like the aperture setting, or current f-stop.
- Light Meter** A handheld meter than can be used to measure the light. My Sekonic L-508 can meter incident light (light falling on the subject), reflected light (reflecting off the subject) in varying degrees all the way down to a spot meter, and light from a flash, with a sync cord or without cord. Awesome, but expensive.

- Local Changes** Processing changes that effect only part of the image through the use of masking or area selection. Selected areas have “marching ants” going around them once selected. This allows for more precise image processing.
- Macro** Close-up photography. It could range from 1:4 magnification, all the way up to 1:1 (life size) where the image size is equal to the subject size.
- Manual Mode** A camera exposure mode that allows the photographer complete control over both the aperture setting and shutter-speed. It is not influenced by exposure compensation adjustments (eV changes) or by changing light conditions.
- Medium Format** A film camera that shoots roll film in 120mm dimensions. Depending on the camera body, different dimensions can be shot on the same film, such as 6x4.5 centimeters, 6x6 centimeters, and 6x7 centimeters. I used to shoot a Mamiya 645 and loved the quality of the images.
- Metadata** Data (information) saved as part of an image file that might include the camera that shot it, the date shot, the colorspace of the image, copyright information, etc. This information can be accessed by clicking File, then File Info.
- Mirror Lock-up** Some cameras have this feature which allows the mirror to be locked up before the photograph is taken in order to minimize vibrations. Once the mirror is locked up you cannot see through the lens.
- Model Release** A contract between a photographer and a subject in which the subject agrees to allow the images to be commercially used.
- Monochrome** In image based on many shades of the same color. A black-and-white image is a monochrome, as is a sepia-toned image.
- Monopod** Used to steady the camera while shooting. It is a one-legged support and is preferred at many sporting events where space is tight.
- ND Filters** ND stands for neutral density. These filters can be a solid gray color that reduces the light reaching the sensor without changing any of the colors in the image (achieving slower shutter-speeds), or they can be graduated, which means half the filter is clear and it gradually darkens so that no solid line appears in the image. Both solid and graduated ND filters are important tools in landscape photography.
- Noise** Noise is random variations in brightness and color and comes from the camera’s image sensor. Noise is most obvious in areas of an image that has smooth or continuous tones – like the sky, or in areas where you have brightened the shadows. There are many factors that increase noise, some are: long exposures that heat up the sensor, higher ISO settings, sensor size (FX vs DX sensors), pixel size (large vs small), and hot days. Factors that can reduce noise are FX sensors, fast lenses (higher shutter speeds), and low ISO speeds.

Noise Reduction	Some cameras have built-in software to reduce noise in long exposures. Noise reduction can also be done in many software programs to smooth areas of the image where noise is obvious.
Normal Lens	A lens that closely duplicates a person's normal view. Usually a 50mm lens.
Optical Zoom	Glass elements move to provide the zoom function of the camera's lens. This is a much better zoom system than Digital Zoom, which simply crops tighter into the image and quality is reduced.
Output Device	This could be a computer monitor or an inkjet printer. Both devices have certain resolution requirements for best results.
Panning	A photo technique where the photographer moves the camera to follow the motion of the subject. When done correctly it results in a relatively sharp subject and a very blurred background that improves the feeling of motion in the image.
Panoramas	Sometimes called panos. These images are cropped (some cameras are built to take panoramic images) to be much wider than they are tall. I think panoramas go from a 2:1 ratio, height to width (like a 20"x40" dimension) up to extremely wide formatted images, like a 20"x60" dimension). Cropping images to panoramas can improve composition by excluding unwanted areas in an image.
Pixel	Abbreviation for Picture Element. This is the smallest unit making up the digital image.
Polarizing Filter	A dark gray filter with two elements of glass. One end screws onto the end of the lens while the other is turned to absorb glare and reduce reflections. It is particularly effective in darkening a blue sky, and in
Printing Resolution	Usually 300dpi (dots per inch). This is typical printing resolution for both inkjet and commercial printing. A newspaper can be printed at just 200dpi, far less than a glossy print at 300dpi. Fine art images might have a much higher dpi. Large billboard images can be printed as low as 30dpi. An image that is 3000ppi being printed at 300dpi will be 10" wide when printed at actual size (3000/300=10).
Program Mode	A camera exposure mode where the camera sets the f-stop and shutter-speed to reach the correct exposure.
Raw	Raw refers to a file type that D-SLR cameras can record images in that retains all the information provided by the sensor. Raw files are larger than jpg files and are not compressed using a lossy method. They are saved at a higher bit depth and thus have much more information which allows for better image processing. These files are sometimes called digital negatives.

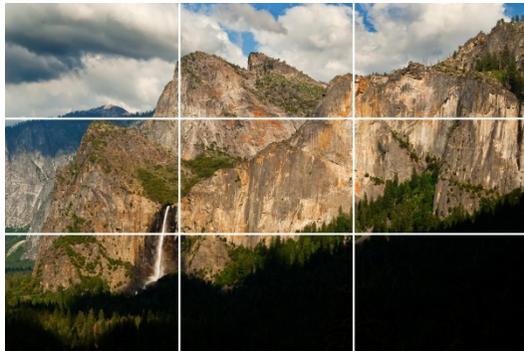
Recycling Time How quickly a flash refills the capacitor in order to have a full charge ready.

Red Eye Usually results in dark environments where flash is used. Light bounces off the blood vessels in the eye and returns to the sensor. If you move the flash off-camera, like higher, red eye is removed.

RGB Red, Green, Blue – the colors used to make up a digital image.

RSS Abbreviation for Really Simple Syndication.

Rule of Thirds This is a visual aid in composing images. It is not a hard and fast rule, just a tool to guide in framing. In theory, you divide up the scene using two equally spaced vertical lines and two equally spaced horizontal lines. Putting important image elements at the intersection of those lines, or along the axis of the lines.



Screen Resolution Usually 72ppi (pixels per inch). A typical computer monitor is 72ppi. This resolution is typical of e-mailed images so they fit on-screen when viewed online. Thus, an image 8" wide at 72ppi will appear 8" wide when viewed at 100% on your monitor. A pixel has a certain size value.

Selective Focus The use of large f-stops (like f4 or f2.8) to minimize DOF so that the subject stands out sharp against a blurry background.

Self Timer A camera feature that allows you to delay the triggering of the image for a few seconds (usually 2 or 10 seconds) in order to take your hands off the camera and tripod to reduce camera vibration. I use a self timer in nearly all landscape imaging I do. I have an expensive remote cord, but I use the self-timer more.

Shortcuts Coded keystrokes that have actions assigned to them. For example, most people know hitting the **Ctrl + C** keys (**Cmd + C** on a Mac) on the keyboard will Copy the selected item to the clipboard. Knowing the shortcut keys in Photoshop allows for much quicker work. There are many shortcuts shown in this PDF.

SLR Single Lens Reflex. A type of camera that has only one lens to both look through the lens to see the subject, and to take the photograph. D-SLR just adds the word Digital to the meaning.

- Smart Sharpen** A filter selection in Photoshop that adds contrast and sharpness to an image by making light pixels lighter, dark pixels darker, and thus adding more contrast along edges in an image. Exposure is the intensity of sharpening, while the radius increases sharpening away from the edges. Images with greater texture can be sharpened more, while images with less texture and more smooth tones would receive less sharpening.
- Soft Focus** In digital photography this is usually done in post-processing. It is used to give an image a softer, smoother appearance. On a person, this will soften wrinkles and remove small blemishes.
- Teleconverter** Abbreviated to TC. A lens with glass elements that goes between the camera body and the lens in order to increase magnification. With a TC installed, the working f-stop of the lens is increased as well. A 2x TC will double the length of a lens – like a 500mm lens to a 1000mm lens, and will also decrease the f-stop, from an f4 lens to an f8 lens (2 stops).
- Telephoto Lens** A lens with a narrow angle of view. My 500mm telephoto lens has a 5 degree angle of view. A telephoto lens has only a single setting and angle of view.
- Tonal Range** The range of light between the darkest and lightest areas of an image. See Dynamic Range.
- Tool Options Bar** In image editing software like Adobe Elements and Adobe Photoshop CS each tool, when selected, has options located in the bar above the image. These options allow you to fine tune the tools strength and range as you process your image.
- Tripod** A mechanical tool with three legs and a center post to aid in shooting images with a minimum of vibrations. The tripod head can be purchased separately from the tripod legs.
- TTL** An abbreviation for Through-The-Lens light and/or flash metering.
- Web Feed** Abbreviated titles to web content and/or summaries of web content with links to the websites, pages, or blogs where the full story is found.
- White Balance** WB is the color of light. In Auto WB a camera measures the color of incoming light and makes WB adjustments to correct it. While some settings in WB have names (like “Cloudy”), WB is actually measured in degrees Kelvin and the camera assigns a number to the images WB setting. Manually adjusting the WB is risky unless careful attention is made to resetting it when done. WB can be changed in most image processing software.
- Wide Angle Lens** A lens with a wide focal length, anything including and wider than 24mm (like 20mm, 18mm, etc.).
- Workspace** When either Photoshop program is open you see its workspace. This is the

system of menu options, tool options, the toolbox, photo area, and palettes that are currently open. Elements opens with its last workspace, while in CS5 workspaces can be saved with different layouts for different types of projects

Zoom Lens . A lens with a variable set of focal lengths, like a 24-105mm lens. Professional zoom lenses have a fixed f-stop, like f2.8 or f4, while consumer grade zoom lenses have a variable f-stop, like f3.5-f5.6. There is a price difference as well.