

List of Photographic Terms

CAMERA OBSCURA is literally dark room in Latin. It was the first “cameras” discovered by the desert people who got into a darkened tent in the middle of the day and were able to see an upside down and reversed image of what was going on outside on the tent walls. A small opening in the tent flap acted like a pinhole lens..

PINHOLE cameras can be made out of a shoebox, your SLR, or even a watermelon. Basically, they are made out of a light tight container, which does not have a lens. The lens is replaced by a piece of tin pie plate, which you use a needle to make a tiny hole with. The shutter is a piece of electrical tape that covers the hole. Film (or paper) is loaded in the dark, and then the exposure is made by removing the tape and replacing it after sufficient exposure.

AUTOMATIC is a camera where you have no control over the exposure or focus.

MANUAL means a camera where you have to figure out the correct exposure and focus the image.

SINGLE LENS REFLEX (SLR) is what you call a camera that you look through the lens rather than a viewfinder to frame your image. What you see is what you get. This is done with the aid of a 45° mirror placed behind the lens.

RANGEFINDERS are cameras that you do not look through the lens to compose the frame, you look through a small viewfinder to the side or above the lens. What you see is not what you get, but is slightly off center depending on where the finder is. (Disposable cameras and lower grade point and shoot).

WAIST LEVEL FINDERS refer mostly to medium format camera, but do exist in 35mm format as well. Instead of looking through a viewfinder through the same lense as exposure is made through, you look down at a ground glass that looks out through a second lens that is directly above the exposure lens. What you see has been calibrated to be the same as what you get despite looking through a different lens, except in very close situations.

PARALLAX ERROR is the technical term for the error that occurs at close distances when using a camera with two lenses, one for viewing and another for exposure.

FORMAT refers to the size film you shoot through the camera. Large format (View cameras) refers to sheet film larger than 4” x 5”; medium format or two and a quarter) is 120 or 220 film (which is 2 1/4 “ wide) and 35mm is often referred to as miniature format.

FRAME refers to what you see in the viewfinder of a SLR, and also what ends up on the film

FILM is usually described in terms of light sensitivity, grain, resolution, sharpness, definition, density, contrast, and reciprocity. It is composed of (from top to bottom)

1. A scratch resistant coating of hard gelatin
2. The emulsion itself, in which light sensitive silver halides are suspended in gelatin
3. An adhesive that glues the emulsion to the base
4. The film base, cellulose triacetate
5. A second adhesive, between base and backing
6. Antihalation Backing, a dye coating that prevents light passing through the film from reflecting off the camera's film pressure plate back onto the emulsion. Without it, halos would be created around the highlights.

35mm film is 0.005 inches thick.

CHROMOGENIC BLACK AND WHITE FILM is a color film photographic product, and is not compatible with traditional processing methods. It is essentially color film that is manufactured with only one dye (instead of three like normal color film) to create a monochromatic negative.

FILM SPEED refers to the sensitivity of the emulsion to light. It is measured by the film's ability to record shadow density at lower levels of exposure. Fast films record shadow density at shorter exposure than slow films, or is less sensitive to light. Faster films have larger silver halide crystals in their emulsion than slower films; because the crystals are larger, the light has a bigger target to hit and thus the film is able to react faster to low light situation.

The higher the ISO, the greater the film sensitivity. Also, each doubling of the ISO number indicates a doubling of film sensitivity. ISO 400 film might render a scene 1/60 @ f 11, while 200 ISO film would render the same scene 1/60 @ f8. Each time you double the film speed, you make the exposure one stop faster. Each time you halve it, you make the exposure one stop slower.

ASA (American Standards Association) helped set a standard by which to rate film speed.

ISO (International Standards Organization) helped set a standard by which to rate film speed.

EMULSION is found on both film and paper. Light sensitive silver halide crystals are suspended in gelatin. Film and Photo paper come pre-coated with emulsion, but it is available to buy for you to spread yourself.

LIQUID EMULSION (LIQUID LIGHT) is light sensitive emulsion that you can buy in a light tight bottle and spread yourself on any prepared surface you choose. It is sensitive to light and cannot be opened under daylight, or else it will fog.

SPECULAR LIGHT is sunshine traveling in a direct path, uninterrupted by cloud cover or haze. It is like standing in an open lawn at noon on a bright day. This light causes harsh shadows.

DIFFUSE LIGHT is sunshine redirected or interrupted by haze or cloud cover on a darkish day. Diffuse light is also the light under shade on a bright day (shadows)

REFLECTED LIGHT is the light that reflects off the surface of an object toward the camera.

BACKLIGHTING is when the light source is behind the subject and shines in the direction of the camera

HIGHLIGHTS are the bright part of a scene. In a negative they will appear dark, and in a print they will appear light.

SHADOWS are the dark part of a scene. In a negative they will appear light, in a print they will appear dark.

EXPOSURE of the film affects both shadow and highlight areas, but it most importantly controls shadow density. An underexposed negative will not produce enough detail in the shadow areas to print adequate detail. Overexposed negative will cause more graininess and less apparent sharpness than a correctly exposed negative.

DEVELOPMENT mostly affects highlight density. Since shadow areas receive relatively little light, there is a minimum amount of silver clumping, and the development proceeds rapidly. Highlights reflect more light, and thus there is much more silver clumping, which causes more developer action. The shadows will be fully developed in the first half of the recommended time, and the highlights continue to develop even past the recommended time. The amount of development controls the negative contrast by primarily affecting the difference between highlights and shadows. Thus, N-/N+ development.

LIGHT METERS are the things in your camera that determine your exposure (make the needle go up or down, the pluses or minuses light up.) They measure the amount of light reflecting off the surface of what you are photographing and translate it into a workable combination of f-stops and shutter speeds. Light meters are calibrated to indicate an average, or middle gray – one that reflects 18% of the light reaching it – regardless of the subject's brightness. If you point the meter at a solid white wall, the indicated exposure will produce a medium density and a middle gray wall (on the print). The meter reads the situation as being darker than it really is and overexposes the negative. A light meter sees the white wall as being middle gray. Similarly, if you point the meter at a solid black wall, the indicated exposure would produce a medium density and a middle gray wall. The meter reads the situation as being lighter than it really is and underexposes the negative.

GRAY CARDS are 18% gray on one side and white on the other, and are calibrated for light meters. By metering the gray card instead of the subject, you avoid confusing shadow and highlight tones and receiving an average estimate. Metering a gray card instead of the subject will give you the most accurate exposure possible.

THE ZONE SYSTEM is what you use when you do not have the time to meter a gray card, or do not have a gray card to meter. It was invented by Ansel Adams and put into written form by him in *The Negative*. There are 10 Zones: Zone 0 is black, Zone V is middle gray (18%) and Zone IX is white.

THROUGH THE LENS METERING (TTL) is what all 35mm SLRs use; the meter measures the amount of light coming through the lens.

CENTER WEIGHTED METERING is when a SLR meter reads the whole scene but puts extra emphasis on the center. Easier to use when metering for the zone system since it meters what you put in the middle of the frame.

MULTIZONE METERING is when a SLR randomly picks places in the scene to average together to make a meter reading from. Marketing gimmick to trick you into thinking your meter knows more than you do.

REFLECTED LIGHT METERS measure the amount of light that reflects off the object you are metering. You stand by the camera and meter the subject.

INCIDENT LIGHT METERS measure the amount of light that is reaching the subject. You make a reading with this type of meter by standing by the subject and metering back toward the camera.

SPOT METERS measure the reflected light from a small area of the subject.

CALIBRATION is a method for finding the effective speed of film in relation to camera, metering, and development.

EXPOSURE INDEX (EI) is the exposure compensation you have determined after calibration of your camera.

DENSITY is the relative darkness of a negative or print; a dense negative will not allow much light to pass through, a dense print will look too dark.

SOFT is a term used to describe an image that is not perfectly focused, either in the enlarger or camera.

SHARP means that the image is perfectly focused. Also called Definition.

DEPTH OF FIELD is the area of a photograph that is in sharp focus. Aperture helps determine how much in front and behind the focal point is also in focus. A smaller aperture (higher numbered) will allow for more to be in focus than a larger aperture (larger numbered) aperture.

APERTURE (f STOPS) are the numbers on the lens of manual cameras, or the AV option for partially automatic cameras. An aperture the adjustable lens opening that determines the amount of light allowed to pass through the lens. Technically a number that determines what fraction the diameter of a lens opening is in regards to the focal length of the lens.

FULL STOP indicates the change is the lens opening from one f stop number to the next, which either halves or double the amount of light hitting the film when not changing the shutter speed. A full stop also is made by halving or doubling the shutter speed, which halves or doubles the amount of time light is hitting the film and not changing the aperture.

OPENING UP refers to using a larger aperture (smaller numbered)

CLOSING DOWN refers to using a smaller aperture (larger numbered)

ADDING A STOP can be done two ways. One is done by not changing the shutter speed and opening up the aperture. This lets more light hit the film. To add a stop to 1/60 @ f11, you would go to 1/60 @ f8. 1/15 @ f5.6 would become 1/15 @ f4. 1/125 @ f22 would become 1/125 @ f16. Or, you could leave the aperture alone and make a longer exposure by exactly double your current time. f11 @ 1/60 would become f11 @ 1/30. f 5.6 @ 1 minute would become f 5.6 @ 2 minutes. f8 @ 1/1000 would become f8 @ 1/500.

SUBTRACTING A STOP can be done two ways. One is done by not changing the shutter speed and closing down the aperture. This lets less light hit the film. To subtract a stop from 1/60 @ f11, you would go to 1/60 @ f16. 1/15 @ f5.6 would become 1/15 @ f8. 1/125 @ f22 would become 1/125 @ f32. Or, you could leave the aperture alone and make a shorter exposure by halving your current time. f11 @ 1/60 would become f 11 @ 1/125. f 5.6 @ 1 minute would become f5.6 @ 1/30. f8 @ 1/1000 would become f8 # 1/2000.

SHUTTER SPEED indicates the precise length of time that light exposes the film, usually marked by fractions of a second. Your camera may just say 60 on it, it really means 1/60 of a second. 30 means 1/30 of a second. 4 means 1/4 of a second. 1 means 1 whole second. B means Bulb, T means timed.

BULB EXPOSURE (B) or TIMED EXPOSURE (T) is when the shutter will stay open as long as you hold the button down, meaning that the exposure is as long as you hold the button down. Used for long exposures, with a cable release to prevent camera shake

THRESHOLD OF EXPOSURE is the minimum light level needed to create an image on the film.

FOCAL PLANE SHUTTERS are the type used in SLRs; the curtain or shutter mechanism is directly in front of the film.

OVEREXPOSURE is excessive time or too large (big numbered) aperture was used, and too much density has accumulated on either film or paper. Film will appear opaque or too dense, prints will appear too dark.

UNDER EXPOSURE is when too short of time or too small (large numbered) aperture used. Film will appear clear or not dense enough, prints will appear too light.

RECIPROCITY EFFECT happens when extremely long or short shutter speeds are used. The increase or decrease in exposure is no longer directly proportional to an increase or decrease in the density of the image registered on the negative. This is what makes night photography a guessing game.

RETICULATION is the cracking or wrinkling of emulsion caused by extreme differences in chemical temperature during processing.

CAMERA SHAKE is when your image is blurred due to you moving while holding the camera.

MOTION BLUR happens when the subject is moving and your shutter speed was too slow to freeze the action.

MULTIPLE EXPOSURE is when you expose the same frame to more than one scene.

DIAGONAL ANGLE OF VIEW refers to the amount of the scene you can see through your lens. 360° would be a complete panorama going all around you; they do not make lens that can do that!

For a 35mm camera, you can see this many degrees of your surrounding through this size lens:

Wide Angle	Normal	Telephoto
88° 75° 63°	46°	29° 18°
21mm 28mm 35mm	50mm	85mm 135mm

When you change to larger film or digital formats, you will find the same size lens will give you a different diagonal angle of view. For example, Woodie, my camera, has the following:

4" x 5"

Wide Angle	Normal	Telephoto
88° 75° 63°	46°	29° 18°
60mm 80mm 90mm	150mm	240mm 360mm

Thus, if you could theoretically put the 50mm lens off a 35mm SLR film camera on a 4" x 5" view camera (which you can't do in real life) a 50mm lens would be SUPER wide angle!

FILTERS are used both in printing and on camera to control contrast with black and white materials. The same filters do not cause the same effects for both materials, however.

ULTRAVIOLET FILTER (UV FILTER) on a camera will help reduce atmospheric haze in landscapes, also left on at all times to protect the surface of the lens.

POLARIZING FILTERS will reduce glare or reflections on shiny surfaces and reduce atmospheric haze in landscape photographs. They also will saturate colors when used with color film.

CABLE RELEASE is a small cord that you can screw or plug into your camera so you do not shake it while depressing the button.

DIOPTERS are a lens added on top of your viewfinder (or built in) that allows people with poor vision to focus without their glasses.

LOUPES are small magnifying devices that make it easier to look at film and contact sheets.

WORKING SOLUTION is when the chemistry has been diluted with water and is ready to use.

STOCK SOLUTION is when the chemistry has not been diluted with water and is too concentrated to use.

PREWASH is soaking the film in water before the introduction of the developer. It allows the developer to work evenly.

DEVELOPER reduces exposed silver halide crystals in both film and paper emulsions to metallic silver. Developers are composed of:

1. Developing agents: Hydroquinone, Metol, Phenidone.
Effect contrast and graininess. Low activity level.
2. Accelerator (Activator) (strongest 1st) sodium (potassium) hydroxide, sodium carbonate, borax, sodium sulfite.
Causes quick development but fogs film & makes coarse grain
3. Restrainer: Potassium Bromide, Benzotriazole
Minimizes chemical fog
4. Preservative: Sodium Sulfite
Helps to keep developing agents from oxidizing (developer turning brown)

FOGGED is the term we use for light sensitive material that has been damaged.

CHEMICAL FOG: The tendency of developing agents to react with unexposed silver halide crystals. The edge of your film will look consistently dark

STOP BATH is a mild acidic rinse that neutralizes development action, but does not make dissolve unexposed silver halide crystals (which have not reacted with the developer and thus are still light sensitive.) Stop bath is composed of extremely dilute acetic acid and a color indicator for a visual check of usefulness.

FIXER (also called **hypo**) dissolves the unexposed (and therefore undeveloped) silver halide crystals from the emulsion. If these crystals are not removed they will eventually darken and ruin the image. Thus, fixer makes film and photo paper safe to view in daylight. Fixers are composed of:

1. Fixing Agents: Sodium Thiosulfate or Ammonium Thioisulfate
Removes unexposed silver halide crystals, easily exhausted.
2. Acid: Acetic Acid
Neutralizes development action when water is used as stop bath
3. Preservative: Sodium Sulfite
Prevents fixer from being exhausted by Acid

FIXER REMOVER (also called **hypo clear**) allows for a quicker, more efficient wash time than is possible with plain water. Composed of sodium sulfite.

PHOTO FLO (also called **wetting agents**) reduce the surface tension of the water to shorten drying times and cause uniform drying.

ENLARGERS allow you to project a negative onto a piece of photo paper and make an enlargement.

CONDENSER ENLARGERS have twin lenses that produce images with finer detail and higher contrast than diffusion enlargers since a pair of lenses is used to concentrate the light source.

DIFFUSION ENLARGERS scatter the light reaching the negative and are mostly used for printing color.

GELATIN SILVER PAPER refers to almost all black and white papers used today. It refers to the emulsion, which is composed of part gelatin and part light sensitive silver halide crystals.

ENLARGER TIMERS allow you to set the time of your exposure so that it is exactly repeatable. A button also turns on the enlarger light so you can focus your image. It basically functions like the shutter on your camera in that it controls the time, only it controls it by turning on and off the light source rather than opening and closing a physical barrier.

NEGATIVE CARRIERS are what holds your negative flat during printing.

GRAIN FOCUSER (MINI SIGHT) is what you use to focus the projected image on the easel

ENLARGER LENSES have adjustable apertures that work just like your camera. A smaller aperture (larger number) will ensure that your photograph is in focus despite minor enlarger focusing errors or enlarger alignment problems. Also, enlarger lenses work just like camera lenses in that you need different sizes when using different film formats.

When using this format, you need a lens this size:

35mm film	Medium Format (120/220)	4" x 5"
50 mm lens	75 or 80 mm lens	135mm

It is perfectly fine to use a smaller negative on a lens meant for a larger format; for example, using a 75mm lens with 35mm film, however, it means that the enlarger head will have to be farther away from the baseboard since enlarger lenses work just like camera lenses – you would have to be farther away from the subject to fill the frame with a 75mm camera lens than you would be with a 50mm.

EASELS are what give you nice white borders

ENLARGER ALIGNMENT is ensuring that the plane of film is perfectly parallel to the baseboard; it makes sure that your photo will be completely in focus from side to side.

FIBER BASED PAPER (FB) is the traditional enlarging paper that absorbs chemistry and water. It has a cotton base. It can dry down by as much as 10% after drying from how it appears when wet. The emulsion soaks into the top layer of the backing, allowing for an expanded tonal range.

RESIN COATED PAPER (RC) is a newer type of enlarging paper (1970s) that is liquid resistant. It has a plastic base. There is generally very little dry down with RC paper, but the emulsion sits on top of the base rather than permeating it, and allows for less tonality. Also, the chemistry has a harder time reacting with it.

VARIABLE CONTRAST PAPER (VC) or MULTIGRADE, allows for filters to control the contrast. With no filter, it is the equivalent of grade 2 (or a 2 filter with a perfect negative)

GRADED CONTRAST PAPER is not affected by filters. To change contrast, you have to change to a different grade of paper. Grade 2 paper is like using a 2 filter, grade 3 paper is like using a 3 paper, and so on.

DRY DOWN is the term for how a print may look darker after it has dried. Fiber paper (especially matt surfaced) is especially prone to this

WARM TONE refers to developers that help a paper turn brownish or paper that has a finer grain and naturally turns brownish.

NEUTRAL TONE refers to developers that help a paper stay neutral tones, or paper that is medium grained and naturally neutral tone.

COLD TONE refers to developers that help a paper turn bluish, or paper that has a coarse grain and naturally stays neutral toned or even mild blue toned.

PAPER SURFACES are chosen for many reasons. Glossy (F) surfaced paper is going to reflect more light back, causing colors to look more saturated or blacks to look blacker. Matt paper reflects less light and causes less saturated colors and the blacks to be less strong.

PAPER TINTS are when the paper base is cream or ivory instead or pure white.

PAPER WEIGHTS are not just for your desk any more, it has to do with how thick the base of your photo paper is. RC paper is almost always Medium weight, while you can get FB paper in Single Weight (SW) or Double Weight (DW). Since fiber paper has cotton backing, SW paper will wrinkle easier but be thinner to handle.

CONTRAST is the difference between highlights and shadows. Low contrast means there is less difference between them, high contrast means there is a lot of difference in between them. In printing, exposure controls the shadows and contrast controls the highlights.

TONALITY is the number of shades of gray that a print is composed of. Greater tonality means more shades of gray in between paper white and fully exposed black.

SAFE LIGHTS are painted light bulbs, or a plastic cover over an unpainted bulb. The colors are measured and only photo quality safelights should be used. Light Amber (Kodak OC) is recommended for most B&W enlarging paper. The maximum wattage is usually 25 watts, and you should always keep you paper at least four feet from the light fixture. Paper will fog if exposed to safelights for a long time, and Ilford recommends that RC VC paper be left out for a maximum of three minutes. No safelights may be used when handling film, unless you have a Kodak OA filter and only turn it on briefly when developing by inspection. There is not one of these filters at A&M, and we will not be developing by inspection, so never look at your unprocessed film under a safe light.

BURNING is when you give part of the print extra exposure to help darken a bright area. It is done by shielding the rest of the print and adding time to the normal exposure.

DODGING is when you shorten the exposure of part of a print to keep an area from getting too dark. It is done by shielding part of the print during the normal exposure time

FLASHING is a method of reducing print contrast by deliberately fogging the printing paper. It's primary use is for adding gray tone in an area that may be especially difficult to burn in. The paper is exposed normally in the enlarger, then exposed very briefly to white light. This method barely alters the shadows and reduced overall print contrast.

SOLARIZATION (Sabattier Effect) Partial reversal of an image that occurs when film or paper is re-exposed to light while in the developer

SANDWICHING sounds like lunch, but is when you put one or more negatives in the negative carrier. Looks similar to a multiple exposure.

BAS RELIEF is when two identical negatives are sandwiched slightly out of register in the negative carrier.

VIGNETTING is when a print has had the corners burned in to cause an oval effect. It can also be caused if a lens does not have enough covering power (only applicable in large format).

BLACK BORDERS are created by filing out a negative carrier to allow for the clear edge of the film to print through. A black mat board can be used instead of the negative carrier.

HARMONIZATION is the French term for burning and dodging, it also means to make the whole print look even (the grass on an openly lit lawn would appear to be the same tonality across the whole print, and not fade off or get too heavy)

CROPPING eliminates unwanted parts of the scene from the photograph. Best done in camera since it means less magnification.

CONTACT PRINT is a print the same size of a negative; often used to make proof sheets, which are also called contact sheets.

PHOTOGRAMS are made by placing objects on photo paper, exposing it to white light, then processing like normal. Magazine pictures can be used to make an image by placing them directly on the paper. Just remember that where the white light hits, it will turn black, and magazine pictures will come out in reverse (negative).

TONING is done after printing in room light to change the color of a black and white print or just simply make it more archival. Sepia toners are used for purposes, changing the color to brown and replacing the metallic silver with silver sulfide. Selenium is less likely to change the color of a print, but instead makes it more archival by replacing the silver halide crystals with silver selenide. Metallic silver is not the most stable metal, and may change colors on its own over time. Toners will permanently destroy silver jewelry.

DYING is when you change the color of the print but do not change the composition of the metallic silver. All these do is change the paper tint. Tea or food coloring are examples.

SPOT TONE is actually no longer made by the company named Spot Tone, it is made by Marshall and called spot correction fluid. Marshall brand is not nearly as good as the original spot tone, and if you have some of the original, be careful not to lose it! It essentially is a very dilute watercolor that you dilute even further with water to paint in white dust spots on your finished prints. Original Spot tone can be washed out if you make a mistake as long as you wash the whole print immediately and do not let it dry.

HAND COLORING is when you use different kinds of paint to colorize a black and white image.

ARCHIVAL means that your prints will be around for a long time and not change drastically from the way they appeared when you first made them. If not properly washed, your prints will turn brownish yellow and fade. The same will happen if you do not store them in an acid free box or display them with acid free backing and acid free matting, in addition to protecting them from excessive UV light. Many old photographs and negatives have turned yellow or faded due to improper storage.