Photography and Digital Imaging Glossary

18 percent gray card — A card with a matte surface of 18 percent reflectance used as a standard tone for metering and printing purposes.

4/1 — A job printed with four colors of ink on both sides of the sheet. *See* process colors, subtractive color.

4/1 — A job printed with four colors of ink on one side of the sheet, and one color of ink on the other.

aa filter— most digital slr cameras employ a low pass or anti-aliasing filter in front of the sensor to help prevent aliasing.

aberrations — Image flaws or imperfections due to lens design, causing image distortion or degradation of *image sharpness. See also astigmatism, barrel distortion, chromatic aberration, coma, compound lens, curvature of field, pincushion distortion, spherical aberration.*

Absolute Colorimetric Rendering: One of the four ICC-specified rendering intents used for handling out-of-gamut colors in color matching. Absolute Colorimetric rendering is exactly the same as Relative Colorimetric Rendering, except that Absolute Colorimetric rendering compares the white point of the source color space to that of the destination color space and shifts all colors accordingly.

accelerator — A developer component, usually an *alkali*, that increases the speed of development.

acceptance angle — *See angle of view.*

acetic acid — An acid used in diluted form as a stop bath. Also found in vinegar.

achromat — A lens system designed to correct the effects of chromatic aberration so that the two different wavelengths of light have the same focal length.

achromatic — By definition, having no color, therefore, completely black, white or some shade of gray.

Achromatic Color — A neutral color (white, gray or black) that has no hue.

Additive Color Mixture — Mixing of the three primary color lights (red, green and blue) to obtain colors. For example, combining green and red creates yellow, red and blue creates magenta, and blue and green create cyan.

Additive Primary Colors: The primary colors of light, from which all other colors can be made -- red, green, and blue. Adding 100 percent of all three produces white light, while adding lesser intensities produces a gamut of different colors. Combining 100 percent of two additive primaries produces a subtractive primary:

red+green=yellow
red+blue=magenta
green+blue=cyan

acid — A compound that neutralizes *alkalis*. Acids have a pH of less than 7.0.

actions — A recorded series of steps and commands that can be played back to automate repetitive processes. Actions are particularly useful for resizing a number of images, changing resolution, saving a folder full of images in a different file format, and many other common tasks that rely on a defined series of steps.

acutance — The ability of a film to produce a sharp edge between two tonal areas in the image, tested by placing a knife-edge on the film and exposing it to light. Acutance is an objective measure related to *image sharpness.*

ad converter— in-camera device that converts analogue information (the output of the camera sensor) into numbers that can be read by a computer.

adapter rings — Metal rings used to adapt smaller or larger threaded filters or accessories to the threaded fitting on a camera lens. *See also step-down ring, step-up ring.*

adaptive palette — A sampling of colors taken from an image and used in a special compression process, usually to prepare images for the World Wide Web.

additive color — The process of mixing red, green and blue light to achieve a wide range of colors, as on a color television screen. *See* subtractive color.

additive color system — A method of adding varying amounts of the additive primaries to achieve the desired color of light.

additive primaries — *See primary colors.*

adjacent color — An adjoining color. Since the eye responds to strong adjoining color, it's perception of a particular color is affected by any nearby colors. This means that a color with adjacent colors may look different than it does in isolation.

Advanced Photo System (APS) — A subminiature film and camera system that uses film in a self-contained cartridge, and produces an image format size of 16x24mm. The negatives are returned to the cartridge after printing, so the film is never directly handled.

AE — *Automatic exposure.*

aerial image — A real optical image formed in space. To be visible, it must be projected onto a ground glass or screen, or inspected through another lens.

aerial perspective — An indication of depth caused by the increasing effect of atmospheric disturbance or haze as distance increases.

AF — *Automatic Focus.*

agitation — Movement— such as stirring or inverting a container— that causes a processing solution to circulate over the surface of a photosensitive material, providing fresh solution to all area.

air bells — Bubbles of air that cling to a photographic material during processing. Also refers to the spots resulting from less complete development of the material where air bubbles clung to it during developing. Pre-wetting film and vigorous agitation prevent air bubbles.

Airbrush — A spray device that uses compressed air. Used to apply dyes or paints for retouching and protective coatings.

albumen — The white of an egg. Used as a carrier for silver salts in 19th-century photographic prints and plates.

algorithm — A specific sequence of mathematical steps to process data. A portion of a computer program that calculates a specific result.

aliasing— information in the image that wasn't in the original scene – usually appears as 'jaggies' (stair-stepping) or color fringing.

alignment — Positioning content to the left, right, center, top, or bottom.

alkali — A compound that neutralizes acids and has a pH greater than 7.0 Also called a base.

alpha channel — An additional channel in a image that defines what parts of the image are transparent or semitransparent. Programs such as Adobe Illustrator, Photoshop, Premiere, and After Effects use alpha channels to specify transparent regions in an image.

ambience — The light-reflecting nature of the subject environment. An environment with many light-toned, reflective surfaces has a high ambience. One with dark, light-absorbing surfaces has a low ambience. The amount of *environmental light* is influenced by the ambience.

ambient light — *See available light, continuous light, environmental light, preexisting light.* This term is not used in this book because of inconsistent usage.

ambient temperature — The temperature of an environment. For photographic processes, this is usually room temperature.

ambrotype — A slightly underexposed collodion wet-plate glass negative displayed in a frame backed by black material. When viewed at the correct angle to a light source, it appears positive. Popular during the nineteenth century.

American National Standards Institute (ANSI) — An organization that develops and publishes standard methods for measurement and procedures in several fields, including photographic technology.

American Standards Association (ASA) — Former name of *American National Standards Institute.*

amount of development — The total amount of chemical reduction of silver salts to silver during development, which is affected by the development time, development temperature, amount of agitation during development, type of developer, and condition of the developer.

analog image — A photographic image in which the tones of the original subject are represented by a continuously variable substance. For example, in a black-and-white photographic print, the tones of the subject are represented by varying amounts of silver. In an analog video image, the subject tones are represented by voltage that produces varying magnetic patterns on video tape. As opposed to a *digital image*.

analog readout — A data display for a meter or other device that is in the form of a pointer, such as a needle, moving along a scale.

analogous colors — Colors related to each other by their proximity in wavelength. For example, red, orange, and yellow are analogous colors, as are blue, green, and violet.

analogue— continuously variable.

anastigmat — A lens system designed to correct the effects of *astigmatism*.

angle of acceptance — *See angle of view*.

angle of coverage — The angle between the lines from a lens to the ends of a diameter of the circle of usable image the lens can form on the film. The angle of coverage determines how large a format the lens can cover.

angle of incidence — The angle between a ray of light striking a surface and a line perpendicular to the surface at the point where the ray meets the surface.

angle of reflection — The angle between a reflected ray of light and a line perpendicular to the surface where the ray met the surface. *See also law of reflection.*

angle of refraction — The angle between a refracted ray of light and a line perpendicular to the surface where the ray passed through the surface.

angle of view — 1) For a camera lens, the angle between the lines from the lens to the ends of the diagonal of a rectangle outlining the area of the subject included on the negative, determined by the focal length of the lens and the size of the film format. 2) For a reflected-light meter, the angle between the lines from the meter receptor to the ends of the diagonal of the rectangle or the diameter of the circle outlining the area of the subject included in the meter reading. Also called angle of acceptance or field coverage.

animated GIF — A type of sequential file format where multiple bitmap images are displayed one after another.

animated graphics — Images of any type that move.

animation — The technique of simulating movement by creating slight changes to an object or objects over time.

ANSI — *See American National Standards Institute.*

anti-aliasing — A graphics software feature that eliminates or softens the jaggedness of low-resolution curved edges.

anti-aliasing— the process of reducing stair-stepping by smoothing edges or removing high frequency information.

anti-halation backing — A film backing containing absorbing dyes, intended to reduce *halation.*

antistatic — A brush, cloth, or gun that is used to neutralize static charge on the surface of film or other material, making it easier to remove dust, lint, and other particles.

aperture — An opening, usually variable in size, located in or near a lens, that is used to control the amount of light that reaches the photosensitive material. *See also relative aperture.*

aperture priority — An automatic in-camera metering system in which the aperture is set manually and the meter sets the shutter speed automatically. *See also shutter priority.*

apochromat — A lens designed to correct for the effect of *chromatic aberration* so that three different wavelengths have the same focal length (compare with *achromat*). Often used to describe highly corrected lenses of excellent image quality.

application — *See program.*

application's menus. For example, .scanner software may be supplied as a plug-in so the scanner operation can he accessed from within an application.

APS — *See Advanced Photo System.*

archival — Photographic prints described as archival are produced using materials and processing techniques intended to provide maximum image permanence. Also describes storage and handling techniques intended to provide maximum image permanence.

archiving — The process of storing data in a secure and safe manner. Archived data, recorded on tape or optical media, is typically stored offsite to prevent total data loss in case of a catastrophic event. *See* backing up.

art — Illustrations and photographs in general. All matter other than text that appears in a mechanical.

artifact — A visible defect in a digital image, produced by the electronic imaging process.

artifact — Something that is artificial or not meant to be there. An artifact can be a blemish or dust spot on a piece of film, or unsightly pixels in a digital image.

artifact(ing) — the introduction of erroneous information (errors) in an image, usually caused by the jpeg compression system.

artificial light — Illumination from manufactured sources including light bulbs, electronic flash, flashbulbs, and other light sources powered by electricity.

ASA — *American Standards Association.* Also an *exposure index* system devised by that organization.

ascender — Parts of a lowercase letter that exceed the height of the letter “x”. The letters b, d, f, h, k, and t have ascenders.

ASCII — American Standard Code for Information Interchange. Worldwide, standard ASCII text does not include formatting, and therefore can be exchanged and read by most computer systems.

aspect ratio — The ratio of width to length of a negative or print. A square image has an aspect ratio of 1. An 8 X 10-inch print has an aspect ratio of 0.8.

aspect ratio — The width-to-height proportions of an image.

aspheric — Describes a lens with one or more nonspherical surfaces.

asset — An image, sound, video, or other file that may be in use in a Web page.

assignment photography — Specific photographic jobs performed at the request of and under the direction of a client, usually on a freelance or contract basis.

assistant — A person in the photographic industry who assists a photographer in a studio or on location, working under the direction of the photographer, either on a freelance basis or as a permanent employee.

association — Connecting emotions or ideas with visual elements in a photographic image. Also refers to the connection of objects not represented in the photograph to shapes in the photograph by their similarity in appearance (as in seeing the shapes of animals in clouds).

astigmatism — A lens *aberration* that causes off-axis points to be imaged as two perpendicular lines in different planes. *See also anastigmat*.

asymmetrical balance — A visual *balance* in the design of a photograph that is achieved not by *symmetry* but by balancing the visual weights of the various design elements, taking into account all the factors that affect their visual importance.

asymmetrical power pack — A power pack for a studio *electronic flash* that has two or more banks of unequal power, allowing different amounts of power to be supplied to different heads.

audience — Viewers of a movie, videotape, or commercial.

auto white balance — Feature on most cameras to achieve white balance with no user intervention.

automatic diaphragm — A *diaphragm aperture* that remains open to its maximum aperture, regardless of the f/stop setting, until the shutter is released. When the shutter is released, it stops down to the set aperture before the shutter opens and reopens to its widest aperture after the shutter closes. Used in single-lens reflex cameras to provide a bright viewing screen.

automatic exposure (AE) — An in-camera metering system in which the shutter speed, aperture, or both are ser automatically by the meter. *See also aperture priority, program operation, shutter priority.*

automatic flash — An electronic flash containing a metering device that measures flash light reflected from the subject and cuts off the flash when sufficient exposure has been achieved.

automatic focus (AF) — A camera system that automatically focuses the lens on the subject matter that appears within a specific area of the viewfinder. Also called autofocus.

available light — Preexisting light. This term is used most often to refer to preexisting light at a low level of illumination.

averaging meter — A reflected-light meter with an angle of view of 30-45°- When used from the camera position, it covers about the same subject area as a camera equipped with a normal lens.

axial — In optics, describes image points on the axis or light rays that enter a lens along its axis.

axis — In optics, a line drawn through the centers of curvature of the lens surfaces.

axis lighting — Lighting a subject with a lamp or flash placed as close as possible co the camera lens. Also called level front lighting.

B — *See bulb.*

back — The part of a camera body that holds the film.

back focal distance — The distance from the rear surface of the lens to the point of best focus for an infinitely distant subject. Important in camera design to allow room for shutters, mounts, mirrors, and so on.

back lighting — Illumination of the subject from the side opposite the camera position.

background — A static object or color that lies behind all other objects.

backing up — The process of making copies of the current work or work in progress as a safety measure against file corruption, drive or system failure, or accidental deletion. *See* archiving.

balance – both the symmetrical arrangement of compositional elements in a photograph and a personal response to this arrangement.

balance — In design, the feeling that the visual importance ("weight") of the various elements within the image is equally distributed throughout the frame. An image may be balanced left to right (horizontally), or top to bottom (vertically), or both. *See also color balance*.

balloons — Small boxes containing text that identifies objects on the screen and explains their use. You can hide or show balloons by choosing the appropriate command from the Help menu.

banding — A visible stair-stepping of shades in a gradient.

bandwidth — The transmission capacity, usually measured in bits per second, of a network connection.

bank — In an electronic flash power pack, a set of capacitors that are electrically connected to deliver power to the flash heads as a single unit. Power packs usually contain two or more banks that can be connected or disconnected by switches. The power of a bank is divided equally among the flash heads plugged into it.

bare-bulb lighting — The use of a photographic lamp or flash tube without a reflector. Produces a combination of direct light and environmental light reflected from nearby surfaces.

barndoor — Adjustable metal flaps attached to a studio light to restrict the pattern of illumination.

barrel distortion — A lens aberration that causes straight lines to curve outward toward the edges of the image.

barrel mount — A metal or plastic tube in which lens elements are mounted. May also include an iris diaphragm, but does not include a shutter.

barrel distortion— a geometric lens distortion causing straight lines in a scene to appear to bend outward (making a square barrel shape).

baryta — A whitening agent of barium sulfate used as a coating under the emulsion on fiber-based photographic printing papers.

base — 1) The support that carries a photosensitive emulsion. Photographic films use a transparent base; photographic prints use an opaque base, usually of paper. 2) An *alkali*.

base plus fog density — The transmission density of an unexposed area of a processed film, which consists of the density of the film base and emulsion plus the density caused by chemical fog. In processed photographic papers, it is the reflective density of an unexposed area of the paper.

base weight — The thickness of the support for photographic papers. In order of increasing thickness, they are: light weight, single weight, medium weight, and double weight.

baseboard — On free-standing enlargers or copy stands, the flat board to which the vertical column is fastened, which provides a surface aligned with the lens for placement of photographic materials or material to be copied.

baseline — The implied reference line on which the bases of capitol letters sit.

baseline shift — A formatting option that moves selected characters above or below the baseline of normal text.

bas-relief — An image produced by printing a sandwich of negative and positive film images, placed together slightly out of registration. It creates an outline effect of the subject, with a three-dimensional or raised appearance.

batch — 1) A group of photographic materials manufactured at the same time, which provides consistency between packages of the material (as long as storage conditions are uniform). Each package from the batch is labeled with a number, called the batch number. 2) To process several sheets of photographic material at the same time.

Bauhaus — A German school of architecture and design that, during the 1920s and 1930s, was a center for artists influenced by a number of radical trends in art, including Dadaism, Cubism, Constructivism, and Surrealism.

bed — The frame or rails that support the front (lens) and back (film) standards of a view camera.

bellows — A flexible, lighttight housing that connects the lens to the back or body of a camera, allowing for focusing and movements of the front or back of the camera. Usually accordion pleated, the bellows may also be in the form of a lighttight bag. Accessory bellows attachments for smaller format cameras are designed to be placed between the Jens and the camera body for close-up photography.

bellows extension — The distance from the rear *nodal point* of the lens to the film plane. Used in calculating the exposure corrections demanded by close-up photography. Equivalent to the image distance in optics. Bellows extension can be roughly measured from the center of the lens to the film plane, except for a *retrofocus lens* or a *telephoto lens.*

beta test — A part of the software testing process before the completed software is released.

Bézier curves — Vector curves that are defined mathematically. These curves can be scaled without the “jaggies” inherent in enlarging bitmapped fonts or graphics.

bichromate — Chromium salt used in some photographic bleaching processes, and in the gum bichromate and other printing processes. Also called dichromate.

binary — Any downloadable file that doesn’t simply contain ASCII text. Typically it refers to an executable program available for downloading, but it can also refer to pictures, sounds, or movies, among others.

binding edge — The edge of a page that is inserted into the publication’s binding.

bit — One binary digit. Only the numbers 0 and 1 can be represented by 1 bit.

bit depth — A measure of how many colors can be contained in an image. 8-bit color is 256 colors (2 x 2 x 2 x 2 x 2 x 2 x 2 x 2), 16-bit color is 32,768 colors (2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2), and so on.

bit depth — In a digital image, the number of binary digits (bits) that are dedicated to representing the luminosity and color information for each pixel. A 1-bit image can only represent two tones or colors. An 8-bit image can represent 256 shades or colors. A 24-bit image can represent millions of shades or colors. Larger bit depth gives better reproduction of a continuous tone image, but produces larger files.

bit depth— the number of steps used to describe a gradient from white to black. 8 bits gives 256 steps per channel, allowing a total of 16.7 million discrete tones to be captured (256x256x256). this is known as 24-bit (i.e.8x3) color.

bitmap image — An image constructed from individual dots or pixels set to a grid-like mosaic. The file must contain information about the color and position of each pixel, so the disk space needed for bitmap images can be very large.

bitmapped — Forming an image with a grid of pixels whose curved edges have discrete steps because of the approximation of the curve due to a finite number pixels.

bitmapping — The stairstepped appearance of graphics, caused by enlarging raster images.

black — The absence of color. An ink that absorbs all wavelengths of light.

black body — A hypothetical body that absorbs all of the radiation falling on it and emits electromagnetic radiation with a wavelength spectrum dependent on its temperature.

Black Point — Definition of a color in an image that the scanner should interpret as black. All colors in the scanned image that are darker than the black point are also set to black. Colors lighter than the black point are adapted as needed. Black point is set, along with white point to achieve optimal highlight and shadow reproduction.

Black: The absence of light. The color that is produced when an object absorbs all light. When the maximum intensity of the subtractive primaries -- cyan, magenta, and yellow -- are combined, the resulting color should, in theory, be black. Color film, for example, produces black using only cyan, magenta, and yellow dyes. Printing inks, however, are less colorimetrically pure than film dyes, and combining 100 percent cyan, magenta, yellow inks yields a muddy brown; hence, black ink is added as a fourth color ink.

black-and-white image — *See monochrome image.*

blanket— In offset printing, the intermediate step between the printing plate and the substrate. The image is transferred from the plate to a blanket, then from the blanket to the substrate.

bleach — A chemical solution used to remove silver or dyes from photographic images to reduce density. Bleaching can be done selectively to parts of a negative or positive, or as a treatment to the entire image. See also Farmer's reducer, reducer.

bleed — 1) A mounting technique in which the support and the borders of the image are trimmed down to the image. Also called flush mounting. 2) In a picture layout, to butt images together with no space between them, or to run an image to the edge of the page.

bleed — Page data that extends beyond the trim marks on a page.

bleed allowance — The extra portion of an element that extends beyond the page trim edge.

bleed size — An element of page geometry; the trim size plus the bleed allowance.

bleeding — A key whose edges are not sharp, and allows the background to show through.

blend — *See* gradient.

blind emboss — A raised impression in paper made by a die, without being inked.. It is visible only by its relief characteristic.

blocking up of highlights — Loss of tonal separation in the subject light-tone areas of a negative because of overexposure, an extremely contrasty subject, or overdevelopment of the film. Can be explained in terms of the characteristic curve as the case in which the exposures from subject light-tone areas fall above the shoulder.

blotters — Absorbent sheets of paper assembled in rolls or books into which wet prints are interleaved for drying.

blooming (streaking) — when a pixel receives too much light, electrons can spill over to neighboring pixels, giving an unwanted smearing/spreading effect around bright highlights. more common in small sensors with high pixel counts.

blow up — An enlargement, usually of a graphic element such as a photograph.

Blue: One of the three additive primary colors, centered around a wavelength of approximately 436 nanometers.

blue-sensitive emulsion — Sensitive only to blue light and therefore can be handled safely under yellow or amber light.

BMP — A Windows bitmap image format with low-quality and large file sizes.

bmp (bitmap) — windows graphic file format that is most efficient at storing black and white (1-bit) information. not widely used in digital imaging. the only file format where compression actually increases file size.

body copy — The text portion of the copy on a page, as distinguished from headlines.

book — *See portfolio*.

border — A continual line that extends around an element.

bounce – method of softening flash illumination by aiming the flash unit of "head" at a large surface such as a wall or ceiling, so that the light is reflected off that surface before reaching the subject.

bounce flash — *See bounce light*.

bounce light — Diffused illumination achieved by reflecting light from a flash or lamp off a white surface such as a wall or card.

bounding box — An area that defines the outer border of an object.

bracketing — Making several exposures of the same subject, intentionally overexposing and underexposing from an initially determined or estimated exposure.

brightener — An agent added to photographic paper during manufacture or processing to make light areas appear whiter. Also called whitener. *See also baryta.*

brightness — 1. A measure of the amount of light reflected from a surface. 2. A paper property, defined as the percentage reflection of 457-nanometer (nm) radiation. 3. The intensity of a light source. 4. The overall percentage of lightness in an image.

brightness — A subjective interpretation of luminance or illuminance which is not measurable. Commonly, but inaccurately, used in place of luminance.

Brightness: The degree to which a color sample appears to reflect light. This attribute of color is used in the HSB (Hue, Saturation, Brightness) color model.

broad lighting — A lighting situation for a portrait of a person whose head is turned slightly away from the camera, in which the side of the face toward the camera is fully illuminated by the main light. Since a larger area of the face is illuminated, the face appears wider.

bromide drag — Streaks of uneven development resulting from bromide byproducts of the development process. These are heavier than the developer and drag downward across the surface of the film, inhibiting development in those areas. Agitation during development helps prevent bromide drag by bringing fresh developer to all areas of the film and flushing away the bromide products. Also called bromide streaks.

bromide paper — A photographic paper that has silver bromide as the principal light-sensitive compound.

browser — Software program that allows you to surf the web. The most popular browsers are Netscape Navigator and Microsoft Internet Explorer. The very first browsers, such as Lynx, only allowed users to see text. Also called “Web browser.”

browser capability — A term that compares the way a Web page functions on different browsers. Incompatibilities often exist due to the way a browser interprets the HTML. The differences may be very slight or significant.

built-in meter — *See in-camera light meter.*

bulb (B) — A shutter setting for which the shutter remains open as long as pressure is maintained on the shutter release.

bulk film — Film sold in long rolls that must be cut into strips and loaded into cassettes or magazines before use.

bullet — A marker preceding text, usually a solid dot, used to add emphasis; generally indicates the text is part of a list.

burn — 1. To expose an image onto a plate. 2. To darken a specific portion of an image.

burn — Increasing the exposure in a particular area of a print by blocking everything else in the print from image light and giving additional printing time to that area. Burning will darken the area when printing from a negative. Also called burn in or print in. *See also dodge, flashing.*

butterfly lighting — A portrait lighting situation in which the main light is positioned directly in front of the model and higher than the model's head, producing a small shadow under the nose sometimes resembling a butterfly. Also called paramount lighting.

button — An element a user can click to cause an effect, such as the submission of a form.

button state — A visual version of a button. For example, when clicked, the button is in its Down state; when dormant, it is in its Up state. When the mouse is hovered over the button, the button is in its Over state.

byte — Eight binary digits (bits). Numbers from 0 through 255 can be represented by a 1-byte binary number.

C.S. — An abbreviation for camera settings as used in this book.

C-41 process — A Kodak process for developing color negative films for prints, widely established as the industry standard.

cable release — A flexible cable that allows tripping the shutter without touching the camera, reducing the possibility of camera movement during exposure.

cache — A copy of files the browser has already seen and can reference without downloading again.

cadmium sulfidc (CdS) cell — A light-sensitive electronic component of the photoconductor type, in which the resistance changes with the amount of illuminance. Used in some photographic exposure meters.

calibrate — 1) To compare the readings from a measuring device, such as a thermometer or light meter, against a known standard. 2) To determine numbers for the settings on photographic equipment, or times and temperatures of processes, that will give the desired technical results in terms of amount of exposure, development, or other physical result.

calibration — Making adjustments to a color monitor and other hardware and software to make the monitor represent as closely as possible the colors of the final production.

calibration bars — A strip of color blocks of tonal values on film, proofs, and press sheets, used to check the accuracy of color registration, quality, density, and ink coverage during a print run.

Calibration: The act of adjusting a device to bring its behavior into accordance with a known specification. For example, monitors are calibrated to a specific color temperature, gamma, and black and white luminance. Calibration is typically accomplished by measuring the behavior of a device with an instrument, comparing the measured behavior with the standard to which the device is being calibrated, then adjusting the device so that it behaves in accordance with that standard. It builds the foundation to achieve stable ICC profile conditions and must be performed before creating a profile.

callout — A descriptive label referenced to a visual element, such as several words connected to the element by an arrow.

calotype— A photographic process in which paper sensitized with silver salts is used in a camera to produce paper negatives. Introduced to the public in 1840, it was William Henry Fox Talbot's improved version of his original photographic process. *See also talbotype.*

camera — A device for making photographs, consisting of a lighttight body with a lens or pinhole that forms an image on *photosensitive materials* held within the body.

camera exposure settings — *See camera settings.*

camera obscura — Latin for "darkened room." The forerunner of today's cameras, it was originally a dark room with a small hole in one side that formed images on the opposite wall. It was later developed into a portable lighttight box with a lens that formed an image on tracing paper for hand copying.

camera settings (C.S.) — The f-stop and shutter speed set into the camera for an exposure. Also called camera exposure settings.

camera-ready — A completely finished mechanical ready to be photographed to produce a negative, from which a printing plate will be made.

cap line — The theoretical line to which the tops of capitol letters are aligned.

caption — The lines of text that identify a picture or illustration, usually placed beneath it or otherwise in close proximity.

carbon process — A photographic printing process using paper coated with a mixture of gelatin, potassium dichromate, and carbon particles.

carrier — *See negative carrier.*

carte-de-visite — A small photographic portrait mounted on stiff cardboard that was used as a visiting card or a keepsake mounted in an album. Popular in the nineteenth century.

cartridge — A lighttight container for strips of film, which are wound on a spool inside the cartridge. A cartridge contains a take-up reel and is inserted directly into the camera. It requires no rewinding or handling of the film itself.

cassette — A lighttight container for strips of film, which are wound on a spool inside the cassette. Cassettes require a take-up spool in the camera. The film must be rewound into the cassette after use.

catadioptric — An image-forming device that consists of both lens elements and curved mirrors.

catchlights — Small specular reflections in the eyes of a portrait subject.

cathode ray tube (CRT) — A vacuum tube used for viewing purposes in most computer monitors and televisions. In the tube, one or more screams of electrons are deflected across the back of the screen, which is coated with phosphors that release light when struck by the electrons.

catoptric — An image-forming device that consists of curved mirrors.

CC filters — *See color compensating filters.*

CCD — Charge-Coupled Device. A light-sensitive, solid-state semiconductor consisting of image elements (photosites) arranged in a linear or area array. Light illuminates the source, which reflects the light through optics onto the silicon sensors in the array.

CCD — *See charge-coupled device.*

ccd/cmos— the two main types of light sensitive chip used to capture images.

CdS — Cadmium sulfide.

CdS meter — A photographic exposure meter using a cadmium sulfide cell as the light-sensing element.

cel — In conventional animation jargon, a single sheet of clear acetate that contains a single frame of an animation.

center marks — Press marks that appear on the center of all sides of a press sheet to aid in positioning the print area on the paper.

center of interest — A single object or event in a photograph that is of primary interest to the viewer.

central processing unit (CPU) — In a computer, the main solid state chip that performs the calculations.

changing bag — A lighttight bag into which the hands can be inserted that can be used on location for handling photographic films or papers.

character count — The number of characters (letters, figures, signs, or spaces) in a selected block of copy.

character style sheet — A style sheet that defines only character formatting attributes, including font, type size, text color, and type style.

characteristic curve (Hurter/Driffield, H/D, or D-Log-E curve) — A graph of density plotted against log exposure for an exposed and processed photosensitive material. Each curve represents the response to exposure of a particular photosensitive material for a given set of developing conditions, including the developer type and developing time.

Characterization: The act of describing a device's behavior through software. In color management, this typically means creating an ICC profile.

charge-coupled device (CCD) — A light-sensitive, solid-state device that produces electrical voltage when struck by light. In a digital device, such as a scanner, the image is digitized by converting the voltage for each CCD to a number.

chloride paper — A photographic printing paper that uses silver chloride as the principal light-sensitive compound.

choke — The process in which a lighter background object is extended slightly into a darker foreground object to prevent paper-colored gaps caused by misregistration. *See* trapping.

chroma — The degree of saturation of a surface color in the Munsell color space model.

chroma keying — Special effect that uses color (usually blue or green) for the background. This color is replaced by another picture during the key. *See* color key.

Chroma: The property of a color that makes it appear saturated, or strongly colored. Black, white, and gray have no chroma. A red tomato is high in chroma. Pastel colors are low in chroma.

Chromatic — Having color (hue); not neutral (black, white or gray).

chromatic aberration — A lens defect in which light of different wavelengths (colors) is brought into focus at different distances from the lens. It is called axial when it occurs along the lens axis, and lateral when it occurs at the edge of the image. See also color fringes.

chromatic aberration— also known as purple fringing. unwanted colored halos around edges where very bright areas meet darker areas.

chromatic adaption — The ability of the human visual system to adjust to changes in light and still differentiate colors according to relative saturation.

chromaticity diagram — A graphical representation of two of the three dimensions of color. Intended for plotting light sources rather than surface colors. Often called the CIE diagram.

chrome — Slang expression for a color transparency.

chromogenic film — Monochromatic (black-and-white) film designed to be processed with standard color print film chemistry (the *C-41 process*).

CI — *See contrast index.*

Cicero/Didot point — A unit of horizontal distance slightly larger than the pica, used widely in Europe. A Cicero equals 0.178 inches, or 12 Didot points.

CIE — Commission Internationale de l'Eclairage. An international group that developed a universal set of color definition standards in 1931.

CIE (Commission Internationale de l'Eclairage): The international standards organization responsible for setting standards for color and color measurement. (The French name translates to "International Commission on Illumination.") The CIE developed mathematical modes to quantify light sources, objects and observers as a function of wavelength. In 1931, the CIE defined a basic concept for the description of color on the basis of the CIE standard colorimetric observer.

CIE diagram — *See* chromaticity diagram.

CIE Standard Illuminants: A series of spectral data sets that describe the spectral components of different types of light sources. Used in conjunction with tristimulus values such as XYZ or Lab to define a color.

CIE Standard Observer: A hypothetical observer that represents "normal" human color vision, defined in terms of the eye's color-matching functions. The CIE defines two such standard observers -- the 2-degree observer and the 10-degree observer -- because color vision is most acute in the center of the visual field.

CIE Tristimulus Values: Amounts of the three primaries required to match a color sample. When specifying tristimulus values, the standard observer and standard illuminant must also be specified.

CIE XYZ (1931): The first of a series of mathematical models produced by the CIE that describe color in terms of synthetic primaries based on human perception. The primaries are imaginary mathematical constructs that model our eyes' response to different wavelengths of light. Such models allow us to specify perceived color unambiguously, unlike models such as RGB and CMYK, which define amounts of colorants rather than actual colors.

CIELAB (CIE L* a* b*, CIE Lab): A mathematical derivative of CIE XYZ (1931) that describes colors using three synthetic primaries: L* (which indicates Lightness), a* (which indicates red-greenness), and b* (which indicates yellow-blueness).

circle of confusion — A disk of light that is the image of a point on the subject when the image is out of focus. The smaller the circle of confusion, the more the disk looks like a point and the sharper the image appears. Depth of field depends on the largest acceptable size of the circle of confusion.

class — A style designation that can be added to multiple elements.

clearing time — The amount of time needed for fixer to remove the cloudy appearance in a negative that is due to the presence of silver-halide crystals. A common guide for finding the correct fixing time is to double the clearing time.

click stop — A detention device at each step or half-step within aperture or shutter speed controls that indicates the exact position of the setting by feel and sometimes by an audible click.

click-through rate — A measure that reflects the percentage of users who clicked through to a Web site divided by the total number of messages that were delivered inviting them to do so.

client — A computer system or application that requests a service of another computer system on the network.

client-side — Scripting or other actions that take place within the browser, as opposed to the server.

clip art — Collections of pre-drawn and digitized graphics.

clip art — Drawings or photographs that are sold in groups as a collection, usually in digital form on a CD-ROM. The buyer can reproduce and publish the clip art images without further payment of fees or royalties.

clip file — *See idea book.*

clipboard — The portion of computer memory that holds data that has been cut or copied. The next item cut or copied replaces the data already in the clipboard.

clipping path — A path that determines which parts of an image will show on the page. Anything inside the path will show and print. The clipping path knocks out the unwanted part of the image.

clock speed — The speed at which the central processing unit of a computer can perform calculations, usually given in megahertz (million cycles per second). A major factor affecting the speed with which a computer can perform desired operations.

cloning — Duplication of pixels from one part of an image to another.

close down — To reduce the exposure on a photosensitive material by changing the aperture to a smaller opening, for example from f/4 to f/5.6. This term is used loosely to mean reducing exposure by using a shorter exposure time, for example from 1/60 second to 1/125 second. Also called stop down.

close-ended question — An item on a questionare, survey or test that has a single correct response.

close-up — A photograph made at a closer subject distance than is usual for the camera equipment being used, normally requiring the use of accessory equipment and the correction of exposure.

close-up lens — *See supplementary lens.*

CMM — Color-Management Module. The engine of a color-management system.

CMM (Color Matching Method): A software component that adjusts the numerical values that get sent to, or received from, different devices so that the perceived color they produce remains consistent. The "engine" in color management systems.

CMS — Color Management System. A process or utility that attempts to manage color of input and output devices in such a way that the monitor will match the output of any CMS-managed printer.

CMY: Cyan, magenta, and yellow -- the subtractive primary colors -- or a color space that describes colors in terms of their cyan, magenta, and yellow components.

CMYK — A color model used in the printing industry to reproduce color in the printing industry. The addition of black makes up for the practical limitations of trying to reproduce a deep black by using CMY colorants.

CMYK — Cyan, Magenta, Yellow, Black. The subtractive primaries, or process colors, used in four-color printing.

CMYK color — A color reproduction system in which the colors of the original arc represented as percentages of the subtractive primaries (cyan, magenta, and yellow) plus black. Primarily used in printed processes using ink.

cmyk— cyan magenta yellow black. color printing model that mixes varying quantities of four inks to produce a full color image.

coated — Printing papers that have a surface coating (of clay or other material) to provide a smoother, more even finish with greater opacity.

coating — *See lens coating.*

cocking the shutter — To make the shutter ready for release by putting tension on the springs, rewinding the curtains, or performing other mechanical operations. Most in-camera shutters are cocked automatically when the film is advanced.

cold light — Illumination produced by gas-discharge lamps, such as fluorescent tubes. Sometimes used as a light source in enlargers.

cold tone — Describes black-and-white printing papers in which the image color tends toward blue or green.

cold-mounting — Mounting prints with adhesives that do not set and will adhere on contact or with pressure. Cold-mounting materials may come as two-sided adhesive sheets, sprays, or sheets of transfer adhesive.

collate — To gather together separate sections or leaves of a publication in the correct order for binding.

collimated — Describes light in which the rays are parallel.

collodion — A transparent material with a syrupy consistency, made of guncotton (nitrocellulose) dissolved in ether and alcohol. Used as a carrier for light-sensitive silver salts in the *wet-plate process*.

collotype — A process of printing photographs in ink using a plate made with a sensitized gelatin film.

Color — The phenomenon of color results from the interaction between a light source, an object and an observer. Standard mathematical models can be used to quantify light source, objects and observers as a function of wavelength. Sources are quantified as illuminants, objects are quantified by spectral data,

and observers are quantified by the observer functions. These three elements can then be combined to calculate values that correspond to how the human visual system responds to a given color.

color analyzer — A device used as an aid for determining filtration in color printing that measures the component amounts of red, blue, and green light in the projected image.

color balance — 1) The color temperature of illumination for which a color film will give correct color rendition. Two different color balance films are generally available: daylight balance (5500°K) and tungsten balance (3200°K). 2) Often used to refer to the color temperature of illumination, as in daylight balance illumination.

color balance — The combination of yellow, magenta, and cyan needed to produce a neutral gray.

color cast — In a color photograph, the presence of a tinge of color throughout the image.

color cast — The modification of a hue by the addition of a trace of another hue, such as yellowish green, or pinkish blue. Normally, an unwanted effect that can be corrected.

color compensating (CC) filters — Filters that are manufactured in varying densities of the additive and subtractive primary colors, red, blue, green, cyan, yellow, and magenta. Designed for use in the image path to produce specific changes in the color balance of the light reaching the film.

color composition — The ink components that are combined to make up a specific color.

color contamination — A change in the color of light because of reflection from a colored surface or transmission through a colored translucent material. For example, light reflected off a green wall will take on a greenish color.

color contrast — 1) The perceived brightness differences due to the relationship of adjacent colors rather than to their value. When yellow is adjacent to blue it usually appears brighter, even if the luminance of the two is the same. 2) In design, the use of color differences to add visual interest.

color contrast filters — The use of colored filters in black-and-white photography to change the tonal relationship of colored objects within the subject. A yellow filter used to darken the sky is an example of a color contrast filter.

color control strip — A printed strip of various reference colors used to control printing quality. This strip is normally placed on a press sheet outside the area of a project, used as a guide and visual aid for the press operator.

color conversion — Changing the color mode of an image. Converting an image from RGB to CMYK for purposes of conventional printing.

color conversion filter — *See conversion filter.*

color correction — The process of removing casts or unwanted tints in a digital image in an effort to improve the appearance of the image or to correct obvious deficiencies.

color couplers — Compounds incorporated into the emulsions of some color films that release dyes during the development process.

color crossover — The presence of a tinge of a color in specific tonal areas, such as light-tone or dark-tone areas, of a color transparency, negative, or print, caused by a lack of agreement between the characteristic curves of the three emulsion layers. Cannot be corrected by overall filtration.

color depth — Maximum number of colors available for an image. *See* Bit depth.

color depth— also known as bit depth. a measure of the number of colors in a digital image. most cameras are 24-bit devices (16.7 million colors).

color filter array— the cfa is a matrix of (usually) red, green and blue filters placed on top of the sensor so each pixel records only a single color.

color fringes — Outlines of rainbow colors around subject matter at the edges of an image from a lens, caused by lateral *chromatic aberration*.

color gamut — The range of colors that can be formed by all possible combinations of the colorants of a given reproduction system, such as colors that can be displayed on television screens.

color head — An enlarger head with a built-in filter system for color printing.

color key — An overlay color proof of aceteate sheets, one for each of the four primary printing inks. The method was developed by 3M Corporation and remains a copyrighted term.

Color Management — Process for producing predictable color reproduction of an original image from scanner to monitor to proof to final output.

Color Management Module (CMM) — A color computer that performs the actual conversion of color data from one space to another with the aid of ICC profiles.

color mode — A system for describing color, such as RGB, HLS, CIELAB, or CMYK.

color mode — In electronic imaging, the method used to represent the tones and colors of the original. The most common color modes are *grayscale, RGB color,* and *CMYK color*

Color Model: A means of specifying color numerically, usually in terms of varying amounts of primary colors. Examples include RGB, CMYK, and CIELAB.

color negative film — *See negative film.*

color overlay — A sheet of film or paper whose text and art correspond to one spot color or process color. Each color overlay becomes the basis foe a single printing plate that will apply that color to paper.

color picker — A function within a graphics application that assists in selecting or setting a color.

color positive film — *See positive film.*

color printing (CP) filters — Filters in varying densities of the additive or subtractive primary colors intended for use in the lamp housing of enlargers used for color printing. Not designed to be placed in the image path.

color proof — A printed or simulated printed image of the color separations intended to produce a close representation of the final reproduction foe approval and as a guide to the press operator.

color sensitivity — An indication of the sensitivity of photosensitive materials to various colors of light. Several categories of emulsions with different color sensitivities are available. *See also blue-sensitive emulsion, infrared film, orthochromatic emulsion, panchromatic.*

Color Separation — The process of converting a color or image into CMYK for 4 color process printing. As there are different CMYK combinations that can be made to achieve certain target colors, separation settings must be defined for the specific process.

color separation — The process of transforming color artwork into components corresponding to the colors of ink being used, whether process or spot , or a combination of the two.

color sequence — The color order of printing the cyan, magenta, yellow, and black inks on a printing press. Sometimes called rotation or color rotation.

color shift — The result of compressing out-of-gamut colors into colors that can be reproduced with a given model. Color shift can drastically change the appearance of the final output.

color space — A three-dimensional coordinate system in which any color can be represented as a point.

Color Space: A three-dimensional representation of the colors that can be produced by a color model. The universe of colors a color model can produce.

color temperature — A measure of the color of the illumination from a light source, given in degrees Kelvin. Color temperatures are derived from comparison with the color of the illumination emitted from an ideal *black-body* radiator at different temperatures.

color temperature — The temperature, in degrees Kelvin, to which a blackbody would have to be heated to produce a certain color radiation. The graphic arts viewing standard is 5,000 K. The norm for television lighting is 3,200 K, and for outdoors is 5,600 K.

Color Temperature: A measurement of the color of white light, expressed in Kelvins. (The Kelvin scale is a measure of temperature, starting from absolute zero.) The color temperature is the color of light a perfect black-body radiator emits when heated to that temperature. Computer monitors typically have a color temperature of 5000-9300 Kelvins: 5000 Kelvins is a yellowish-white, 9300 Kelvins is a blue white.

Color Tolerance — An acceptable color difference between a standard (reference) and a sample.

Colorants: Materials used to produce color, such as dyes, inks, pigments, toners, or phosphors.

colorimeter — An optical measuring instrument designed to measure and quantify color. It is often used to match digital image values to those of cloth and other physical samples.

Colorimeter: An optical instrument that measures the relative intensities of red, green, and blue light reflected or emitted from (or transmitted through) a color sample. Typically used to measure color from computer monitors.

ColorSync: The color management system built into Apple's Macintosh operating system.

coma — A lens aberration in which subject points off the lens axis are imaged as comet-shaped patches of light.

commercial printing — Typically, printing on high-capacity, high-resolution presses; processes include offset lithography, flexography, gravure, and screen printing. Offset printing is the most widely used commercial printing processes.

comp — Comprehensive artwork used to present the general color and layout of a page.

comp book — A notebook in which the ideas and procedures used in the creation of a photograph are recorded. A comp book can be used as a tool for planning and developing the concept of a photograph before shooting, as in *comprehensive,* as well as a place to record technical data and lighting information for later reference.

comp sheet — *See comprehensive*.

compaction development — Less than normal film development, which lowers the density of subject light-tone areas in the negative, giving reduced negative contrast to compensate for high subject contrast or to produce a desired visual effect. Also called minus, compression, or contraction development. *See also expansion development, N-l development.*

compensating developer — A developer that continues vigorous development of subject dark-tone areas of a negative, while restraining development in the subject light-tone areas, producing less negative contrast without a loss of dark-tone detail or separation.

complementary color — Opposite colors on the color wheel.

complementary colors — Two colors of light that, when combined in equal amounts, produce white light. Red and cyan are complementary colors, as are blue and yellow and green and magenta.

completion — A chemical process in which chemical activity is allowed to continue until no further chemical change takes place. Fixing is a completion process; development is not, because it is usually arrested before all of the silver salts are reduced.

composite Proof — A version of an illustration or page in which the process colors appear together to represent full color. When produced on a monochrome output device, colors are represented as shades of gray.

composition — The thoughtful arrangement of the visual elements within a work of art.

compound lens — A lens combining two or more elements to reduce aberrations and improve the image quality.

comprehensive — A document that outlines the planning of a photograph. A comprehensive may include written material that describes the purpose, content, concept, and other details of the proposed photograph, and may also include a rough sketch or detailed drawing of what the finished photograph is expected to look like. Often called comp sheet.

compression — 1) The apparent reduction of distance between objects in photographs taken with long-focus lenses. Also called foreshortening or telephoto compression. 2) In film development, the same as *compaction.*

compression — A technique used to reduce file size by analyzing occurrences of similar data. Compressed files occupy less space, and their use improves digital transmission speeds. Compression can sometimes result in a loss of image quality and/or resolution.

compression — software technique used to reduce the amount of space an image takes up on the memory card (or whatever storage device is in use). jpeg is the most common compression system.

computer printer — A printer that accepts digital information directly from a computer and produces images or text on paper or other media. Common types are *inkjet, electrostatic,* and *dye sublimation printers.*

concave — Describes a lens surface that curves inward.

concentrate — A concentrated chemical solution that must be highly diluted before use. *See also stock solution, working solution.*

conceptual art — Art in which the object created is of secondary importance to the idea or concept behind its creation. Conceptual artists may produce objects that are only temporary, or may not produce an object at all but simply orchestrate an event.

condenser enlarger — An enlarger with condenser lenses between the light source and the negative carrier.

condenser lens — A positive lens used in the lighting systems of enlargers and projectors to redirect and concentrate the light from the light source, increasing the illuminance and evenness of the light reaching the negative or transparency. Condenser lenses supply specular light for projection.

Cones: The specialized photoreceptors in the human eye that allow us to discriminate between different wavelengths of light. Our eyes contain three distinct types of cones, designated the L, M, and S cones because they are primarily sensitive to long, medium, and short wavelengths of light. (The other type of photoreceptor in the eye are known as rods. They are primarily used in low-light and peripheral vision and do not contribute to color vision.)

configuration — The total combination of hardware components **—** central processing unit (CPU), video display device, keyboard, and peripheral devices **—** that comprise the computer system.

contact paper — Photographic printing paper designed for contact printing with relatively high levels of illumination.

contact printing — Exposing a print material to an image by placing the negative or positive transparency in direct contact with the emulsion of the printing paper and passing light through the negative or transparency. Produces a print image the same size as the film image.

content — In design, refers to the apparent subject of a photograph, usually the objects that are pictured but sometimes an event or activity that is shown.

continuous discharge lamp — *See discharge lamp.*

continuous light — Light that does not vary greatly in intensity over time. Most normal lighting situations have continuous light sources.

continuous spectrum — A display of the wavelengths of light from a source which emits all the possible wavelengths within the range of emission, but not necessarily in equal amounts. Tungsten lamps emit a continuous spectrum of light.

continuous tone — An image (such as a photograph) in which the subject has continuous shades of color or gray tones through the use of an emulsion process. Continuous tone images must be screened to create halftone images to be printed.

continuous-tone — Describes a photographic image that can represent any increment of tone from the darkest possible tone to the lightest possible tone of the photographic material being used. Different from *high-contrast, posterized*, or *halftone images*.

contraction development — *See compaction development.*

contrast — In general, a difference between extremes. Used in many photographic contexts, including *lighting contrast, subject contrast, negative contrast, printing paper contrast,* and *print contrast*, among others. Contrast is also used in several contexts in design, such as contrasts in subject matter, mood, textures, and so on. *See* specific terms for definitions.

contrast – the difference between the darkest and lightest parts of a scene.

contrast — The relationship and degree of difference between the dark and light areas of an image.

contrast filters — *See color contrast filters.*

contrast grade — *See paper contrast*.

contrast index (CI) — A number derived from the characteristic curve of a film, which is an indication of the contrast of the film. The calculation of contrast index includes the parts of the characteristic curve normally used for tonal reproduction in photographs.

contrasty — Describes a subject, lighting situation, negative, or photograph that exhibits more than normal or desired contrast.

controlled lighting — The manipulation of preexisting light or the use of supplementary light sources to achieve a desired result. Manipulation can consist of modifying the quality of the light sources by reflection or transmission of the light they emit, moving the subject for a more desirable relationship with preexisting light, or waiting for different conditions in the natural preexisting light.

controller — An electronic device in a computer that allows the computer to communicate directly with a peripheral device, such as a disk drive.

convergence — The apparent reduction of the distance between parallel lines with distance. Convergence is one of the indicators of depth in a photograph.

conversion filter — A color filter designed to adjust the color balance of a light source to the suggested color balance of the film. For example, an 80A blue conversion filter would convert the illumination from tungsten bulbs for use with daylight films.

converter — A lens designed to be mounted between a camera lens and the camera body that has the effect of increasing the effective focal length of the lens. Also called extender or teleconverter.

convex — Describes a lens surface that curves outward.

cool — Colors that contain noticeable amounts of green or blue are described as cool.

coordinates — Numbers signifying a place in a Cartesian plane, represented by (x, y).

copy — 1. Written matter intended to be reproduced in printed form. 2. The text of a news story, advertisement, television commercial, etc., as distinguished from related visual material.

copy stand — A camera mount attached to a column so it can be adjusted in height, mounted on a baseboard. It is used for photographing flat materials. May also include arms for attaching lights for illumination of the materials.

correction — 1) In color photography, the use of filters on a camera or enlarger to adjust the color of the photograph. 2) Moving the front or back of a camera by swinging, tilting, or sliding, to change the focus or subject shape in the photograph.

counter-mounting — Dry-mounting a print back-to-back with an unexposed but processed sheet of the same type of photographic printing paper. Prevents curling due to humidity.

coverage — The ability of a lens to produce an acceptably sharp and even image over a given format size. May also be given as an *angle of coverage*.

CP filters — *See color printing filters.*

C-print — An outmoded but commonly used term for color negative print materials. Also called Type C print.

CPU — *See central processing unit.*

creep — The minute and progressive extension of the edges of each spread in a folded signature.

crimp marks — Black marks on a negative, often of crescent shape, caused by bending the film before processing.

crop — To show in a print only part of the entire image that appears in the negative or transparency. This can be done by increasing the enlargement of the image when printing or by physically cutting the print after processing.

cropmarks — Printed lines used as guides for final trimming of the pages within a press sheet. Also called “trim marks.”

cropping — The elimination of parts of a photograph or other original that are not required to be printed.

cross light — Light that crosses the surface of a subject at a low angle relative to the surface, used to accentuate the texture of the surface.

CRT — *See cathode ray tube*.

CSS — Cascading Style Sheet. Part of a Web page file listing properties that affect the appearance of content, the content to which those properties apply, and their values.

curtain shutter — A shutter in which the exposure is made by a slit, usually variable in size, in a metal or cloth curtain travelling in front of the film.

curvature of field — A lens aberration in which the image of a flat subject comes to a focus on a curved surface.

curvilinear distortion — A lens aberration in which straight lines in the subject bow in or out in the image. *See also barrel distortion, pincushion distortion.*

custom lab — A photographic lab that provides a wide range of services catering to the professional photographer.

custom printer description file — A file containing information specific to a type of output device; used in conjunction with a standard PPD file to customize the printing process.

cut film — *See sheet film.*

Cyan: One of the subtractive primary colors. Cyan colorants absorb all red light, reflecting green and blue.

cyanotype process — A photographic process using light-sensitive iron salts. The resulting images are monochromatic blue or cyan in color. Also known as the blueprint process. Sometimes used by photographers as a print material, the most widespread use of the cyanotype has been for reproduction of architectural and industrial drawings.

D — *Density*.

D50: The CIE Standard Illuminant that represents a daylight-correlated color temperature of 5000 Kelvins. Widely used as a standard for viewing booths in the printing industry.

D65: The CIE Standard Illuminant that represents a daylight-correlated color temperature of 6500 Kelvins. Widely used as a standard color temperature for calibrated monitors.

daguerreotype — A photographic process that uses silver-plated copper plates fumed with iodine. After exposure the plate is fumed with mercury as a kind of development. The result is a one-of-a-kind direct-positive photograph. The daguerreotype was invented by Louis Jacques Mande Daguerre and was the first practical photographic process, announced to the public in 1839.

dark slide — An opaque metal or plastic sheet in a film holder that protects the film from light. Once the film holder has been inserted into the camera, the dark slide is pulled out of the way for the exposure.

darkroom — A room that can be sufficiently darkened and lit with a safelight for the safe handling and processing of light-sensitive materials.

daylight — Natural illumination consisting of a combination of sunlight and skylight. The color and quality of natural daylight illumination vary widely with location, weather and time of day. Standard photographic daylight is defined as illumination with a color temperature of 5500°K.

daylight balance film — Film designed to give correct color rendition with daylight illumination (average direct sunlight in the middle of the day), usually defined as a standard color temperature of 5500°K. Also called daylight balance film.

DCS — Desktop Color Separation. A version of the EPS file format. DCS 1.0 is composed of five files for each color image plus a separate low-resolution image to place in a digital file. DCS 2.0 has one file that stores process and spot color information.

dedicated flash — An electronic flash that provides automatic flash exposure by coupling directly to the metering system of the camera. Since camera metering systems vary, each dedicated flash is designed for use with specific camera models.

dedicated flash – flash unit designed to work with a specific camera model or system, usually ttl.

default — A specification for a mode of computer operation that occurs if no other is selected.

definition — The viewer's subjective perception of the amount of detail rendered in a photograph.

dense — Describes an area of a negative or print that transmits or reflects little light. Also used to describe a negative or print that is darker than is desired. The opposite of "thin."

densitometer — A device for measuring densities. A transmission densitometer measures the density of film. A reflective densitometer measures reflective densities of prints.

Densitometer — A measuring instrument that can determine reflective and/or transmissive density values.

densitometer — An electronic instrument used to measure optical density; reflective for paper, and transmissive for film.

density — A measure of the ability of a material to absorb light. The higher the density, the more light a material absorbs. In silver-based photosensitive materials, density is created by the presence of metallic silver in the processed image. Transmission density is defined as the log of one divided by the transmission [D = log(l/T)]. Reflective density is defined as the log of one divided by the reflectance. In a print, the higher the reflective density, the darker the tone.

density — The ability of a material to absorb light. In film, it refers to the opacity of an area or image. A maximum density of 4.0 refers to solid black. Improper density in film results in washed-out or overly dark reproduction.

density range — *See range*.

density scale — *See scale*.

depth – depth is always an impression in a flat photograph. the focal length of the lens and the distance from camera to subject are factors that influence the perception of depth.

depth of field – the area from near to far that appears sharp in a photograph.

depth of field — The area in which all objects, regardless of their distance from the camera, appear in focus. Depth of field depends heavily on the lens type selected.

depth of field — The nearest and farthest subject distances' that are acceptably sharp in the finished photograph. Depth of field changes with focused distance, lens focal length, aperture, magnification of the printed image, and standards of acceptable sharpness. *See also circle of confusion*.

depth of focus — The distance the film can be moved forward or backward and still retain acceptable sharpness for a focused image.

depth-of-field scale — A scale, dial, or chart that gives an indication of the depth of field for different f-stops and distances for a specific focal length lens and format. Many lenses and cameras have depth of field scales on them.

descender — The part of a lower case letter that extends below the baseline (lower edge of the x-height) of the letter. The letters g, j, p, and y contain descenders.

descreening — A technique used to obscure the halftone dot pattern when scanning printed material.

design elements — *See visual elements*.

desktop — 1. The area on a monitor on which the icons appear before an application is launched. 2. A reference to the size of computer equipment (system unit, monitor, printer) that can fit on a normal desk, thus, desktop publishing.

desktop proof — A proof made on a desktop laser or inkjet printer, used to check overall design and positioning.

detail — 1) Visible texture or distinct separation of small tonal areas in a photographic negative or print. 2) A small part of a subject shown as a full-frame photograph.

developer — A chemical solution that converts a latent image to a visible one. See also amount of development.

developer-incorporated — Describes photographic papers that include some developing substances in the emulsion. They are designed for use with *stabilization processors*.

developing-out paper — A photographic paper that requires development after exposure to produce a visible image; as opposed to *printing-out paper*.

development — Used interchangeably to refer to the single chemical step that converts a latent image to a visible one, and to the entire process of chemical steps used, including stop, fixer, washes, and so on. *See also amount of development.*

device dependant color — Reproduction in which the output color is determined by the output device characteristics.

Device Specific Color Space — A color space that is defined based on how a specific device reproduces color. RGB and CMYK are both device specific color spaces.

Device-dependent: Describes a color space defined in terms of physical colorants, such as a monitor's RGB or a printing press' CMYK. So called because the actual color produced from a set of device-dependent values depends on the colorants and physical properties of the device in question.

device-independent color — Reproduction in which the output color is absolute, and is not determined by the output device characteristics.

Device-independent: Describes a color space defined using synthetic primaries based on human perception, independent of the properties of any physical device. Device-independent color models provide an unambiguous description of perceived color, unlike device-dependent color models.

diaphragm — An iris-type device made of overlapping moral blades that gives adjustable apertures for controlling the amount of light passing through a lens.

dichroic filter — A filter with a thin coating that allows only one color of light to pass through it. It is called dichroic because it transmits one color while reflecting its complement. Widely used in color-head enlargers.

dichroic fog — An iridescent coating on a print that appears when developer is carried into the fixer on the print surface. Use of an acid stop bath helps to prevent dichroic fog.

dichroic head — A color-head enlarger using dichroic filters to control the color of the light.

diffraction — The slight bending of light when it passes the edge of an object. Diffraction affects photographic image sharpness, becoming most noticeable when very small apertures are used.

diffuse — Describes illumination that has been scattered and reaches a surface from many directions. The opposite of specular. See also diffusion.

diffused highlight — An area of a subject that receives the full effect of the principal illumination, and reflects back only diffuse light. That area shows the true tonality of the subject (gray appears gray, white appears white, and so on).

diffused-shadow contrast — The difference in luminance between a diffused highlight and a shadow. When measured on the same tonal surface this is a direct measure of the lighting contrast.

diffused-specular contrast — The difference in luminance between the diffused highlight and the specular highlight on a subject's surface.

diffusion — Scattering of the rays of light either by reflection from a slightly textured surface or transmission through translucent materials. The diffusing surface effectively becomes a new light source of larger area providing non-specular light, usually called diffuse light. Diffuse light sources produce "soft-edged" shadows with a more gradual transition from lit areas to shadowed areas.

diffusion enlarger — An enlarger in which the illumination is diffused before it reaches the negative, as opposed to a *condenser enlarger*.

digital — The use of a series of discrete electronic pluses to represent data. In digital imaging systems, 256 steps (8 bits) are normally used to characterize the gray scale or the properties of one color.

digital camera — A camera that produces digital photographic image files directly without the use of film.

digital enlarger — A device that produces images on traditional photographic papers directly from a digital image file. It may use laser beams or LCDs to expose the paper, which is then chemically processed by traditional means.

digital image — A photographic image that has been *digitized.*

digital image-processing — Altering the characteristics (e.g., color balance, contrast, luminosity, and sharpness) of a digital image using digital image-processing software, such as Photoshop.

digital— information that is represented using the zeros and ones of binary code.

digital readout — A data display for a meter or other device that gives readings in direct numerical form.

digitize — The procedure of breaking a photographic image into discrete areas, called pixels, and assigning numbers to -s the average color and luminosity of each area. The numbers can then be stored and manipulated by computer techniques. *See also pixel*.

DIN — Deutsches Industrie Norm. Also used to designate an exposure index system devised by that organization.

diopter — A measure of the power of a lens. A positive diopter describes a converging lens; a negative diopter describes a diverging lens. Most commonly used in photography to indicate the magnifying capability of the supplementary lenses used in close-up photography and sometimes used to refer to the lenses themselves. *See also supplementary lens.*

direct viewing system — A viewing system in a camera that allows inspection of the image formed by the camera lens, as in a view camera. To be visible, this image must be formed on an actual surface, such as a *ground glass*.

direct-positive — A photographic process in which the exposed photosensitive material produces a positive image without going through an intermediate negative stage.

discharge lamp — A source of illumination in which light is generated by an electrical discharge through a gas enclosed in a glass envelope. The illumination may be continuous, as in neon and fluorescent lamps, or discontinuous, as in electronic flash tubes.

discontinuous light — Light of extremely short duration. Since the only discontinuous light photographers normally use is artificial light supplied by flash units, this type of light is almost always called "flash" lighting. Artificial discontinuous light can also be produced with some types of electrical arcing or discharge. Examples of discontinuous sources in nature are lightning and light-emitting explosions. Also called momentary light.

discontinuous spectrum — Electromagnetic radiation from a source that does not contain all of the possible wavelengths within a range, but shows only specific wavelengths. Most discharge lamps produce discontinuous spectrums of radiant energy unless they are combined with a fluorescent coating on the tube, as with fluorescent lamps.

dispersion — Separation of light into its component colors, resulting from the differing amounts of refraction for different colors of light. A rainbow is a result of dispersion, as is the spectrum of visible light seen after passage of white light through a prism.

distortion — *See curvilinear distortion*.

dithering — A technique in which a color is represented using dots of two different colors displayed or printed very close together. Often used to compress digital images and in special screening algorithms. *See* stochastic screening.

D-log-E curve — *See characteristic curve.*

Dmax — The maximum density in an image, or the maximum density that can be captured with a scanner or digital camera.

Dmax — The maximum density that can be produced by a photographic material.

Dmin — The minimum density in an image, or the minimum density that can be captured with a scanner or digital camera.

Dmin — The minimum density that can be produced by a photographic material. *See also base-plus-fog density.*

dodge — To reduce the exposure in a particular area of a print by blocking image light from that area during part of the exposure. When printing from a negative, dodging will lighten the area. Also called hold back.

dodging tool — Any opaque object used to block image light from an area of the photographic paper during printing.

DOF — *Depth of field.*

dot gain — The growth of a halftone dot that occurs whenever ink soaks into the paper. Failure to compensate for this gain in the generation of digital images can result in very poor results on press. Also known as “tone value increase.”

dot pitch — In computer monitors, the distance (in millimeters) between the holes in the shadow mask: the smaller the number, the sharper the image. Generally, the smaller the number, the higher the resolution of a given monitor size.

double exposure — Exposure of the same frame or sheet of film to two different images successively, either intentionally or accidentally.

download — To transfer digital data from a Web site or other remote location to your computer, placing it into RAM or onto a storage medium, such as the hard disk.

downsampling — A technique for reducing the amount of digital data used to represent an image; part of the data compression process.

DPI — Dots Per Inch. The measurement of resolution for page printers. phototypesetting machines, and graphics screens. Currently graphics screens use resolutions of 72 to 96 dpi; standard desktop laser printers work at 600 dpi.

drag — To position the pointer on an object, press and hold the mouse button, move the mouse and release the button.

drop shadow — A duplicate of a graphic element or type placed behind and slightly offset, giving the effect of a shadow.

dropout — *See high-contrast image.*

drum — 1) A cylindrical plastic or metal tube used for processing photographic materials. 2) A polished heated metal cylinder used in drying prints.

drum dryer — A print dryer that uses a heated drum for drying prints.

dry down — The tendency of some photographic print materials to appear darker after drying than they do when they are wet.

dry plate — A glass photographic plate that is used dry. It is called dry plate to differentiate it from the wet-plate process, which it superseded.

dry-mounting — Strictly refers to any method for attaching a print to a support that does not use a liquid adhesive, but most often used to refer to mounting techniques that make use of a press with a heated platen and sheets of adhesive that adhere when heated.

dry-mounting press — A press with a heated platen and clamping mechanism used to mount prints or other flat materials to supports, employing adhesives that require heating for adhesion.

dry-mounting tissue — Sheets of adhesive for mounting prints that require heating for adhesion.

duotone — The separation of a photograph into black and a second color. Duotones are used to enhance photographic reproduction in two-, three-, or sometimes four-color work. Often the second, third and fourth colors are not standard CMYK inks.

DX coding — A pattern of electrically conductive parches indicating the ISO, printed on some film cassettes. Some cameras are capable of sensing this pattern and automatically setting the film speed into the in-camera meter.

dye sublimation printer — A computer printer that produces photographic quality images consisting of dyes on special papers.

dye transfer — A color separation process for making color prints, with images in each of the three subtractive colors combined in the printing. Both color negatives and color positives can be printed by the dye transfer process.

dye transfer — A photographic color print using special coated papers to produce a full-color image. Can serve as an inexpensive proof.

Dye: A soluble colorant (as opposed to pigments, which are insoluble). Dyes are capable of producing brighter colors than pigments, but are less stable and less resistant to fading over time.

dynamic range — The difference between the lightest and darkest area of an image. Also used to describe the range of color capture capability in a scanner or digital camera.

dynamic range— a measurement of the range of brightness levels – from the deepest shadows to the brightest highlights – that can be captured by a camera in a single exposure.

Dynamic Range: The range of density that a film stock, digital camera, scanner, or measuring instrument can detect, from the lowest to the highest, usually expressed in O.D. (Optical Density) units. The lowest density is termed dMin, the highest density is termed dMax.

E-6 process — A Kodak process, widely accepted as an industry standard, for developing positive color transparency films.

easel — A device for holding photographic print materials for exposure by an enlarger.

effective resolution — The final resolution of an image, calculated by dividing the image resolution (pixels per inch) by the magnification percentage.

EI — *See Exposure index.*

electromagnetic spectrum — All of the forms of electromagnetic energy arranged in order of increasing wavelength from gamma rays to radio waves, including the visible light spectrum.

electronic flash — A discontinuous light source in which illumination is generated by a brief high-voltage electric discharge through a gas-filled transparent or translucent tube. Commonly but inaccurately referred to as *strobe*.

electronic flash – also called strobe, a light source that is either an accessory unit or built into the camera body, providing a short burst of illumination.

electronic shutter — A shutter that is electronically controlled and timed.

electrostatic printer — A computer printer that produces type and images on paper by a process of charging the paper in a pattern corresponding to the image, which attracts toner to the paper. The toner is then heated to produce a reasonably permanent image. Similar to the process used in copy machines. Usually called a laserjet printer, even though no lasers are used in the image production.

element — 1) An individual glass or plastic component of a compound lens. 2) *See visual elements*.

elliptical dot screen — A halftone screen having an elliptical dot structure.

emulsion — A mixture of gelatin and silver-halide salts that is coated onto a film or paper base to produce a photosensitive material. The emulsion side of the material is the side on which the emulsion is coated.

emulsion — The coating of light-sensitive material (silver halide) on a piece of film or photographic paper.

emulsion batch — *See batch.*

enlargement — A photograph that shows a magnified image of a negative or positive transparency.

enlarger — A device used for projection printing. It consists of a column with a moveable head containing a light source, a negative carrier, and a lens for projecting an enlarged image of a negative or positive transparency onto a photosensitive material. The name is somewhat misleading, since images may sometimes be projected at smaller size than the original.

enlarging paper — Photographic print materials with relatively high light-sensitivity designed for use in projection printing. Also called projection papers. *See also contact paper*.

environmental light — Light that does not reach the subject directly from a light source, but is scattered or reflected by the environment surrounding the subject or the subject itself. Environmental light may result from either preexisting or supplementary sources. *See also ambience*.

EPS — Encapsulated PostScript. File format used to transfer PostScript data within compatible applications. EPS files can contain text, vector artwork, and images.

equivalent — The use of a photograph as a *metaphor*.

equivalent exposure settings — Pairs of aperture and exposure time that yield the same exposure on a photosensitive material and, within the limits of the reciprocity law, the same density. For example, f/8 at 1/125 second and f/11 at 1/60 second are equivalent exposure settings.

etch — 1) To remove silver from a photographic image by scraping the image. 2) To chemically remove unwanted material from an image, as in some photomechanical printing processes.

EV — *Exposure value*.

existing light — *See preexisting light.*

expansion development — More than normal film development, which raises the density of subject light-tone areas in the negative, giving increased negative contrast to compensate for a lower contrast subject or to produce a desired visual effect. Also called plus development. See also compaction development, N + 1 development.

expiration date — A dace printed on the packaging of some photosensitive materials, indicating that the material should be used before that date for optimum image quality. Storage at lower temperatures than recommended by the manufacturer can extend the useful life of the material well beyond the expiration date.

exposure — The total amount of light that a photosensitive material receives, equal to the product of the illuminance on the material and the amount of time the material is exposed to light.

exposure factor — A multiplication factor used to correct exposure in situations where accessories or procedures are used that alter the exposure on the photosensitive materials (as in close-up photography or use of filters). The indicated exposure time is multiplied by the exposure factor.

exposure index — A numerical measure of a photosensitive material's sensitivity to light. The standard system for measuring the exposure index is the ISO index, which is a combination of two older systems, the ASA index and the DIN index. In all systems, the higher the exposure index number, the more sensitive the film is to light. *See also system index.*

exposure latitude — The ability of a film to withstand over-exposure or underexposure and still produce a usable image, with detail in both subject light-tone and subject dark-tone areas. The latitude for overexposure is usually greater than for underexposure. In general, slow speed films have less exposure latitude than fast films. In practice, exposure latitude also depends on the contrast of the subject being photographed—subjects with high contrast giving less exposure latitude—and the type and amount of development.

exposure meter — A device used for measuring light for photographic purposes, usually called a light meter. Most exposure meters have a calculator that provides suggested camera settings for the readings obtained. *See also incident-light meter, reflected-light meter.*

exposure settings — *See camera settings.*

exposure value (EV) — A number output by some light meters that gives an indication of the level of the luminance or illuminance, relative to the exposure index. Originally devised as a simplified method of setting aperture and shutter speed with one number, exposure values are most often used now for comparison of light meter readings or for giving the sensitivity range of a light meter. The EV number is meaningless without a specified ISO.

extender — *See converter.*

extension tubes — Metal tubes that are custom-designed to fit between a lens and the camera body, extending the distance between lens and film for close-up photography.

eye relief — The maximum distance between the eye and the eyepiece of a camera viewing system that still allows a view of the complete image.

factor — *See exposure factor*.

fall — Finding the film exposure as an REV (or as a zone in the Zone System) for a specific subject area by comparing its luminance to the camera settings. For example, if C.S. f/4 at 1/60 second is used, an area in the subject that has a reflected-light meter reading of M.R. f/2.8 at 1/60 second would produce a film exposure that falls at REV —1.

fall-off — 1) The dimming of a lens image toward its edges as the distance from the image center increases. This effect can be reduced by careful lens design. 2) In lighting, the decrease in illumination as the distance from a light source increases.

Farmer's reducer — A bleaching agent that is a solution of potassium ferricyanide and sodium thiosulfate in water, used to reduce density in a processed silver image.

fast — Refers to: 1) Photographic materials with a high sensitivity to light. 2) Lenses with a large maximum aperture (small f-stop number). A lens with maximum aperture f/2 is faster than one of maximum aperture f/4. 3) Shutter speeds of shorter duration. 1/500 second is faster than 1/125 second.

FB — Fiber base. *See fiber-based paper*.

feathering a light — Using the edge of the beam of light from a light source to provide a transition from more to less illumination on an area of the subject. Can be used to even out the illumination on a subject with objects at different distances from the light source, or to provide less illumination on some part of the subject, such as when lighting a backdrop.

ferrotype — 1) To dry a fiber-base glossary-surface print in contact with a polished plate or drum to achieve extremely high gloss. 2) *See tintype.*

fiber-based paper — A photographic prim material in which the emulsion is coated on a paper base. *See also resin-coated paper*.

field coverage — *See angle of view.*

field curvature — *See curvature of field*.

field test — To photograph subjects usually photographed in order to confirm equipment and material tests or calibrations performed in a studio.

figure-ground relationship — A simple visual structure in which an object of interest or a strong visual shape (the figure) is seen against a relatively neutral surrounding (the ground). *See also negative space.*

file — A document or image stored in digital form. The method used for arranging the data in the file determines its file format. Many different file formats exist, depending on the use of the file and the program that produced it.

file — A specific collection of information stored on the computer disk, separate from all other information. Can be randomly accessed by the computer.

file compression — The process of reducing the number of bytes in a file, file compression is usually used when transferring files between computers.

fill — To add a tone or color to the area inside a closed object in a graphic illustration program.

fill flash – technique in which a flash unit’s output is balanced to supplement existing light, usually adding just enough illumination to brighten (“fill”) the shadows.

fill light — Light that illuminates the shadow areas of a subject.

film — Photosensitive material consisting of a light-sensitive emulsion coated on a flexible transparent support.

film clip — A spring-action clip used either to hang film or, attached to the bottom of a film, to weigh it down during drying.

film crimp marks — *See crimp marks*.

film exposure — The product of the illuminance of the image falling on the film and the length of time the film is exposed to the image. Depends on camera settings and subject luminance. Since a lens image consists of many different illuminances, one for each luminance in the subject, each frame actually receives a scale of different film exposures. *See also relative exposure value*.

film hanger — A metal frame designed to hold a piece of sheet film for processing in tanks.

film holder — A lighttight container for film, which is inserted into a camera for use.

film pack — A lighttight package of several sheets of film that is inserted into the camera and gives a provision for progressing from one sheet to the next. Seldom used for sheet film today, but still used for instant-print materials.

film plane — The plane at which the film is located.

film recorder — A device that produces images on photographic film directly from a digital image file. Older film recorders produce the image by photographing a cathode ray tube. Newer ones expose the film with laser beams. The film is then traditionally processed.

film sensitivity — *See sensitivity*.

film speed — *See sensitivity*.

filter — 1) A sheet of glass, plastic, or gelatin placed over a lens or light source that selectively absorbs specific wavelengths (colors) of light. 2) A software routine that alters a digital image by changing its sharpness or producing special visual effects. May be part of the image-processing program, or may be purchased as a third-party *plug-in*.

filter — In image-editing applications, a small program that creates a special effect or performs some other function within an image.

filter factor — A multiplication factor used to correct the exposure when using a filter on a camera. The exposure indicated by the meter (without the filter) is multiplied by the filter factor to produce correct exposure with the filter. Filter factors should be used when it is impractical to meter through the filter.

filter pack — A stack of filters combined to absorb specific colors of light. Most commonly used in printing color photographs.

first developer — In the processing of reversal color photographs, the first developing solution, producing a negative silver image that is reversed to a positive dye image in subsequent processing steps.

fisheye lens — An extreme wide-angle lens, generally one that has an angle of view of about 180° and produces a round image with a considerable amount of barrel distortion on a rectangular format.

fix — To treat a photographic material in fixer.

fixed focus camera — A camera with a lens that cannot be focused, but is prefocused at its *hyperfocal distance*. Usually found on simple snapshot cameras. Also called prcfocused camera.

fixer — A chemical solution that removes unexposed and undeveloped silver salts from a photographic emulsion.

flag — *See gobo*.

flare — Light reflected internally in passage through a lens from the surfaces of the elements or from parts of the lens or camera body. This reflected light can spread throughout the image, reducing contrast by adding undesirable light to the dark parts of the image, or appearing as unexpected streaks and shapes of bright light in the image.

flash — Illumination provided by *electronic flash* units or *flashbulbs*.

flash card — A removable digital storage device in the form of electronic chips contained in a small card that can be plugged directly into digital cameras or readers attached to a computer.

flash compensation – manually set deviation from the standard exposure determined by an automatic flash.

flash ghosting – effect of using flash with slow shutter speeds so the film registers a blurred image of the subject superimposed on the sharp image created by the flash.

flash meter — A photographic exposure meter capable of sensing and measuring the illumination from an electronic flash.

flash synch speed – highest shutter speed at which a particular camera model will synchronize with a flash.

flash synchronization — *See synchronization*.

flash synchronization – timing the flash so it fires only when the shutter is fully open; also called flash synch.

flashbulb — A glass enclosure filled with metallic fibers that are ignited by an electric current to produce an intense burst of illumination for photographic purposes.

flashing — The application of white light to an area of a print before processing by using an external light source such as a small flashlight. Used to selectively blacken areas of the print.

flat — 1) Lower than normal or desired contrast when used to describe a subject, lighting, a negative, or a photographic *Gray* and *soft* are terms often used in place of flat, but are not preferred since they have other meanings in the description of photographic subjects, lighting, and images. 2) A large, flat, moveable surface that is used in a studio for controlling illumination. White flats are used to reflect light for redirection or diffusion, and black flats are used to absorb unwanted light. Flats can also be used as backdrops.

flat color — Color that lacks contrast or tonal variation. Also called “flat tint.”

flexographic printing — A rotary letterpress printing process using a rubber plate that stretches around a cylinder making it necessary to compensate by distorting the plate image. Flexography is used most often for printing on metal or other non-paper material.

floodlight — A studio light that provides a broad beam of illumination.

flop — To make a mirror image of visuals such as photographs or clip art.

flop — To place a negative or transparency with the emulsion side up in an enlarger when printing in order to reverse the image left-to-right.

flush mount — *See bleed.*

f-number — *See relative aperture*.

focal length — For a simple lens focused on an infinitely distant subject, the distance between the center of the lens and the point on the axis of sharpest focus. For a compound lens the focal length is measured from the rear nodal point of the lens to the point on the axis of sharpest focus. Increasing the focal length increases the image magnification for a given subject distance. *See also nodal point.*

focal length — The size of the angle of view of a camera lens.

focal plane — The plane of sharpest focus for a flat subject perpendicular to the lens axis.

focal point — The point at which the image of an object point is at its sharpest focus.

focal-plane shutter — A shutter that is located as close as possible to the film. Consists of a flexible curtain or a series of metal blades producing a rectangular slit that crosses the film for exposure.

focaltone — A special-color library used in the United States.

focus — The condition in which the film is located at the focal point for a particular subject distance.

focusing — The act of adjusting the lens-to-film distance in order to bring the image of a particular subject to its sharpest focus on the film plane.

focusing cloth — An opaque cloth draped over the ground glass of a view camera to block environmental light from the ground glass and make the image easier to see.

focusing magnifier — A device that shows a magnified view of the projected image from an enlarger, providing for more accurate focusing. Also called grain focuser or focusing aid.

focusing scale — A scale inscribed on a lens or camera bed that indicates the distance for which the lens is focused.

fog — 1) An overall layer of silver (density) in a negative or print due to chemical action, age, exposure to heat, and so on. 2) Undesired density on film or paper due to accidental exposure of the photosensitive material to light before or during development.

folder — The digital equivalent of a paper file folder, used to organize files in the Macintosh and Windows operating systems. Double-clicking the icon opens it to reveal the files stored inside.

folding dummy — A template used for determining the page arrangement to meet folding and binding requirements.

font — A font is the complete collection of all the characters (numbers, uppercase and lowercase letters, and in some cases, small caps and symbols) of a given typeface in a specific style; for example, Helvetica Bold.

font embedding — The technique of saving font data as a part of a PDF file, which eliminates problems caused by missing font files.

font family — In Web design, a grouping of (supposedly) similar fonts, will be used to display text in the Web page. See Cascading Style Sheets.

font license — The legal right to use a font you have paid for; most licenses limit fonts to use on a single computer.

font metrics — The physical characteristics of a font, as defined in the data file.

font subsetting — Embedding only the used characteristics of a font into the final file. The advantage of font subsetting is that it decreases the overall size of your file. The disadvantage is that it limits the ability to make corrections at the printing service.

font substitution — A process in which your computer uses a font other than the one you used in your design to display or print your publication. Usually occurs when a used font is missing on the computer used to output the design.

force justify — A type alignment command that causes the space between letters and words in a line of type to expand to fit within a line.

forced perspective — The apparent expansion of the distance between objects in a photograph taken with a short-focus lens at close distance. Also called wide-angle perspective or wide-angle distortion, although it is not distortion in the optical sense. *See also compression (1).*

foreshortening — *See compression (1).*

form — The three-dimensionality of an object. Must be implied in a photograph, since depth cannot be directly perceived in a two-dimensional photograph. The representation of shadows on the surface of an object (called shading or modeling) shows its form. Form can also be implied by the distortion of lines on the surface of an object. Also called volume.

format size — The size of the image produced on a film. Format size is determined by camera design and film size.

four-color process — Process color printer. *See* process colors.

FP — Focal-plane flash synchronization, for use with focal-plane class flashbulbs, which have a long peak intensity for use with focal-plane shutters.

FPO — For Position Only. A term applied to low-quality images or simple shapes used to indicate placement and scaling of an art element on mechanicals or camera-ready artwork.

frame — 1) The boundaries of a photographic image. 2) To adjust camera position or lens focal length to control which parts of a subject will be included in the image. 3) A single image on a roll of film.

frame – used to describe the rectangular shape defined by the edges of the viewfinder window or a single negative (a frame) on the film or contact sheet.

frame numbers — Numbers imprinted on the borders of strips of film to identify individual frames.

framing – the process of selecting elements of the scene to be included in or excluded by the frame.

free-lance — A photographer who is self-employed and must generate business from a variety of clients.

frequently-modulated (FM) screening — A method of creating halftones in which the size of the dots remains constant but their density is varied; also known as stochastic screening.

fresnel lens — A positive, plano-convex (flat on one side, convex on the other) lens that is made lighter and thinner by collapsing the lens into a series of concentric sections, each retaining the curvature of a single convex surface. Used in spotlights to concentrate light and in camera viewing systems (in contact with the ground glass) to even the brightness of the viewing screen.

frilling — The peeling away of small bits of emulsion along the edges of film or paper.

frisket cement — A removable rubber-based cement used to protect specific areas of a print from being affected during toning.

front lighting — Illumination that reaches the subject from the direction of the camera.

f-stop — The calibration on the lens indicating the aperture or diaphragm opening. Controls the amount of light that can pass through the lens.

f-stop number — *See relative aperture*.

full measure — A line set to the entire line length.

full-frame print — A print of the entire image that appears on the negative or transparency.

full-range print — A print showing the maximum black and the maximum white of the printing paper, if demanded by the subject matter.

full-scale print — A print that represents as faithfully as possible the total number of tones appearing in the subject.

full-scale subject — A subject with a large number of luminances, from low to high.

fully detailed dark tone — The darkest area of the subject that shows full detail and texture in the print.

fully detailed light tone — The lightest subject area that shows full derail and texture in the print.

G.N. — *Guide number*.

gaffer — In the movie industry, a person who is responsible for arranging and operating lighting equipment.

gaffer tape — A heavy-duty adhesive tape used for a variety of purposes in a studio. The adhesives used in gaffer tape leave no residue when the tape is removed.

gaffer's kit — A collection of tools, supplies, and materials that are useful for working on lighting equipment or sets in a studio or on location.

gallium photodiode (GPD) — A light-sensitive solid-state device used in photographic exposure meters that has a fast response time, no memory of high light levels, and low sensitivity to infrared radiation.

gamma — A measure of the contrast, or range of tonal variation of the midtones in a photographic image.

gamma (γ) — The slope of the straight-line portion of a characteristic curve. Gives a rough indication of the contrast for that film-developer combination and amount of development, but is no longer widely used because it does not take into account the shape of the toe portion of the curve, which is currently used in photographic reproduction, and because some modern films have no true straight-line portion. *See also contrast index.*

gamma correction — 1. Adjusting the contrast of the midtones in an image. 2. Calibrating a monitor so midtones are correctly displayed on screen.

gamut — *See* color gamut.

Gamut Compression: The process where a large color gamut (for example, that of transparency film) is reduced to fit the smaller gamut of a print or display process (for example, color printing).

gamut shift — *See* color shift.

gamut— the range of colors that a device can capture or output.

Gamut: The range of color a device can produce, or the range of color a color model can represent.

gang — 1. Changes made to multiple tracks simultaneously. If you want to simultaneously change the audio volume levels in tracks 1, 3 and 4, gang those tracks. 2. The process of printing more than one job on the same press sheet to minimize paper waste.

GAP — Gallium-arsenide phosphide, a compound used in the making of *gallium photodiodes*.

GASP — Graphic Arts Service Provider. A firm that provides a range of services somewhere on the continuum from design to fulfillment.

GB — Gigabyte. A unit of measure equal to one billion (1,073,741,824) bytes.

GCR — Gray Component Replacement. Technique for adding detail by reducing the amount of cyan, magenta, and yellow in chromatic or colored areas, replacing them with black.

gel — Slang term for *gelatin filters*, but also loosely used for any flexible plastic filter.

gelatin — An organic protein substance manufactured from skins, bones, and other parts of animals. Serves as a carrier for silver salts in modern photosensitive emulsions.

gelatin filters — Filters made of lacquered gelatin. Suitable for use in an image path. Useful when several filters must be combined because of their thinness.

GIF — Graphics Interchange Format. A popular graphics format for online clip art and drawn graphics. Graphics in this format are acceptable at low resolution. *See* JPEG.

glacial acetic acid — The highly concentrated form of acetic acid, about 99 percent dilution. Capable of badly burning skin on contact. *See also acetic acid*.

glare — Bright reflected light, from a surface. Usually specular but may also be partially diffused.

glossy — 1) Describes fiber-based printing papers with a smooth surface suitable for ferrotvping, or resin-coated papers with a mirror-like surface. 2) Describes subject surfaces that are very smooth and capable of producing clear specular reflections but only indistinct reflected images of surrounding objects.

gobo — Any opaque object used to block unwanted light from the subject or camera lens. Black materials are normally used to prevent scattering reflected light into the environment. Also called a flag or cutter.

GPD — *See gallium photodiode*.

gradation — *See local contrast*.

grade — *See paper contrast.*

graded-contrast paper — Black-and-white printing paper that has a fixed paper contrast, indicated by a number on the packaging. To change paper contrast, a new pack of paper with a different grade number must be used. *See also variable-contrast paper*.

gradient — A gradual transition from one color to another. The shape of the gradient and the proportion of the two colors can be varied. Also known as blends, gradations, graduated fills, and vignettes.

gradient — The rare of change of one variable compared to another. In a graphical presentation of the relationship between the two variables, this is the slope of the curve, which is the amount of vertical change divided by the amount of horizontal change (or the rise over the run). In photography, this refers most commonly to the slope of a characteristic curve, which is directly related to contrast. *See also gamma.*

graduate — A container with an inscribed scale used for measuring liquids.

grain — A granular texture visible under magnification in processed silver-halide emulsions, a result of clumping of the silver particles during processing.

grain — Silver salts clumped together in differing amounts in different types of photographic emulsions.

grain focuser — *See focusing magnifier.*

graininess — Visual impression of the irregularly distributed silver grain clumps in a photographic image, or the ink film in a printed image.

granularity — The level of detail of an outline.

gray — Describes a surface of neutral color, which reflects in equal proportions all colors of light incident on it. Although it is often thought of as a medium reflectance, the color gray can appear in any value from neutral black to neutral white. Also commonly but inaccurately used to describe a photographic print that is too low in contrast. *See also flat.*

gray balance — The values for the yellow, magenta, and cyan inks that are needed to produce a neutral gray when printed at a normal density.

gray card — *See 18 percent gray card.*

grayed out — Any option (menu selection, button, etc.) that is not available.

grayscale — 1. An image composed in grays ranging from black and white, usually using 256 different tones. 2. A tint ramp used to measure and control the accuracy of screen percentages. 3. An accessory used to define neutral density in a photographic image.

grayscale — A series of neutral tones. A step gray scale contains only a few of the infinite number of values of gray possible with continuous-tone photographic materials. A common choice of gray scale used in printing breaks the continuous gray scale into ten tones, ranging from the maximum black of the paper to the maximum white of the paper.

grayscale image — A *monochrome image* in which the tones of the original are represented as shades of neutral gray. In digital imaging, grayscale images are usually 8-bit images, with 256 shades of gray.

grid — A division of a page by horizontal and vertical guides into areas here text or graphics may be placed accurately.

gripper edge — The leading edge of a sheet of paper that grippers on the press grab to carry the paper through a press.

ground — *See figure-ground relationship*.

ground glass — A sheet of glass with a uniformly roughened surface. It is used in some cameras to allow viewing of the aerial image formed by the camera lens.

group — In lens design, one or more elements identified as a single component of a compound lens.

guide number (G.N.) — In photography using flash illumination, a number given in feet or meters, used for calculating the f-stop required for a given flash-to-subject distance. To find the correct f-stop, the guide number for the flash is divided by the flash-to-subject distance.

guide number – a unit of measurement for a flash's output/power used to determine either the proper f/stop or distance from subject to flash.

$$gn \div distance = f/stop$$
$$gn \div f/stop = distance$$

gum-bichromate process — A photographic printing process that is dependent upon the hardening effect of light on gum arabic mixed with potassium dichromate. Watercolor pigments can be added to the gum-dichromate mixture, producing prints of any desired color. Also called gum-dichromate process or gum process.

H/D curve — *See characteristic curve*.

hair light — A light used to illuminate the hair. Often placed above and slightly behind the model.

hairline rule — The thinnest rule that can be printed on a given device. A hairline rule on a 1200-dpi imagesetter is 1/1200 of an inch; on a 300-dpi laser printer, the same rule would print at 1/300 of an inch.

halation — Unwanted exposure in the emulsion of a film that results from image light passing through the emulsion and reflecting off the backing to expose the emulsion a second time. It is called halation because of the halo effect it creates around the image of a bright light source. It can be reduced by *anti-halation backings* on films.

halftone — A technique used for reproducing photographs in ink, in which the continuous-tone photographic image is broken down into small dots whose varying size and frequency simulate different tonal values.

halftone — An image generated for use in printing in which a range of continuous tones is simulated by an array of dots that create the illusion of continuous tone when seen at a distance.

halftone tint — An area covered with a uniform halftone dot size to produce an even tone or color. Also called “flat tint” or “screen tint.”

halides — Compounds that have iodine, chlorine, or bromine as a component. Silver halides are the most commonly used light-sensitive agent in photosensitive materials.

hand-held meter — A light meter contained in its own integral housing, as opposed to an in-camera meter.

handle — In digital imaging, a point on a selection marked by an icon that can be dragged to change the shape or position of the selection.

hanger — *See film hanger.*

hard — 1) In lighting, describes specular light. Also sometimes used to describe high lighting contrast, although the term *harsh* is preferable to avoid confusion. 2) Photographic printing paper of high contrast is also called hard.

hardener — A chemical that limits the softening of gelatin emulsions when wet. Often included in fixer formulations.

hardware — The physical electronic and mechanical parts of a computer system.

harsh — A harsh lighting situation is one with high lighting contrast.

haze filter — A filter of yellowish color that absorbs some of the blue and ultraviolet light present in atmospheric haze. The effect is to darken areas containing haze.

heliograph — The first permanent photographic process, invented by Niépce. It made use of pewter plates coated with bitumen of Judea, an asphaltic varnish that hardens with exposure to light. After exposure to an image, the plates were washed with a solvent to produce a one-of-a-kind direct-positive nonsilver image.

hex values — Numbers specified in the hexadecimal system, commonly used for specifying colors on Web pages.

Hexachrome — Six-color printing process developed by PANTONE, in which green and orange are added to process colors to extend the printable gamut. Also called “HiFi.”

high key — A photographic or printed image in which the main interest area lies in the highlight end of the scale.

high key subject — A subject with predominantly light tones and only small areas of midtones or dark tones.

high-contrast image — A photographic image in which a subject with a full scale of luminances has been rendered as only two tones, black and white, with no intermediate tones shown. Sometimes called a dropout.

highlight — The lightest areas in a photograph or illustration.

highlight mask — An underexposed black-and-white high-contrast negative of a color transparency showing density only in the subject light-tone areas. It is used in the preparation of a contrast reduction mask for printing the color transparency in order to retain local contrast and correct values in the highlights, at the same rime reducing overall contrast in the print. See also mask.

highlights — The light tonal areas of a subject, represented by the high-density areas in the negative and the light print values in the print. See also specular highlight.

high-resolution file — An image file that typically contains four pixels for every dot in the printed reproduction. High-resolution files are often linked to a page-layout file, but not actually embedded in it, due to their large size.

hinge mounting — Use of small hinges made of rice paper or archival tape to attach a print to a support board.

histogram — A graphical representation of the occurrence of tones or colors in a digital image.

histogram— graphical representation of the brightness levels in an image.

HLS — A color model based on three coordinates: hue, lightness (or luminance), and saturation.

hold back — *See dodge*.

holder — *See film holder.*

home page — The opening screen for a Web site that usually contains links to other pages within the Web site.

horizontal framing — Holding a camera with a rectangular format so that the long dimension of the image is horizontal. Called landscape orientation for computer printers.

horizontal scale — A technique used for creating artificially condensed type.

hot light — *See incandescent lamp*.

hot shoe — A flash mounting shoe on a camera that contains the contacts needed to fire an electronic flash mounted in the shoe when the shutter is released.

HSB — Model used to define color in terms of hue, saturation, and brightness.

HSB Color Model: A color model that describes color in terms of hue, saturation, and brightness.

HSL — A color model that defines color based on its hue, saturation, and luminosity (value), as it is displayed on a video or computer screen.

HSV — A color model based on three coordinates: hue, saturation, and value (or luminance).

HTML — Hypertext Mark-Up Language. A tagging language that allows content to be delivered over the World Wide Web and viewed by a browser.

hue — The specific color associated with a wavelength of light. *See also saturation, value*.

hue — The wavelength of light of a color in its purest state (without adding white or black).

Hue: The property of a color that is identified by a color name, such as "red," "green," or "blue." Used as a primary in the HSB (Hue, Saturation, Brightness) color model.

Hurter/Driffield curve — *See characteristic curve*.

hydroquinone — A developing agent that is slow acting but produces high contrast. Often used in combination with *metol*, another developing agent.

hyperfocal distance — The focused distance for a lens that provides the greatest possible depth of field for any given aperture, from half the hyperfocal distance to infinity. The hyperfocal distance is determined by formula from the focal length of the lens, the aperture at which it is set, and the standards of acceptable sharpness (the size of the circle of confusion). *See also circle of confusion, depth of field.*

hyperfocal focusing — Focusing a lens at the hyperfocal distance for the aperture set.

hypo — *Fixer*.

hypo eliminator — A chemical solution that is used after fixing a photosensitive material to convert residual fixer to a form that is more easily washed from the material. *See also washing aid*.

hypo neutralizer — *See hypo eliminator*.

hypo-clearing bath — *See hypo eliminator*.

I.M.R. — *Incident-light meter reading* (as used in this book).

ICC — International Color Consortium. A standards-making body for color reproduction technology.

ICC (International Color Consortium): Abbreviation for International Color Consortium, which was established in 1993 by the major suppliers of operating systems, application programs and peripherals. The ICC initiated the development and standardization of an open architecture for a color management system (CMS) that is independent of suppliers and platforms.

ICC Profile: A standard format developed by the ICC for a data file that describes the color behavior of an input, display, or output device, or a color model, by referencing it to a device-independent color model such as CIE XYZ or CIELAB. Used in almost all current color-management systems.

icon — A small graphic symbol used on the screen to indicate files, folders, or applications, activated by clicking with the mouse or pointing device.

idea book — A scrapbook or file in which examples of published photographs are kept as a source of ideas or inspiration. Also called clip file, source file, or swipe file.

illuminance — The amount of light falling on a surface. An incident-light meter measures illuminance.

illuminance meter — *See incident-light meter*.

Illuminant D50 — Mathematical representation of noon sky daylight. Color temperature: 5000K. Used for evaluating color uniformity and quality in the graphic arts industry.

Illuminant D55 — Mathematical representation of noon sky daylight. Color temperature: 5500K. Simulates the CIE average noon sky daylight.

Illuminant D65 — Mathematical representation of average north sky daylight. Color temperature: 6500K. Most common daylight illuminant used for general evaluation of color.

Illuminant: A light source with known spectral power distribution.

illumination — Hand-drawn illustrations, often in color, that was added to medieval manuscripts.

illumination — Light falling on a surface. The measure or this light is called the illuminance.

image — 1) The optical pattern of light formed by a lens that represents the subject matter in front of the lens. 2) Any photographic representation of subject matter in the form of a print, negative, or positive transparency.

image distance — In optics, the distance from the rear *nodal point* to the *focal plane*.

image fall-off — *See fall-off.*

image magnification — A measure of the size of the image on the film compared to the size of the original subject, or the size of the image on the baseboard of an enlarger compared to the size of the negative image. An image magnification of 2X indicates that the image is twice the size of the original object. An image magnification of 2X would be an image ratio of 2:1.

image sharpness — 1) The amount of blurring in a photographic image due to movement or poor focus adjustment. The less blur that is present, the sharper the image is. 2) In design, the use of image blurring or lack of blurring as a visual element.

imagesetter — A raster-based device used to output a digital file at high resolution (usually 1000-3000 dpi) onto photographic paper or film, from which printing plates are made, or directly to printing plates (called a “platesetter”).

implied lines — A visualized line defined by the mental connection of two or more visual elements that are visually attractive, similar in shape, or in close proximity to each other. The attempt to follow the direction of a subject's gaze in the photograph also creates an implied line. A moving object implies a line of travel.

implied shape — A visualized shape created when implied lines enclose an area.

imposition — The arrangement of pages on a printed sheet, which, when the sheet is finally printed, folded, and trimmed, will place the pages in their correct order.

impression cylinder — In commercial printing, a cylinder that provides back pressure, allowing the image to be transferred from the blanket to the substrate.

in-camera light meter — A light meter built into the body of a camera.

incandescent lamp — A light source containing a tungsten filament within a glass or quartz bulb. Produces continuous light when an electric current is passed through the filament. Also called tungsten lamp. Studio lights using incandescent lamps are often called hot lights. *See also quartz-halogen.*

incident light — Light falling on a surface; illumination. Measured as illuminance.

incident-light meter — A meter that measures the amount of light falling on the subject (illuminance). It is normally placed at the position of the subject and pointed back toward the camera. Also called illuminance meter.

incident-light meter reading (I.M.R.) — A measurement of illuminance made with an incident-light meter.

index of refraction — A measure of a transparent material's ability to bend light rays. The higher the refractive index, the more an oblique ray of light is bent when it passes into or out of the material.

indexed color — A digital image in which specific colors are referenced by the number assigned to each pixel. In a 1-bit image a pixel can be one of only two colors. An 8-bit image has 256 color choices for each pixel. Used to reduce file size for images intended for use on the World Wide Web. *See also bit depth.*

indexed color image — An image that uses a limited, predetermined number of colors; often used in Web images. *See* GIF.

indicator stop bath — A stop bath that changes color when it is exhausted, usually from yellow when fresh to purple or blue when exhausted.

indoor film — *Tungsten film.*

infinity — In optics, a subject distance so great that the rays of light reaching a lens from the subject appear parallel, and come to a focus at the principal focal plane of the lens, which defines the focal length of the lens.

infrared — Electromagnetic energy with wavelengths just longer than those of red light. Not visible.

infrared film — Film that is sensitive to infrared radiation near the visible spectrum. Infrared film is also sensitive to some visible light and must be used with special filters if only the effect of infrared is desired. Since infrared films are not sensitive to the long wavelength infrared associated with heat, special imaging techniques must be used to record heat radiation.

ink-film thickness — The amount of ink that is transferred to the substrate.

inkjet printer — A computer printer that produces images and text by spraying tiny drops of ink onto paper or other media.

inspection — Determining the desired amount of development by periodically looking at a film under a very dim green safelight during development. As opposed to *time-and-temperature development.*

instant film — Film with incorporated developers that produce a finished photograph within seconds or minutes of making the exposure. Instant-print films produce a print, while other instant films produce color or black-and-white transparencies. The original Polaroid process invented by Edwin Land was the first instant-print process.

intellectual property — Any product of human intelligence that is unique, novel, unobvious, and valuable (such as a literary work, idea, or invention).

intensification — A chemical process that increases the density of a processed photographic image.

intensifier — A chemical solution used in intensification.

intensity — A measure of the race at which light is emitted from a light source in a specific direction.

intensity — Synonym for degree of color saturation.

interchangeable lens — A lens that can be removed from the camera body, allowing the attachment of different lenses or accessories.

interference — The reduction or increase of energy caused by the superimposition of two waves of close wavelength. The reduction of reflected light by lens coatings depends on interference between transmitted and reflected waves.

intermittency effect — The fact that lower density will result from several repeated exposures on a photosensitive material than from a single equivalent exposure. For example, four 5-second exposures would yield a lower density than one 20-second exposure would.

inter-negative — A photographic negative made from a positive transparency as an intermediate stage to producing a print from the transparency.

international paper sizes — The International Standards Organization (ISO) system of paper sizes based on a series of three sizes **—** A, B, and C. Each size has the same proportion of length to width as the others.

Internet — A world-wide system of linked computers allowing communication and data file transfer from user to user. Sometimes called the Net. *See also World Wide Web*.

Internet service provider (ISP) — A business that allows an individual user to connect his or her own computer to the Internet. Connection to the ISP can be by modem, cable satellite, or other data transfer method.

interpolated resolution — "Artificial" resolution that is created by averaging the color and intensity of adjacent pixels. Commonly used in scanning to achieve resolution higher than the scanner' optical resolution.

interpolated resolution — A method of increasing the apparent resolution of a digital image by creating new pixels by *interpolation*.

interpolation — In digital imaging, creating new pixels based on the color, and luminosity of adjacent existing pixels.

interpolation— software technique for increasing image information. can apply to both color and pixel count.

inverse square law — A law that states that the illumination from a point source varies inversely with the square of the distance. Doubling the distance from the *point source* will produce one-fourth the illumination. The inverse square law roughly applies to any source with a physical size that is small relative to the distance from light to subject.

inverse square law – rule stating that a subject's illumination is inversely proportional to its distance from the light source.

inversion — Agitating film during development by turning the tank completely upside-down and back about a horizontal axis through the center of the tank.

iris diaphragm — *See diaphragm*.

irradiation — Scattering of light within a photosensitive emulsion. Irradiation reduces resolution and apparent sharpness.

ISO International Organization for Standardization. — Also designates an exposure index system devised by that organization. The ISO number is a combination of the ASA and DIN numbers.

ISP — *See Internet service provider*.

jaggies— also known as pixelization, the 'stair stepping' appearance of diagonal lines and curves caused by visible pixels in the final image.

Java — A platform-independent programming language, invented by Sun Microsystems, that Web developers use to create applets. Java-enabled Web pages can include animations, calculators, scrolling text, sound effects, and games.

JavaScript — A scripting language , designed by Netscape, which can be embedded into HTML documents.

job package — The collected group of all elements that must be sent to a service provider or printer, including a desktop proof, the project file, any images or graphics placed in the layout, and all fonts used in the design.

job specifications — Detailed information about a particular job, required to complete the design and print the final product. Includes page geometry, number of ink colors, type of paper being used, special finishing requirements, delivery instructions, and any other relevant information.

JPEG — A compression algorithm that reduces the file size of bitmapped images, named for the Joint Photographic Experts Group, which created the standard. JPEG is a "lossy" compression; image quality is reduced in direct proportion to the amount of compression.

jpeg— see compression.

justified alignment — Straight left and right alignment of text **—** not ragged. Every line of text is the same width, creating even left and right margins.

K — Kelvin temperature scale.

Kelvin (K) — Unit of temperature measurement based on Celsius degrees, starting from absolute zero, equivalent to -273 Celsius (centigrade); used to indicate the color temperature of a light source.

Kelvin (K): Unit of measurement of color temperature. The Kelvin scale starts at absolute zero (minus 273° Celsius).

Kelvin temperature scale — A temperature scale that begins at absolute zero and has the same size increments of temperature change as the Celsius scale. Used in the designation of *color temperature*.

kerning — Moving a pair of letters closer together or farther apart, to achieve a better fit or appearance.

key light — *See main light*.

keyline — A thin border around a picture or a box that indicates where to place pictures. In digital files, keylines are often vector objects while photographs are usually bitmap images.

kicker — A light used to separate subject matter from a background. Often placed low and slightly behind the subject.

knockout — A printing technique that prints overlapping objects without mixing inks. The ink for the underlying element does not print (knocks out) in the area where the objects overlap. Opposite of overprinting.

L*a*b color — The lightness, red-green attribute, and yellow-blue attribute in the CIE L*a*b color space, a three-dimensional color mapping system.

lamination — The adherence of a sheet of transparent plastic to the face of a photograph for protective purposes. A second sheet of plastic is sometimes adhered to the back of the photograph as well.

LAN — Local Area Network. Computer network limited to one single location, usually an office.

landscape — Printing from left to right across the wider side of the page. A landscape orientation treats a letter-size page as 11 inches wide and 8.5 inches long.

landscape orientation — *See horizontal framing*.

large-format camera — A camera that produces an image on the film equal to or larger than 4" X 5" and usually uses sheet film.

laserjet printer — *See electrostatic printer*.

latent image — An image on a photosensitive material that is invisible to the naked eye. It is composed of small specks of silver reduced from silver salts by the action of light in the optical image formed by a lens. Development reduces more silver in the area of the latent image, creating a visible photographic image.

latitude — *See exposure latitude*.

law of reflection — A law that stares that the *angle of reflection* is equal to the *angle of incidence*.

layer — A function of graphics applications in which elements may be isolated from each other, so a group of elements can be hidden from view, reordered, or otherwise manipulated as a unit, without affecting other elements.

layout — An arrangement of photographs, type, and other graphic material for publication purposes.

LCD — *Liquid crystal display*.

LCH Color Model: A derivative of CIELAB that uses cylindrical coordinates of lightness, chroma, and hue instead of the rectangular coordinate system of Lab.

leader — A piece of paper or film at the beginning of a roll of film that allows loading and handling the film without exposing the first frames.

leading — Space added between lines of type. Named after the strips of lead that used to be inserted between lines of metal type. In specifying type, lines of 12-pt. type separated by a 14-pt. space is abbreviated “12/14” or “twelve over fourteen.”

leaf shutter — A shutter consisting of a series of overlapping metal leaves, which move radially to open for exposure.

LED — *Light-emitting diode*.

lens — One or more pieces of glass or transparent plastic with curved surfaces designed to produce an optical image of light. *See also compound lens, simple lens*.

lens — Optical device, essential for projecting an optical (light) image of a scene in front of the surface of the camera. Lenses come in various fixed focal lengths, or in variable focal lengths and with various aperture (iris) openings.

lens barrel — *See barrel mount*.

lens coating — A thin coating on a lens surface designed to reduce the amount of light reflected from the surface, thereby reducing lens flare and increasing image contrast and lens transmission.

lens contrast — The difference between light and dark that a lens can reproduce in its image in fine subject detail.

lens element — *See element.*

lens extension — Usually the same as *bellows extension* or *image distance*. This distance must be increased as subject distances are reduced. In some cases this term refers to the image distance minus the focal length.

lens hood — *See lens shade*.

lens mount — The mechanical coupling between camera body and lens that allows the lens to be removed from the body.

lens resolution — The ability of a lens to produce a distinct image of closely spaced lines.

lens shade — A black cylindrical or conical attachment placed on the front of a lens to prevent flare-producing light outside the picture area from striking the lens surface.

lens tissue — Tissue paper designed especially for cleaning coated lens surfaces.

lensboard — A wooden, metal, or plastic mounting device that allows lenses used in enlargers or view cameras to be easily attached and removed.

ligature — Letters that are joined together as a single unit of type such as œ

light balancing filter — A colored filter designed to alter the color balance of light sources to match a specific film color balance. Similar to *conversion filters*, but designed for smaller changes in the color of the light.

light meter — Device used to measure the amount of light that falls on a subject.

light meter — *See exposure meter*.

Light Source — That element in an instrument or in the visual observing situation that furnishes radiant energy in the form of light.

light table — A table with a translucent surface illuminated from below, used to inspect negatives and transparencies.

light tent — Translucent materials arranged around a still-life subject to control surface reflections, especially in mirror-like surfaces such as polished metal. The subject is lit by lighting through the light tent.

light trap — A specially designed opening into a room or lighttight container that allows passage of objects, air, or people, but does not allow light to enter.

Light: That small part of the electromagnetic spectrum whose wavelengths lie in the range of 380 (violet) to 720 (red) nanometers, and hence are detectable by the normal, unaided human eye.

light-emitting diode (LED) — Small solid-state device that produces light. Used as an indicator light in cameras, meters, and other photographic equipment.

lighting contrast — The difference between the illumination supplied to (incident on) the fully lit parts of the subject (the diffused highlight) and the illumination incident on the parts of the subject shaded from the direct effect of the lighting (the shadow areas). Sometimes given in stops, but often expressed as a lighting ratio. High lighting contrast is often called harsh or contrasty and low lighting contrast is called flat.

lighting ratio — The ratio between the illuminance at the diffused highlight and the illuminance in the shadow. A lighting ratio of 2:1 means that twice as much illumination is being supplied to the fully lit areas as to the shadow areas (in other words, one stop difference in incident-light meter readings).

lightness — The property that distinguishes white from gray or black, and light from dark color tones on a surface.

Lightness: The degree to which a color sample appears to reflect light. This attribute of color is used in the LCH (Lightness, Chroma, Hue) color model.

lighttight — Describes any container or enclosure that is totally opaque and sealed so that light cannot enter.

line – a compositional element.

line — A visual element defined by the boundary between darker and lighter tones. Lines may be straight or curved.

line art — A drawing or piece of black-and-white artwork with no screens. Line art can be represented by a graphic file only 1-bit resolution.

line copy — A high-contrast photographic rendition with only two tones, black and white, usually of type or drawings containing only black and white tones.

line screen — *See* LPI.

linear perspective — The relative size in a photograph of objects at different distances from the camera. It is one of the principal indicators of depth in a photograph, the dwindling size of objects indicating greater distance from the camera. Perspective can be changed only by changing the distance from the camera to the subject.

link — A graphic icon or highlighted text in a Web page that when clicked takes you to a different place in the Web page or to another Web page or Web site.

liquid crystal display (LCD) — Electronic devices whose surfaces can be electrically induced to display patterns, including numbers, letters, and symbols. Used to display information in cameras, meters, and other photographic devices with digital readouts, as well as some computer monitors.

lith film — Slang for *lithographic film*.

lithographic film — High-contrast *orthochromatic* film designed for use in graphic arts and in photomechanical reproduction of photographs.

lithography — A mechanical printing process based on the principle of the natural aversion of water to grease. In modern offset lithography, the image on a photosensitive plate is first transferred to the blanket of a rotating drum, and then to the paper.

local contrast — Tonal or density separation within a particular area of a photographic image. Also called gradation.

location photography — Production of controlled photographs not in a studio, but in a spot chosen either for its pictorial possibilities as an environment for the subject or because of its convenience.

long lens — *See long-focus lens*.

long-focus lens — A lens with a longer than normal focal length. Long-focus lenses for 35mm range from a moderate 70 mm to 500 mm (giving 10X the image magnification of the normal lens) and longer. Long-focus lenses for small formats are often of *telephoto* design, and the term telephoto is widely, if not always accurately, used to describe any long-focus lens.

lossy — A data compression method characterized by the loss of some data.

low key subject — A subject with predominantly dark tones and only small areas of midtones or light tones.

LPI — Lines Per Inch. The number of lines per inch used when converting a photograph to a halftone. Typical values range from 85 for newspaper work to 150 or higher for high-quality reproduction on smooth or coated paper. Also called “line screen.”

luminance — The amount of light reflected from, emitted from, or transmitted through a surface. Luminance due to reflected light is determined by the illumination on the surface and the reflectance of the surface. A reflected-light meter measures luminance.

luminance meter — *See reflected-light meter*.

luminosity — The amount of light or brightness in an image. Part of the HLS color model.

LUT — Look-Up Table. A chart of numbers that describe the color reproduction characteristics of a specific device.

LZW compression — Lempel-ziy-welch compression. A method of reducing the size of image files.

M — Medium flash synchronization for M-class flashbulbs.

macro lens — A lens that has extra focusing extension in die lens barrel for close-up photography with the ability to focus at distances from infinity to close enough for an image size equal to or half of the size of the original subject. The lens elements are designed for optimum image quality at close focusing distances.

macrophotography — *See photomacrography.*

macro-zoom — A zoom lens that includes extra focusing extension for moderate close-ups.

Magenta: One of the subtractive primary colors. Magenta absorbs all green light, reflecting red and blue.

magnification — *See image magnification*.

main light — The light that principally determines the shape and position of shadows and highlights on the subject. Also called the key light.

makeready — The process of starting a printing press and manipulating the controls until the press is running at its optimum capability.

manual exposure — Transferring the readings from a meter reading manually to the shutter speed and aperture scales. As opposed to *automatic exposure*.

manual flash — A Hash unit that requires measuring or estimating the flash-to-subject distance and using a chart, table, or calculator to determine the correct f-stop for that distance. This f-stop is manually set on the aperture scale. As opposed to *automatic flash* or *dedicated flash*.

manual mode — For cameras or meters with automatic features, the operational setting that allows manual operation of the controls.

marching ants — The blinking lines at the edge of a text box, indicating that it is selected.

marquee — The blinking lines indicating the area selected with the selection tools. Also called "marching ants."

mask — 1) A same-size underexposed negative or positive of an original color negative or positive transparency, which is sandwiched with the original during printing to control print contrast. *See also highlight mask*. 2) A high-contrast image of the original, or an opaque material cut in the proper shape, used to block light from part of the image during printing.

masking — Using a mask during printing.

masking — A technique used to display certain areas of an image or design; the shape and size of the top-most object or layer defines what is visible on lower layers.

mat — 1) A piece of cardboard with an opening cut in it, which is placed over a photographic print to act as a border for the image. Also called overmat or window mat. 2) Any piece of cardboard used for mounting or overmatting a photographic print.

mat knife — A device with a blade specially designed for cutting mats for mounting or overmatting prints. Some mat knives allow the blade to be angled for a bevel cut.

match-needle system — An exposure meter readout in which two needles are superimposed to make a reading.

matrix metering — An in-camera metering pattern in which the field of view is divided into zones. Each zone provides a meter reading to a built-in computer that analyzes the readings and provides a single meter reading.

matte — Describes the surface of a print or other object that is smooth but dull in finish as opposed to glossy.

meaning – the meaning of a photograph can be described as the articulation of a response to it in words.

mechanical — A pasted-up page of camera-ready art that is photographed to produce a plate for the press.

mechanical dot gain — *See* dot gain.

medium — A physical carrier of data such as a CD-ROM, video cassette, or floppy disk, or carrier of electronic data such as fiber optic cable or electric wires.

medium-format cameras — Cameras that use 120 or 220 roll film and produce several different image sizes depending on the model but are limited by the width of the film, which is 60mm.

memory — 1) In some meters and cameras, the ability to Store meter readings or other data that can be recalled at a later time. 2) A characteristic of the cadmium sulfide metering cell, which will give inaccurately high readings for some time after being exposed to a very bright light source such as the sun.

memory color — The tendency to evaluate color based on what we expect to see rather than what is actually there.

meniscus — A simple lens design that has one concave and one convex surface with the centers of curvature of the surfaces on the same side of the lens.

metallic ink — Printing inks which produce gold, silver, bronze, or other metallic colors.

Metameric Pair — A pair of colors that match when viewed under one set of viewing conditions, but no longer match if the viewing conditions are changed.

metamerism — Phenomenon in which the same color appears differently in different lighting conditions.

Metamerism: The phenomenon where two color samples appear to match under one light source, and differ under another. Two such samples are called a metameric pair.

metaphor — A photograph that implies ideas unrelated to the subject matter pictured. Also called equivalent.

meter reading (M.R.) — A reflected-light meter reading, as used in this book. A measure of the average subject luminance in, that area and may be given in terms of a meter number, EVs, or a suggested f/stop and shutter speed, depending on the type of meter. *See also incident-light meter reading (I.M.R.).*

metering pattern — The shape of the area sensed by the meter, when pointed at a flat surface perpendicular to the direction of metering. Most meters have either a circular or rectangular metering pattern, but a few meters do have other patterns.

metol — A developing agent used in the formulation of developers that is relatively fast acting, but produces low contrast. Often used in combination with *hydroquinone*.

metric — Any method of measurement used to determine whether a goal has been reached.

microphotography — The production of photographs at great reductions of size. The opposite of *photomicrography*.

microprism — A multitude of small prisms embedded in a focusing screen as a focusing aid.

middle gray — A neutral color of 18 percent reflectance. *See also 18 percent gray card*.

midtone — Any subject tonal value close to the middle of the scale of possible subject tonal values. Also the corresponding density in the negative or the corresponding print value in the print.

midtones — The tonal range between highlights and shadows. Also called “middletones.”

miniature-format cameras — Cameras that use *Advanced Photo System* film for a 16 X 24mm format. Specialized miniature cameras such as the Minox also fall in this category.

minimum printable dot — The smallest dot that can be accurately and consistently reproduced on film or a printing plate.

mirror lens — A lens that uses curved mirror surfaces for image formation. *See also catadioptric, catoptric*.

mismatched color — A problem that occurs when a defined, named color has two different values **—** one defined in the page layout and one defined in a placed picture file.

misregister — The unwanted result of incorrectly aligned process inks and spot colors on a finished printed piece. Misregistration can be caused by many factors, including paper stretch and improper plate alignment. Trapping can compensate for misregistration.

model — 1) A person (or in some cases a trained animal) who poses for a photograph and responds to the direction of the photographer with regards to position and expression. 2) A three-dimensional representation of an object constructed to be photographed in place of the real thing. For example, food models constructed of plastics or other materials are sometimes used in place of the food itself.

model release — *See release.*

modeling — 1) Posing for a photograph at the direction of the photographer. *See also pose*. 2) The representation of shadows on the surface of an object to show its form. Also called shading.

modeling light — 1) An incandescent bulb placed as close as possible to the flash tube of an electronic flash to give a visual indication of the direction and quality the flash illumination will have.

modem — An electronic device attached to a telephone line that allows sending or receiving digital files.

Moiré — An interference pattern caused by the overlap of two or more regular patterns such as dots or lines. In process-color printing, screen angles are selected to minimize this pattern.

moiré— a visible pattern caused by interference between patterns in the scene and the grid of pixels. usually produces a colored checkerboard or rainbow pattern.

Monitor Calibration — To achieve predictable color reproduction on the monitor, the monitor must be calibrated before generating a monitor profile. This will ensure that the monitor can reproduce the optimal color gamut.

Monitor Profile — A monitor profile describes the RGB corner coordinates, the gradations curves for each color channel, the black point and the white point.

monobath — A chemical solution for processing films that includes developer and fixer in a single solution.

monochrome — An image or computer monitor in which all information is represented in black and white, or with a range of grays.

monochrome image — A photographic image the reproduces the colors and tones of the subject as shades of a single color, usually a neutral gray. Also called black-and-white image.

monolight — A studio electronic flash that includes the power pack, flashtube, and modeling light in one housing.

monopack — *See monolight.*

montage — A single image formed by assembling or compositing several images.

montage — *See photomontage*.

motion – every photograph is a still moment in time. a slow shutter speed can blur a moving subject and create an impression of motion in the photograph.

motor drive — A device incorporated in or attached to a camera that automatically advances the film after each exposure. Slower or lighter-duty motor drives are often called winders.

mottle — An uneven appearance, especially in the dark-tone areas of a print, resulting from too little development or no agitation during development.

mottle — Uneven color or tone.

MQ — Describes a developer that uses a combination of *metol* and *hydroquinone* as a developing agent.

multicoating — A lens coating technique that uses more than one layer on the lens surface. *See also lens coating.*

multiple exposure — Exposing the same sheet or frame of film to two or more successive images, either accidentally or intentionally for aesthetic purposes.

N - 1 development — A compaction development time that will cause an area of a negative with a film exposure of REV +3 to print as PV + 2, a fully detailed light tone.

N + 1 development — An *expansion development* time that will cause an area of a negative with a film exposure of REV +1 to print as PV + 2, a fully detailed light tone.

nanometer — A unit of measure equal to one-billionth (10^{-9}) of a meter.

Nanometer (nm)**:** A unit of length equal to one-millionth of a millimeter. Visible light wavelengths are measured in nanometers.

narrow lighting — *See short lighting*.

natural light — Light from sources occurring in nature, including sunlight, moonlight, and firelight. The only natural light source commonly used for illuminating a subject for photographic purposes is the sun, though occasionally open flame or moonlight is used.

ND — *Neutral density*.

negative — A photographic image on film or paper that shows a reversed relationship of tones when compared with the original subject—light subject tones are represented as dark tones and dark tones are represented as light tones. A color negative image is also reversed in color, with subject areas represented as the compliment of their original color. *See also negative lens, negative space.*

negative carrier — A frame designed to hold a negative flat and aligned within an enlarger.

negative contrast — The difference in density between the areas of the negative representing the dark subject tones and those representing the light subject tones. Can be measured using a densitometer. Depends on subject contrast, amount of development, type of film, and film freshness.

negative film — A film that, when processed, produces a negative image of the subject.

negative image — *See negative*.

negative lens — A lens that causes parallel light rays to diverge.

negative space — In a *figure-ground relationship,* a ground that is relatively featureless, with fairly uniform tonal values.

neutral — 1) In reflection or transmission of light, describes a material that reflects or transmits all wavelengths of light in the same proportion, leaving the color of the light unchanged. The color of the

neutral material is described as gray. 2) In chemistry, describes a solution with a pH of 7.0, neither basic nor acidic.

neutral — Any color that is absent of hue, such as white, gray, or black.

neutral density — A measurement of the lightness or darkness of a color. A neutral density of zero (0.00) is the lightest value as possible, and is equivalent to pure white; 3.294 is roughly equivalent to 100% of each of the CMYK components.

neutral density (ND) filter — A filter that absorbs light without changing the color of the transmitted light. Neutral density filters are marked with their density; an ND 0.3 filter transmits 50 percent of the light incident on it, resulting in a one stop change in exposure.

nicad battery — A rechargeable battery that uses a nickel-cadmium cell. Used as a power source in some portable photography equipment.

nodal plane — In optics, the plane defined by the intersection of the extensions of incoming parallel rays of light and the exiting rays of light. In a simple lens, this coincides generally with the physical center of the lens, but with compound lenses it may fall within or outside the physical limits of the lens. A compound lens has two nodal planes, the second defined by parallel rays entering the back of the lens.

nodal point — In optics, a point that is the intersection of the axis with the nodal plane. A compound lens has two nodal points, one on the object side—the front nodal point—and one on the image side—the rear nodal point. Focal lengths and other image measurements are normally made from the rear nodal point.

noise — Unwanted signals or data that can reduce the quality of output. On a television screen, it resembles snow.

noise— random pixels of the wrong color appearing in an image caused by minor random fluctuations common to all electronic circuits. makes images look ‘grainy’.

non-reproducible colors — Colors in an original scene or photograph that are impossible to reproduce using process inks. Also called “out-of-gamut” colors.

nonsilver process — Any photographic process that uses a light-sensitive material other the silver salts for image formation.

normal development — The amount of film development needed to produce a negative from film exposed to a subject of normal subject contrast that will print on normal contrast paper with desired detail in dark tones and light tones (REV -2 should be the darkest fully detailed dark tone and REV +2 the lightest fully detailed light tone in the print).

normal key — A description of an image in which the main interest area is in the middle range of the tone scale, or distributed throughout the entire tonal range.

normal lens — A lens that produces an image that most closely approximates the view and apparent perspective seen by the unaided eye. The normal focal length changes with format size, being approximately the distance across the diagonal of the image formed on the film. For the 35mm camera format the normal focal length is about 50mm.

normal subject contrast — The contrast of a subject in which placing a fully detailed dark tone at REV —2 results in a fully detailed light tone falling at REV +2. It can also be defined as a subject in which the difference in luminance readings from a fully detailed dark tone and a fully detailed light tone is four stops.

notching code — Notches of specific patterns and shapes cut in an edge of sheet film allowing identification of both the film type and the emulsion side in total darkness. When you hold the film with the notches at the upper right-hand edge, the emulsion side faces you.

null system — An instrument readout system in which readings are made by adjusting the controls until a pointer (needle, LED, or LCD) is pointing to a zero or center position. Used in some photographic meters, both handheld and in-camera, and color analyzers.

number-transfer system — A light meter readout system in which a number is indicated by a pointer (needle LED, or LCD). The number must then be manually transferred into the calculator to find suggested camera settings.

object — In optics, the subject material from which light is reflected or emitted for image formation.

Object — One of the three components necessary for the phenomenon of color to occur.

Opaque — Term used to describe complete opacity, i.e. degree to which a specimen obscures the substrate beneath it; opposite of transparent.

object distance — In optics, the distance between the subject and the front nodal plane of a lens.

objective — In optics, the lens element or elements that are closest to the subject matter.

object-oriented art — Vector-based artwork composed of separate elements or shapes described mathematically rather than by specifying the color and position of every point. This is in contrast to bitmap images, which are composed of individual pixels.

Observer Functions — The response of the average normal human eye at each wavelength has been measured through extensive experimentation by the CIE. Since there are three color sensor types, there are three observer functions that comprise what is known as the standard observer.

Opponent Color Theory — Opponent Color Theory explains conceptually how the human visual system perceives color. To the human visual system, red and green are opposites and yellow and blue are opposites. This means that if something is red, it has no green in it (but it may also be blue or yellow) and if something is yellow, it has no blue in it (but it may also be red or green). This theory is the basis for most uniform color spaces, such as CIELab and CIELCh.

off-axis — In optics, a subject or image that appears away from the axis of the lens, as opposed to *axial*.

off-camera flash – lighting technique in which an accessory flash unit is not mounted on the camera body.

offset — The distance at which rules are placed above or below paragraphs of text; can be defined as a specific measurement or as a percentage of paragraph spacing.

offset lithography — A printing method whereby the image is transferred from a plate onto a rubber-covered cylinder, from which the printing takes place. *See* lithography.

of-the-film (OTF) metering — An in-camera metering system that meters light reflected off the film during the exposure. Off-the-film meters are useful when light may change during the exposure or when the camera meter is capable of metering and controlling flash exposure.

one-shot developer — A film developer that is used once and then discarded.

one-time use — To use a chemical solution once and then discard it.

opacity — 1. The degree to which paper will show print through it. 2. The degree to which images or text below one object, whose opacity has been adjusted, are able to show through.

opacity — A measure of the ability of a material to absorb light, equal to the reciprocal of the transmission. If a material transmits 1/2 of the light incident on it, its opacity is 2. The higher the opacity, the less light the material transmits.

opalescence — A milky, hazy appearance, sometimes with a tinge of color. Seen in some films at certain stages of their processing and in opal glass, which is a diffusing glass with a very fine texture.

opaque — 1) Incapable of transmitting light. 2) In retouching, a paint applied to negatives or transparencies to prevent light from passing through. 3) In retouching, to apply an opaque paint.

open flash — Describes the process of opening the shutter using a bulb (B) or time (T) setting, firing the flash manually, and then closing the shutter. *See also painting with light.*

opening up — Increasing the exposure on a photosensitive material by changing the aperture to a larger opening, for example, changing from f/11 to f/8. This term is also loosely used to indicate increasing the exposure by using a longer shutter speed, for example, changing from 1/250 second to 1/125 second.

OpenType — A font format developed by Adobe and Microsoft that can be used on both the Windows and Macintosh platforms, can contain over 65,000 distinct glyphs, and offers advanced typographic features.

operating system — Computer software that performs basic operations and allows the user to communicate with the computer. The two most popular operating systems currently are the Microsoft Windows operating system used on PC computers and the Macintosh operating system used on Apple computers.

OPI — Open Prepress Interface. A system in which high-resolution images are scanned and stored, while low-resolution representations are placed in page layout. When the layout is output, the OPI server swaps out the high-resolution file in place of the low resolution version.

Optical Density: The ability of a material to absorb light. The darker the material, the higher the density. Density is usually expressed on a logarithmic scale of Optical Density (O.D.) units.

optical resolution — For digital imaging devices (scanners, cameras), the number of pixels per inch generated in the image directly by sensing cells (usually CCDs) in the device. *See also interpolated resolution.*

optical resolution — The actual resolution of a scanner's optics. *See* interpolated resolution.

optimum exposure — The exposure on a photosensitive material that yields the best quality results. In a negative, it is usually the least exposure that retains detail in the areas representing the dark tones of the subject. In a positive transparency or print, it is normally the exposure that gives desired tone and detail in the subject light-tone areas.

options bar — Automatically displays in the menu bar area of your Photoshop window, revealing the options available for the tool in use.

ortho — Orthochromatic.

orthochromatic emulsion — Emulsion that is sensitive to all colors except red and safe to handle under red safelights.

OTF — *Off-the-film.*

outdated — A photographic material labeled with an expiration date that has already passed.

out-of-gamut — Color that cannot be reproduced with a specific model.

output device — Any hardware equipment, such as a monitor, laser printer, or imagesetter, that depicts text or graphics created on a computer.

overdeveloped — Describes a photographic material that has received more than the necessary development. In a negative, overdevelopment results in excessive contrast.

overexposed — Describes a photosensitive material that has received more than its optimum exposure. In a negative, overexposure results in excessive density, larger grain, and the possibility of blocked up highlights. In a positive transparency, overexposure results in loss of light-tone detail and overall tones that are too light. In a print from a negative, overexposure results in print tones that are too dark.

overlay — A transparent sheet used in the preparation of multicolor mechanical artwork showing the color breakdown.

overmat — *See mat*.

overprint color — A color made by overprinting any two or more of the primary yellow, magenta, and cyan process colors.

overprinting — Allowing an element to print over the top of underlying elements, rather than knocking them out. Often used with black type. *See* knockout.

override — To manually change a setting provided by an automatic operation. Many automatic metering systems, for example, offer a way to override the settings.

oxidation — The chemical combination of a substance with oxygen, a major reason for deterioration of developers and other photographic chemicals.

page geometry — The physical attributes of a layout page. *See* trim size, live area, bleed size.

painting with light — The process of using repeated open flash or a moveable continuous light source to sequentially illuminate parts of a subject while the shutter is held open. This procedure is normally done in a darkened area, but can also be combined with preexisting light of low intensity.

palette — 1. As derived from the term in the traditional art world, a collection of selectable colors. 2. Another name for a dialog box or menu of choices.

palette well — An area in Photoshop's Menu bar to which often-used palettes can be stored quick and easy access.

pan — 1) Panchromatic. 2) *See panning.*

panchromatic emulsion — Emulsion that is sensitive to all the colors of the visible spectrum, although its degree of sensitivity to individual colors may vary somewhat from that of the eye. Most general-purpose black-and-white films are panchromatic. Panchromatic materials must be handled and processed in total darkness.

panchromatic paper — A special black-and-white printing paper sensitive to all visible colors. Used for making black-and-white prints from color negatives. Since it is sensitive to any color of light, panchromatic paper must be handled and processed in local darkness or under an extremely dim dark-green safelight.

panning — Following the motion of a subject with the camera, usually with a slow shutter speed, giving a reasonably sharp subject image against a blurred or streaked background.

panning – the technique of following the motion of a moving subject with the camera while exposing the film. the subject will be relatively sharp and the background blurred in the photograph.

PANTONE Matching System — PMS. A system for specifying colors by number for both coated and uncoated paper; used by print services and in color desktop publishing to ensure uniform color matching.

paper — Commonly used to refer to photographic print materials, both fiber-based and resin-coated.

paper contrast — The response of a photographic printing paper to changes in exposure. The higher the paper contrast, the greater the tonal difference for a given range of exposure. Print contrast is given

as a number, the contrast grade, which may range from 0 to 5. Grade 0 produces the least contrast and grade 5 the most. The normal contrast grade is 2.

paper negative — A negative image produced on a photographic print material. Can be made by using photosensitive paper in a camera or by exposing the paper to a positive image.

parallax — A visual error that arises when the viewing system in a camera is in a different position than the lens that forms the image on the film, as in viewfinder or twin-lens reflex camera designs.

parameter — Any physical variable that affects a result, such as time or temperature.

parametrics — A graph of density versus developing time for a particular film and developer combination. The graph is in the form of a family of curves, one curve for each relative exposure value. Parametrics present much the same information that a group of several characteristic curves of different developing times would, with the difference being that developing times (normal, N + 1, N - 1, and so on) can be interpolated directly from the graph.

pasteboard — In a page-layout program, the desktop area outside the printing-page area.

pattern — Similar shapes, lines, or tonal areas repeated over an area of a photograph.

PC card — A solid state device in the form of a card, which can be inserted directly into a computer or reading device. Primarily designed for digital data storage, but some cards may perform other functions such as modem operations. Formerly called PCMCIA card.

PC connector — An electrical connector in which the male plug consists of a small pin surrounded by a concentric cylinder. Widely used for connecting flash synchronization cords to cameras.

pc cord – extension cord that connects a flash unit to the camera body or a flash meter, usually for remote firing.

PC lens — *Perspective control lens.*

PC terminal — The female half of the PC connector, a socket found on many camera bodies.

PDF — Portable Document Format. Developed by Adobe Systems, Inc. (read by Acrobat Reader), this format has become a de facto standard for document transfer across platforms.

pentaprism — A specially designed prism used in some camera designs to reorient a ground-glass image so that it appears upright and correct left-to-right to the eye.

Perceptual Rendering: One of the four ICC-specified rendering intents used for handling out-of-gamut colors in color matching. Perceptual rendering attempts to compress the gamut of the source space into the gamut of the destination space in such a way that the overall relationships between the colors -- and hence the overall image appearance -- is preserved, even though all the colors may change in the process.

peripheral — Any electronic device connected to a computer to perform specific tasks; for example, printers, scanners, and external storage devices.

peripheral devices — Other pieces of hardware that are plugged into your computer.

perspective — *See linear perspective.*

perspective — The effect of distance in an image, achieved by aligning the edges of elements with imaginary lines directed toward one to three “vanishing points” on the horizon.

perspective – the impression of scale and depth in an image.

perspective control (PC) lens — A lens designed for small or medium-format cameras that allows some vertical or horizontal shift for correcting the convergence of parallel lines in the subject.

pH — A measure of the alkalinity or acidity of a solution. Acids have a pH of less than 7. Neutral solutions have a pH of 7. Bases (alkalis) have a pH of greater than 7.

Phosphors: Chemical compounds that emit light when struck by a beam of electrons. The amount of light emitted is proportional to the intensity of the electron beam. RGB monitors use three different phosphors to produce red, green, and blue light.

photodiode — A solid-state device that is sensitive to light. Used as a light-sensing cell in some photographic light meters.

photodiode— the light-sensitive part of a pixel, which converts light into electrical current. most sensors have a single photodiode per pixel.

photoflood — Tungsten filament light bulbs similar in appearance to household bulbs but designed for photographic use. They provide more illumination and a color temperature compatible with tungsten balance color films.

photogram — A photographic print produced by laying objects on a photosensitive material and exposing it to light.

photogravure — A photomechanical process that uses etched metal plates to provide high quality reproductions of photographs in ink.

photomacrography — Photography in which the image of the subject is life-size or larger on the film. Most photographers loosely include image magnifications as small as 1/5 life-size in this category. A less accurate but more commonly used term is macrophotography.

photomechanical reproduction — The reproduction of photographs or other graphic material in ink by means of photosensitive plates used on mechanical printing presses.

photomicrography — Highly magnified photographic images made using a microscope.

photomontage — The combination of parts of images from two or more negatives into one print. The simplest method of making a photomontage is printing with a negative sandwich. Other methods include multiple images from different negatives printed sequentially on one sheet of printing paper, or an assembly of cut and pasted images. *See also sandwich*.

Photoreceptor: A mechanism that emits an electrical or chemical signal that varies in proportion to the amount of light that strikes it. CCD (charge-coupled device) sensors in desktop scanners and digital cameras, PMT (photomultiplier tubes) in drum scanners, and the rods and cones in the human retina are all photoreceptors.

Photo-Secession — A society formed in 1902 with the avowed intent to further the fight for the establishment of photography as art. Among its members were Alfred Stieglitz, Edward J. Steichen, Clarence H. White, Frank Eugene, and Gertrude Käsebier.

photosensitive material — 1) A substance that shows a visible or measurable change when exposed to light. Photosensitive compounds that undergo a chemical change when exposed to light are used for films and printing papers. Light meters and electronic imaging use materials that exhibit a measurable electrical change when exposed to light. 2) Often used as a general term to refer to photographic films and printing papers.

pica — A traditional typographic measurement of 12 points, or approximately 1/6 of an inch. Most applications specify a pica as exactly 1/6 of an inch.

PICT/PICT2 — A common format for defining bitmapped images on the Macintosh. The more recent PICT2 format supports 24-bit color.

pictorialists — A loosely structured group of photographers who fought the battle for photography as an art from about 1890 through the first decade or two of the twentieth century. The term *Pictorialist* covered a wide range of styles, but the main principle that gave coherence to the movement was the idea that photography was a valid art form to be considered on an equal footing with painting, drawing, sculpture, and the other fine arts.

picture element — *See pixel.*

Pigment: An insoluble colorant (as opposed to dyes, which are soluble). Pigments generally have better fade-resistance and permanence than dyes.

pincushion distortion — Curvilinear distortion in which the images of straight subject lines bow in at the edges of the photograph.

pincushion distortion— a geometric lens distortion causing straight lines in a scene to appear to bend inward (making a square pincushion shape).

pinhole — 1) Describes a camera that uses a tiny hole for image formation rather than a lens. 2) A tiny pit or hole in a photographic emulsion.

pixel — Picture element. In digital imaging, refers to the small areas into which an image is divided for digitizing. The number of pixels determines the limits of *resolution* for a digital image, with a greater number of pixels providing higher resolution. *See also distal image processing*.

pixel — Picture Element. One of the tiny rectangular areas or dots generated by a computer or output device to constitute images. A greater number of pixels per inch results in higher resolution on screen or in print.

pixel— strictly defined as the individual imaging elements of a ccd. usually consists of a photodiode (the light-sensitive part), some circuitry to carry the signal and a tiny ‘microlens’ to gather light. also used to describe a point in the final image.

place — To give an area of the film corresponding to a particular area in the subject a desired film exposure (REV) by choice of camera settings. For example, if an area of the subject has a reflected-light meter reading of M.R. f/8 at 1/60 second and the desired REV for this area is REV +2, a camera setting of C.S. f/4 at 1/60 second should be used. The area has been placed at REV +2. Only one area in a subject can be placed. The other areas fall at their own REV's. *See also fall.*

placement — The procedure of metering the luminance of a particular subject area and manipulating the camera settings to produce a desired film exposure (REV) for that area. *See also place*.

plane of focus — *See focal plane*.

plate — 1) A photographic negative or positive on a sheet of glass. 2) In photomechanical printing, a sheet of paper, metal, or plastic that bears the image. 3) A flat surface that holds the film flat in a camera, usually called the pressure plate.

platen — A flat surface used to flatten a material.

platform — The physical computing system. The two most common platforms are the PC (meaning personal computer and referring to IBM-compatible systems), and the Macintosh system built by Apple. *See also operating system.*

platform — The type of computer or operating system on which a software application runs. Common platforms are Windows, Macintosh, UNIX, and NeXT. When a program can be used on more than one of these platforms, it is termed cross-platform compatible.

platinotype — *See platinum print process.*

platinum print process — A photographic print process based on light-sensitive iron salts, which form an image of platinum metal in the finished print. Invented by William Willis in 1873, platinum papers were commercially available from 1880 until the early part of the twentieth century. Also called platinotype.

plug-in — A software routine that is designed to perform specific tasks within a specific application. Plug-ins are not part of the application itself, but can be accessed from the

plug-in — Small piece of software, usually from a third-party developer, that adds new features to another (larger) software application.

PMT — Photomechanical Transfer. Positive prints of text or images used for paste-up to mechanicals.

PNG — Portable Network Graphics. A graphics format similar to GIF. It is a relatively new file format, and is not yet widely supported by most browsers.

point — A unit of measurement used to specify type size and rule weight, equal to approximately 1/72 inch.

point — In color printing, a change in filtration equivalent to a density change of 0.01.

point of view — The direction and distance from which a subject is seen by the camera.

point source — A hypothetical light source that emits light in all directions from a single point. Since a point has no dimension, it is impossible to manufacture a true point source. A tungsten filament has definite physical dimensions, but it is small enough that when viewed from some distance it behaves much as a point source. *See inverse square law.*

polarized light — Light in which the electromagnetic waves are organized so that they all vibrate in the same direction. Appears naturally in reflections from nonmetallic surfaces at an angle of about 35° to the surface.

polarizer — A filter that allows only light waves vibrating in a specific direction to pass. Can be used to produce polarized light from nonpolarized light, or to block polarized light from passing by orienting the filter against the orientation of the polarized light.

polarizing angle — In reflection from nonmetallic surfaces, the angle at which the reflected light shows the largest amount of polarization. With many materials this angle is close to 35°, measured from the surface (55° measured from a perpendicular to the surface).

polarizing filter — *See polarizer*.

POP — *Printing-out paper*.

pop-up menu — A menu of choices accessed by clicking and dragging the current choice.

pop-up window — A new window that can be created and controlled through scripting. This window is in addition to the current window.

portfolio — A group of photographs, usually presented in a protective container suitable for carrying or easy storage.

Portrait — Printing from left to right across the narrow side of the page. Portrait orientation on a letter-size page uses a standard 8.5-inch width and 11-inch length.

portrait lens — A lens designed for taking portraits containing a provision for softening the image.

portrait orientation — *See vertical framing.*

pose — To assume positions and expressions for the purpose of being photographed. *See modeling.*

positive — *See positive image*.

positive film — Film that produces a positive image on a transparent base after processing. Positive films are available in both color and black-and-white. Also called reversal, slide, or transparency film.

positive image — A photographic image on film or paper that shows the same relationship of tones or colors as the original subject. Dark subject tones are reproduced as dark tones in the image and light tones appear light.

positive lens — A lens that converges, or brings to a focus, incoming parallel rays of light.

posterization — The reproduction of a continuous-tone subject as an image containing only a few tones, accomplished with high-contrast materials or by digital image manipulation.

posterize, posterization — 1. Deliberate constraint of a gradient or image into visible steps as a special effect. 2. Unintentional creation of steps in an image due to a high lpi (lines per inch) value used with a low dpi (dots per inch) printer.

PostScript — 1. A page-description language, developed by Adobe Systems, Inc., that describes type and/or images and their positional relationships on a page. 2. A computer-programming language.

postvisualization — Aesthetic decisions made about changing the appearance of a photograph after the exposure has been made on the film, usually in printing the image. *See also previsualize*.

Power pack — The box or case chat contains the electrical power source and control switches for operating one or more separately housed electronic flash tubes.

PPD — PostScript Printer Description File. A file format developed by Adobe Systems, Inc., that contains device-specific information that enables software to produce the best results possible for each type of designated printer.

PPI — Pixels Per Inch. Used to denote the resolution of an image.

preexisting light — As used in this book, any illumination natural, artificial, or a combination) on the subject that is coming from light sources other than those supplied by the photographer. Available, existing, prevailing, and ambient are all terms used by photographers to describe pre-existing light, although ambient is also variously used to describe environmental light or continuous light.

preferences — A set of modifiable defaults for an application.

prepress — All work done between writing and printing, such as typesetting, scanning, layout, and imposition.

preservative — In developers, a chemical substance that prolongs the life of the developer by retarding oxidation.

previsualize — To predict the final appearance of a photograph, both in composition and tonal values, while viewing the original subject.

prewet — To place film in a water bath prior to developing. Also called presoak.

Primaries: The components of a color in a color model. They may be actual primary colors perceivable by humans, as in RGB or CMYK, or they may be imaginary mathematical constructs, as with CIE XYZ (1931) or CIELAB.

primary colors — Colors that can be used to generate secondary colors. For the additive system (a computer monitor), these colors are red, green, and blue. For the subtractive system (the printing process), these colors are yellow, magenta, and cyan.

primary colors — In additive color systems: red, blue, and green light, which combine in equal amounts to give white light. In subtractive color systems: cyan, yellow, and magenta dyes, which, when overlapped in equal amounts, produce neutral density.

Primary Colors: The colors from which all other colors can be made. The primary colors of light are red, green, and blue. These are the additive primaries, used for transmissive or emissive color. The primary colors of pigments are cyan, magenta, and yellow, used for reflective color. It's possible to create all colors from primary colors because the human eye contains three different types of color-sensitive photoreceptors, which are sensitive to the individual primary colors.

print — 1) A photographic image on an opaque base, usually paper. 2) To produce such an image from a photographic negative or positive transparency.

print contrast — 1) The difference in reflective density (tonal value) between the areas representing the dark subject tones and those representing the light subject tones. 2) The degree to which a print shows a full range and scale of tones as demanded by the subject. Determined by how well the paper contrast matches the negative contrast. *See also contrasty, flat*. 3) An indication of the number of tones the print shows between maximum black and maximum white (the scale). A print with only two tones (black and white) from a subject with a full scale of tones is called a high-contrast print. *See also scale*.

print finishing — Any steps performed after the print is processed and dried to prepare it for presentation.

print in — *See burn*.

print quality — A subjective term for describing the technical merits of a photographic print, including such things as image sharpness, contrast, lightness or darkness, and so on.

print value (PV) — 1) Tone (reflectance) in a photographic print. 2) In this hook, a numerical labeling system for print tones. The number attached to a print value is the same as the numerical value of the REV (film exposure) that produces that tone for normal developing and standard printing. For example, an area of the film receiving a film exposure of REV +1 will produce a print value of PV +1 if the film is developed normally and printed by standard methods.

printer driver — The device that communicates between the software program and the printer. When using an application, the printer driver tells the application what the printer can do, and also tells the printer how to print the publication.

printer fonts — The image outlines for type in PostScript that are sent to the printer.

printer's marks — *See* trim marks, registration marks.

printer's spread — The two pages that abut on press in a multi-page document.

printing filter — A filter intended for use on an enlarger while printing, usually a color filter for printing color materials. Printing filters are generally not suitable for placing in the image path.

printing frame — A frame containing a sheet of glass, designed to hold photosensitive materials flat for exposure.

printing paper — Photosensitive materials on an opaque base, usually paper.

printing-out paper (POP) — A printing paper that does not require development, but produces a visible image directly from exposure.

process — 1) To treat an exposed photosensitive material with a series of chemical solutions for the purpose of developing and preserving a visible photographic image from the latent image. 2) To correct or manipulate a digital image on a computer.

process colors — The four inks (cyan, magenta, yellow, and black) used in four-color process printing. A printing method in which a full range of colors is reproduced by combining four semi-transparent inks. See color separation, CMYK.

process lens — A lens of high optical quality used on copy cameras employed in photomechanical and other graphic arcs applications.

Profile — A data file that describes how a device reproduces color in terms of a device-independent color model. Also used as a verb to describe the process of creating a profile for a specific device.

profile — A file containing data representing the color reproduction characteristics of a device determined by a calibration of some sort.

Profile: A that describes the color behavior of a physical device (such as a scanner, monitor, or printer) or that defines the color of an abstract color space (such as Adobe RGB 1998 or ColorMatch RGB) (such as CIELAB or CIE XYZ). Used by color-management systems to define and match color.

program — Computer *software* designed to perform specific functions on the computer. Examples are word processing, database, spreadsheet, and image-processing programs. Larger programs are usually called applications; smaller programs may be called utilities or *plug-ins*.

program operation — An automatic in-camera metering system that sets both the shutter speed and the aperture based on the amount of light and a built-in program of shutter speed-aperture pairs.

programmed mode — On a camera that has several metering methods (modes), a control selection that changes the camera to program operation.

progressive download — A characteristic of JPEG files, in which the file will be displayed in increasingly greater detail as it is downloaded.

projection print — A photographic print made by projecting the image of a negative or transparency onto the paper in an enlarger.

projection printing — Using an enlarger to make a projection print.

projector — A device for projecting images of photographic transparencies in enlarged form onto a screen or other surface for viewing.

proof — A representation of the printed job that is made from plates (press proof), film, or electronic data (prepress proofs). Generally used for customer inspection and approval before mass production begins.

proofing — To make small photographic prints or contact prints of images for editing or selection purposes.

prop — Any object placed in a photograph to enhance the subject or contribute to the concept of the photograph. Shortened from property.

property — An aspect or quality of an element.

property release — *See release*.

proportional modeling light — A modeling light in an electronic flash head connected so that its intensity varies automatically as flash power is changed.

proportional spacing — A method of spacing whereby each character is spaced to accommodate the varying widths of letters or figures, thus increasing readability. For example, a proportionally spaced “m” is wider than an “i.”

protective toning — The use of selenium or gold toner to protect a photographic silver image from deterioration with age.

pt. — Abbreviation for point.

public domain — Any created work, including software, the public may copy and use without paying royalty fees.

public domain — Created material, such as photographs, on which the copyright has lapsed, making them available for anyone's use without compensation to the creator.

pull — To overexpose and decrease the amount of development of a film, for an apparent decrease in film speed.

push — To underexpose and increase the amount of development of a film, for an apparent increase in film speed.

PV — *Print value*.

quality — 1) The desirable characteristics of a photographic image, as determined by objective measurements (resolution, acutance, and soon) or subjective judgments (sharpness, tonal reproduction, and so on. 2) The characteristics of illumination, including specularity, direction, color, and so on.

quartz lamp — *See quartz-halogen.*

quartz-halogen — A light source with a tungsten filament enclosed in a quartz bulb containing a halogen gas. Quartz-halogen lamps produce a more intense light for their size and have a longer burning life than photofloods.

que — A set of files input to the printer, printed in the order received unless otherwise instructed. Also spelled “queue.”

query — Request for specific information from a database.

rack — To operate a focusing device, usually in a back and forth motion on each side of correct focus, gradually reducing the motion to accurately determine the point of best focus.

radio button — A single round button that can be clicked to cause a form to send a name/value pair to an action.

radio group — A group of radio buttons with the same name. Only one radio button may be selected at a time within a radio group.

RAM — Random Access Memory. The “working” memory of a computer that holds files in process. Files in RAM are lost when the computer is turned off, whereas files stored on the hard drive or floppy disks remain available.

random access memory (RAM) — Solid-state chips in a computer designed to store digital data. RAM is volatile, which means that if power to the chip is interrupted the data is lost. Access to data in RAM is very fast.

range — The difference between the extremes of a physical characteristic. For example, the density range of a negative is the density difference from the lowest to the highest density. The term is also applied to contrast, print tones, luminance readings of a scene, and so on. Sometimes given as a ratio between the low and high values. Often used interchangeably with the term *scale*, which has a different meaning. *See also full-range print, full-scale print, scale.*

range kerning — Another term for tracking.

rangefinder — An optical device for determining the distance from the camera to the subject in order to focus the lens.

raster — A bitmapped representation of graphic data.

raster graphics — A class of graphics created and organized in a rectangular array of bitmaps. Often created by paint software or scanners.

raster image — A type of picture created and organized in a rectangular array of bitmaps. Often created by paint software, scanners, or digital cameras.

raster streaks — Streaks seen in photographs of television or other cathode ray tubes when a shutter speed fast enough to stop the scanning action of the tube is used.

rasterize — The process of converting digital information into pixels. For example, the process used by an imagesetter to translate PostScript files before they are imaged to film or paper.

ratios — The difference between the highlight and shadow brightness.

raw— file format free of any in-camera image processing (color corrections, sharpening etc). needs special software to open and convert to a more common file format.

RC — *Resin-coated.*

reader's spread — The two (or more) pages a reader will view when the document is open.

reading discrimination — The amount of exposure change a light meter is capable of distinguishing, given as a fraction of a stop.

read-only memory (ROM) — Computer data stored on solid-state chips or other storage media that can be accessed but not changed. ROM chips do not lose data when power is interrupted and are used for storing the basic start-up instructions for the computer.

readout — The mechanism or device used on a measuring t- instrument for providing numerical information to the operator.

ready light — An indicator light on an electronic flash that lights when the capacitors are fully charged and ready to deliver power to the flash tube.

real image — In optics, an image formed by a positive lens, which can be projected on a surface.

realistic — *See representative photograph.*

rear nodal point — *See nodal point.*

reciprocity effect — *See reciprocity failure.*

reciprocity failure — The failure of equivalent camera settings to produce equivalent density on the film, requiring increased exposure to produce the expected density, and changes in development to control contrast. Color films may also require color filtration corrections. Reciprocity failure occurs for long exposure times or very short exposure times. The exposure times requiring reciprocity failure corrections vary from film to film.

reciprocity law — A law that states that the effect of exposure on the film, seen as density, is the same regardless of the rate at which the exposure is given. One demonstration of the reciprocity law is equivalent exposure settings for which the same density can be achieved with many different combinations of aperture and shutter speed. *See reciprocity failure.*

rectilinear — In optics, describes a lens that is free of *curvilinear distortion* and reproduces straight lines in the subject as straight lines in the image.

recycling time – delay after a flash fires before it has recharged (“recycled”) and is ready to fire again.

reducer — A chemical solution used to lessen densities in photographic images. *See Farmer's reducer*.

reducing agents — Chemical compounds that reduce silver-halide salts to metallic silver and the halide ion. Used in developers as developing agents.

reduction — 1) The chemical process of breaking down light-sensitive silver salts to their component silver and halide during development. 2) The use of a reducer to lessen the amount of silver in an image. Note that this definition is the reverse of (l) in chemical activity. 3) A photographic image smaller than the original. The opposite of an enlargement.

reel — A spiral-shaped wire or plastic spool onto which film is wound for processing.

Reference — In evaluating color difference, the reference is the color against which all measurements are compared. Also referred to as Standard.

reflectance — The ability of a surface to reflect light. A surface with 18 percent reflectance reflects back 18 percent of the light falling on it.

reflected-light meter — A meter that measures the amount of light transmitted, emitted, or reflected by the subject (the luminance). Normally pointed at the subject from the direction of the camera. Also known as luminance meter.

reflection — Light that has been reflected from a surface. *See also diffusion, glare, specular highlight.*

reflective art — Artwork that is opaque, as opposed to transparent, that can be scanned for input to a computer.

reflector — Any device used in photography to reflect light for the purpose of redirecting it or diffusing it.

reflex camera — A camera that uses a mirror in its viewing system.

refraction — The bending of light rays as they pass from one transparent medium to another.

refractive index — *See index of refraction*.

register — To superimpose two or more same-sized photographic images of the same subject on top of each other so that the images are perfectly aligned.

registration — Aligning plates on a multicolor printing press so the images will superimpose properly to produce the required composite output.

registration color — A default color selection that can be applied to design elements so they will print on every separation from a PostScript printer. “Registration” is often used to print identification text that will appear outside the page area on a set of separations.

registration marks — Figures (often crossed lines and a circle) placed outside the trim page boundaries on all color separation overlays to provide a common element for proper alignment.

relative aperture — A number, called the f-stop number, that is found by dividing the focal length of a lens by the effective diameter of its aperture. Also called the f-number.

Relative Colorimetric Rendering: One of the four ICC-specified rendering intents used for handling out-of-gamut colors in color matching. Relative Colorimetric rendering clips the gamut of the source space to the gamut of the destination space, such that the overall color accuracy is preserved.

relative exposure value (REV) — As used in this hook, a relative measure of film exposure, given as the difference in stops between the exposure an area of the film receives and the standard film exposure produced by using the suggested camera setting resulting from a reflected-light meter reading. A

Relative Exposure Value +1 (REV +1) means one stop more film exposure than the standard. REV - and the standard film exposure produced by using the suggested camera setting resulting from a reflected-light meter reading. A Relative Exposure Value +1 (REV +1) means one stop more film exposure than the standard. REV —2 means two stops less film exposure than the standard. Relative exposure values are determined by using either placement or fall. A relative exposure value that is equal to the standard film exposure (that is, the camera settings used match those suggested by a reflected-light meter reading from an area) is labeled **REV M**. *See also fall, place*.

relative film exposure — *See relative exposure value*.

release — A contract between a photographer and a second person that gives the photographer the right to sell or otherwise make use of photographic images of that person (model release), or images of property belonging to that person (property release).

render — A real-time preview of clips and all effects as your production plays.

rendering intent — The method used to convert color from one space to another.

Rendering Intent: Methods established by the ICC to define the objective for a color conversion, especially for the handling of out-of-gamut colors. The ICC profile specification specifies four rendering intents: Perceptual, Absolute Colorimetric, Relative Colorimetric, and Saturation.

repetition with variation — A regularly repeated pattern in a photograph changed in one or more places to create a visual contrast.

replenish — The addition of chemical compounds to a used developing solution intended to replace depleted components of the developer for continued reuse.

replenisher — Chemical compounds or solutions used to replenish a developer.

representative photograph — A photograph that resembles the appearance of the original subject as much as possible within the limits of the medium.

repurposing — Converting an existing document for another different use; usually refers to creating an electronic version of existing print publications.

resample — Resizing an image to decrease the physical size of the file, not just change the appearance on the page.

resin-coated paper — A photographic print material with a paper base that is coated on both sides with a plastic material before the emulsion is applied.

resolution — 1) A measure of the ability of a film to resolve fine detail, tested by exposing the film to a specially designed target with closely spaced parallel lines. A very high-resolution film can distinguish up to several hundred lines per millimeter, whereas a low-resolution film would distinguish fewer than fifty lines per millimeter. 2) In digital imaging, the number of *pixels* per inch or centimeter. *See also lens resolution*.

resolution — The density of graphic information expressed in dots per inch (dpi) or pixels per inch (ppi).

resolution dependant — A characteristic of raster images, in which the file's resolution is determined when the file is created, scanned, or photographed.

resolution independent — A characteristic of vector graphics, in which the file adopt its resolution at the time of output based on the capabilities of the device being used.

resolution— strictly speaking the ability of a camera or sensor to record fine detail, usually measured in lines per mm or lines per picture height. affected by several factors including lens quality, sensor pixel count and processing.

restrainer — A component in a developer that is intended to restrain the development process so that silver salts in un-exposed areas of the film will not be reduced to silver.

restricted-angle meter — A light meter with a *viewing angle* of 15° or less.

reticulation — Wrinkling of the emulsion on a film due to sudden temperature changes during processing, resulting in a granular pattern in prints from the negative.

retouching — Correction of technical flaws or alteration of a photograph for aesthetic reasons, by hand techniques or computer.

retouching — Making selective manual or electronic corrections to images.

retrofocus lens — A lens in which the rear nodal point is located some distance behind the physical body of the lens. The design is used for short-focal length lenses intended for single-lens reflex cameras, in order to leave room for the mirror between lens and film.

REV — *Relative exposure value*.

REV M — A film exposure achieved by using the suggested camera settings from a reflected-light meter reading of a given area. For example, if an area is metered at M.R. f/8 at 1/60 second and the camera setting used is C.S. f/8 at 1/60 second, then that area on the film receives a film exposure of REV M. With normal development an area that received an exposure of REV M should print as 18 percent gray.

reversal — To change a photographic image from negative to positive during processing. Partial reversal of an image can also take place due to *solarization* or use of the *Sabottier effect*.

reversal film — *See positive film*.

reverse adapter — An adapter that allows an interchangeable lens to be mounted backwards on the camera for close-up photography.

reverse out — To reproduce an object as white, or paper, within a solid background, such as white letters in a black rectangle.

RGB — 1. The colors of projected light from a computer monitor that, when combined, simulate a subset of the visual spectrum. 2. The color model of most digital artwork. *See* CMYK, additive color.

RGB — the three primary colors (Red, Green and Blue) for additive color mixing. Color televisions, computer monitors and stage lighting use these additive primaries to reproduce colors.

RGB color — A color system that uses the additive primaries (red, green, and blue) to reproduce colors. Computer monitors and televisions use RGB color.

rgb— red green blue. color model used by digital cameras, scanners and computer monitors. captures or outputs the full spectrum of colors as a mix of red, green and blue light.

rich black — A process color consisting of solid black with one or more layers of cyan, magenta, or yellow. Also called “superblack.”

right-reading — A positive or negative image that is readable from top to bottom and from left to right.

rim light — A light source positioned behind the subject (on the side away from the camera) in such a way as to produce a rim of light outlining the subject.

ring light — A circular electronic flash tube designed to be mounted so that it encircles the lens. Produces a true front light used often in medical photomacrography.

RIP — Raster Image Processor. That part of a PostScript printer or imagesetting device that converts the page information from the PostScript Page Description Language into the bitmap pattern that is applied to the film or paper output.

rising front — A vertical movement of a view camera lens Standard that is performed to keep vertical parallel lines, such as the corners of a building, parallel in the photograph.

roll film — A strip of film for several exposures rolled with protective opaque paper onto a spool. Roll films are threaded onto a removable take-up spool in the camera. Commonly available roll film sizes are 120 and 220.

rollover — The act of rolling the curser over a given element on the screen.

ROM — *See read-only memory*.

rosette — The pattern created when color halftone screens are printed at traditional screen angles.

rotogravure — An adaptation of the photogravure process to printing presses using rotating cylindrical plates.

Rubylith — A two-layer acetate film having a red or amber emulsion on a clear base used in non-computer stripping and separation operations.

ruler — Similar to a physical ruler, a feature of graphics software used for precise measurement and alignment of objects. Rulers appear in the top and left edges of the project window. *See* grid.

ruler guides — Horizontal and vertical guides that can be placed anywhere on the page by dragging from the rulers at the edge of the project window.

rules — 1. Straight lines. 2. Lines that are placed above or below paragraphs of text.

Sabattier effect — A partial reversal of negative or print tones achieved by exposing the photosensitive material to light part way through the developing step, and then continuing the development and the remaining processing steps. A thin line, known as the Mackie line, is produced along boundaries between adjoining areas of dark and light subject tones.

saddle-stitching — A binding method in which each signature is folded and stapled at the spine.

safelight — A light providing illumination of the correct color for working with a specific photosensitive material. Blue-sensitive emulsions can be handled under a yellow or amber safelight. Orthochromatic emulsions can be handled under a red safelight.

Sample — In evaluating color difference, the sample is the target color to be measured and compared to the reference.

sandwich — To stack two or more negatives or transparencies on top of each other in close contact in order to superimpose the images during printing or copying.

saturation — The brilliance or purity of a color, that is, the absence of other colors in that area. The colors of the rainbow show maximum saturation.

saturation — The intensity or purity of a color; a color with no saturation is gray.

Saturation Rendering: One of the four ICC-specified rendering intents used for handling out-of-gamut colors in color matching. Saturation rendering maps fully-saturated colors in the source space to fully saturated colors in the target space, sacrificing hue and lightness.

Saturation: One of the three attributes of color, which indicates the purity of a color. The more gray a color contains, the less saturated it is. We often distinguish the purity of a color by describing it as

stronger or weaker. Black, white, and gray have no saturation. A red tomato has high saturation. Pastel colors have low saturation.

save — To write a digital data *file* to disk or other storage medium.

SBC — *Silicon blue cell*.

SBR — Subject brightness range. More accurately, the *subject luminance range*.

scale — 1) The number of values between two extremes. For example, the number of luminances between darkest and lightest in a subject; the number of densities between maximum and minimum in a negative; or the number of tones in a photographic print between the maximum and the minimum tones. *See also full-scale print.* 2) A series of densities or tones as reproduced by a photographic material assembled into a strip, as in a *gray scale. See also tone ruler*. 3) The actual size of an object. Objects of known and obvious size may be included to demonstrate the actual size of another object in the photograph, that is, to show its scale. Choice of lens focal length and point of view may sometimes create a false sense of scale for objects in a photograph.

scaling — The means within a program to reduce or enlarge the amount of space an image occupies by multiplying the data by a factor. Scaling can be proportional, or in one dimension only.

scan — To convert an *analog image* (such as a photographic print or film) to a *digital image.*

scanner — An electronic device that converts *analog images* to *digital images* by analyzing color and luminosity throughout the print or film and producing *pixels*.

scattering — The diffusion of light by reflection off a surface hat is not perfectly smooth or by transmission through a translucent material. *See also diffusion*.

screen — A surface on which optical images are projected for viewing. A viewing screen in a camera may be a piece of ground glass; a screen for viewing projected transparencies is made of flat white material.

screen — To create a halftone of a continuous-tone image.

screen angle — The angle at which the rulings of a halftone screen are set when making halftones for commercial printing.

screen frequency — The number of lines per inch in a halftone screen, which may vary from 85 to 300.

screen ruling — *See* LPI.

screen shot — A printed output or saved file that represents data from a computer monitor.

scrim — Translucent materials such as plastics or cloth placed between the light source and the subject to diffuse the light.

seamless — Wide rolls of paper without breaks designed for se as backdrops in studio photography.

secondary color — The result of mixing two primary colors. In additive (RGB) color, cyan, magenta, and yellow are the secondary colors. In subtractive (CMY) color, red, green, and blue are the secondary colors.

selection — The currently active object/s in a window. Often made by clicking with the mouse or by dragging a marquee around the desired object/s.

selective color — The addition of color to certain elements of a grayscale image, usually to draw attention to the colored object or area.

selenium cell — A light-sensitive photovoltaic cell used in some photographic light meters.

sensitivity — 1) The degree to which a photosensitive material responds to light, measured by the amount of exposure required to produce a given amount of density in the image. More sensitive (faster) materials require less exposure than less sensitive (slower) materials to produce the same amount of density. Also called the speed. 2) *See color sensitivity*.

sensitivity (iso) — in practical terms the same as film speed, where higher iso numbers (1600) represent high sensitivity and low iso numbers (100) represent low sensitivity.

sensitivity dyes — Dyes mixed with a photosensitive emulsion to improve its response to specific colors of light.

sensitometry — The science and study of photosensitive materials.

separation — 1) Distinguishable tonal or density differences i un area of a photographic image that shows detail or texture. 2) A set of three monochromatic photographic images of a color original, representing the amounts of each of the three additive primaries (red, blue, and green) appearing in the original. Used in photomechanical printing of color images and some other color reproduction recesses, such as pigment transfer.

separation — The process of preparing individual color components for commercial printing. Each ink color is reproduced as a unique piece of film or printing plate.

separation proof — A type of proof in which individual ink colors in a layout are each printed to different pieces of paper; commonly used to check for accurate use of spot colors.

sepia — A reddish-brown color, as produced by some print toners.

series filters — An older style of filters that were made in several series of different sizes. Adapters were used to fit larger series-size filters to lenses of smaller diameter. Largely replaced today by *step-down rings* and *step-up rings*

service bureau — An organization that provides services, such as scanning and prepress checks, that prepare your publication to be printed on a commercial printing press. Service bureaus do not, however, print your publication.

service mark — A legal designation that identifies and protects the ownership of a specific term or phrase.

service provider — Any organization, including a commercial printer, that processes design files for output.

set — Backdrops, flats, furniture, props, and so on constructed and assembled as a scene for making a photograph.

shadow — 1) In lighting, an area of the subject shielded from the direct effect of the main illumination. 2) In metering and printing, any subject dark-tone area or corresponding areas in negative or positive photographic images.

shape — In design, a space enclosed by a line or lines, or defined by the outer boundaries of a tonal value.

sharp — A subjective description of a photographic image that appears to render small detail and texture clearly and precisely. The opposite of *soft* or blurred.

sharpness — *See image sharpness*.

sheet film — Photographic film manufactured as individual sheets, one for each exposure, packed in a lighttight box. Sheet film must be loaded into a lighttight film holder or magazine for use. Sometimes called cut film.

sheet film holder — *See film holder.*

shelf life — The maximum time a material that deteriorates with age can be stored and still retain optimum quality.

shift — Movement of the camera lens or camera back to one side or the other.

short lighting — Lighting a portrait subject so that the main illumination falls on the side of the face turned away from the camera. Makes the face appear narrower. Also called narrow lighting.

short-focus lens — A lens with a focal length less than that of a normal lens. Also called short lens or wide-angle lens.

shoulder — On a characteristic curve, the region above the straight line portion where the race of change in density with exposure begins to decrease.

shutter — A device in a camera or lens consisting of curtains or overlapping blades designed to protect the film from exposure to the image until the shutter release is pressed.

shutter priority — An automatic in-camera metering system in which the shutter speed is set manually and the meter sets the aperture automatically. *See also aperture priority*.

shutter release — A button, lever, or plunger that is depressed to open the shutter.

shutter speed — A measure of the length of time a shutter remains open for an exposure, given in seconds or fractions of a second.

signal to noise ratio (s/n) — a measure of how much stronger the signal (the image information coming off the sensor) is than the residual noise in the circuitry. low s/n ratios produce noisy (grainy) images.

silhouette — To remove part of the background of a photograph or illustration, leaving only the desired portion.

silhouette — An image showing the shape (if the subject as solid black against a light background, achieved by lighting the background and allowing little light to reach the side of the subject nearest the camera.

silicon blue cell (SBC) — *See silicon photodiode.*

silicon photodiode (SPD) — A light-sensitive solid-state device with extremely fast response, good sensitivity to low light levels, and no memory of bright light sources. It is used in many photographic light meters.

silver-halide crystals — Light-sensitive crystals consisting of metallic silver in chemical compound with iodine, chlorine, or bromine. Most modern photographic materials use silver-halide crystals as the light-sensitive component.

simple lens — A lens consisting of a single piece of glass. When two or more simple lenses are combined to form a compound lens, the component simple lenses are called *lens elements*.

single-lens reflex camera — A camera design in which the image from the lens is deflected to a ground glass by a mirror that swings out of the way when the shutter release is operated. Many single-lens reflex cameras use a specially designed prism (a pentaprism) above the ground glass that shows a correctly oriented image through an eyepiece.

skin tone — An area of a subject's skin that is illuminated by the full effect of the main lighting, and reflects back diffused light. In other words, the diffused highlight for the skin.

skylight filter — A pale pinkish-yellow filter that absorbs ultraviolet and some blue radiation, the skylight filter is designed w correct the color of the illumination in open shade or from skylight for use with daylight balance films.

slave — An electronic device that is connected to an electronic flash and fires it when it senses the light from a second flash.

slide — Color transparency.

slope — *See gradient.*

slow — A film or paper that is slow has a low sensitivity to light.

SLR — *Single-lens reflex.*

small-format camera — A camera that uses 135 (35mm) film and produces a 24 X 36mm image.

snapshot — Casually composed, quickly executed photograph made for the purpose of documenting a personal event or subject in the photographer's life.

snap-to — An optional feature in graphic applications that drives objects to line up with guides, margins, or other objects if they are within a preset pixel range. This eliminates the need for very precise manual placement of an object with the mouse.

snoot — An opaque cylinder or cone attached to a light source to limit the pattern of light.

sodium thiosulfate — A chemical compound that was the first fixer, still used today in many fixing solutions.

soft — 1) Describes a photographic image that is not sharp because of diffusion, lens defects, focus blur, or motion blur. 2) Illumination is soft when it has been diffused and produces shadows with graduated edges. 3) Soft is sometimes used to describe paper contrast, soft papers being of lower contrast than normal. 4) Variously used to indicate low lighting contrast or low print contrast, but these uses of *soft* are not recommended, in order to avoid confusion with definitions (1) and (2). The term *flat* is preferred to indicate low contrast.

soft light — *See soft (2).*

software — Any set of instructions (a *program*) that causes a computer to perform calculations for specific purposes. *Applications, operating systems, plug-ins,* and utilities are all software.

solarization — A partial reversal of image densities resulting from gross overexposure.

source book — A professionally produced periodical, usually an annual, displaying work by photographers or other artists and distributed to potential clients in the industry.

space — 1) In design, an area with width and length. 2) *See negative space*.

SPD — *Silicon photodiode*.

special color — Colors that are reproduced using premixed inks, often used to print colors that are outside the CMYK gamut.

spectral absorption — Light wavelengths that are absorbed by the pigments in an object’s surface.

Spectral Data: The most complete and precise means of describing a color, by specifying the amount of each wavelength that the sample reflects. Typically, spectral data records the amount of reflected light in 10-nanometer or 20-nanometer bands.

spectral output — Color balance.

Spectral Power Distribution: The amount of light a light source produces at each wavelength.

spectral reflectance — Light wavelength that are not absorbed by the pigments in an object's surface.

spectrophotometer — A device used to precisely measure the wavelengths that are reflected from an object's surface.

Spectrophotometer: An instrument that measures the amount of light a color sample reflects or transmits at each wavelength, producing spectral data.

spectrum — A display of radiation along a scale arranged according to wavelength, such as the electromagnetic spectrum or the visible spectrum.

specular — 1) *See specular light*. 2) Describes a surface with a high reflective efficiency, such as glossy, shiny, or mirrored surfaces.

specular highlight — The lightest highlight area that does not carry any detail, such as reflections from glass or polished metal. Normally, these areas are reproduced as unprinted white paper.

specular highlight — Visible reflection of a light source on the surface of the subject. Also called specular reflection.

specular light — Illumination in which the light rays are traveling as if they emanated from one point or are traveling parallel. Unscattered light. A specular light source produces shadows with sharp distinct edges ("hard-edged" shadows). Specular light comes from sources that are small in size or appear small due to their distance from the subject, or from sources with lenses or reflectors that collimate or focus the light. Direct light from the sun is an example of specular light.

specular reflection — *See specular highlight.*

specular surface — *See specular (2).*

specularity — 1) In reference to light, the quality relating to the amount of scattering in the light. Unscattered or collimated light is called specular. Scattered light is called diffuse. 2) In reference to reflection, the ability of a surface to reflect back a coherent image of a light source. Surfaces that are able to do so are called specular. Ones that cannot are called dull or matte.

speed — *See sensitivity.*

spherical aberration — A lens defect in which axial and off-axis rays of light are brought to a different focus.

split-image rangefinder — A rangefinder using two views of the subject juxtaposed next to each other. When the images are aligned the rangefinder is focused on that part of the subject.

spot color — Any pre-mixed ink is not one of the four process-color inks.

spot meter — A reflected-light meter with an angle of view of one or two degrees, allowing very small areas of the subject to be read.

spot reading — A light-meter reading of a specific small area of the subject made with a spot meter.

spot-color printing — The printing method in which special ink colors are used independently or in conjunction with process colors to create a specific color that is outside the gamut of process-color printing.

spotlight — A light source in a housing containing curved reflectors and lenses that collimate and focus the light, producing a small intense specular beam of light.

spotlight — A lighting instrument that produces directional, relatively undiffused light with a fairly well-defined beam.

Spotone — A proprietary spotting dye for retouching black-and-white prints or negatives.

spotting — The application of dyes with a line brush to light spots or marks in a print.

spotting colors — Dyes used for spotting.

spread — 1. Two abutting pages. 2. A trapping process that slightly enlarges a lighter foreground object to prevent white paper gaps caused by misregistration.

stabilization processor — A machine used to develop prints. Printing papers for stabilization processing have some of the developer components incorporated into their emulsion. Prints processed in a stabilization processor are not truly permanent, but may be fixed and washed for greater permanence.

stacking order — 1. The order of elements on a PostScript page, where the topmost item can obscure underlying items. 2. The order in which elements are placed on a page; the first is at the bottom and the last is at the top. 3. The order of layers, from top to bottom.

stain — Any undesirable discolored blotch or area in a photographic image, usually caused by chemical activity or deposit.

Standard — In evaluating color difference, the standard is the color against which all measurements are compared. Also referred to as Reference.

star filter — A special-effects filter that creates a star shape around each point of bright light in the subject.

startup disk — The disk from which the computer is set to start.

static — Fixed content.

static graphics — Graphics with no animation or interactivity. The computer image equivalent of a photograph or a painting.

step tablet — A density scale for a photosensitive material, showing several steps of density from the minimum to the maximum.

step-and-repeat — A command in most desktop-publishing applications that makes multiple copies of selected objects using defined offset values.

step-down ring — An adapter ring designed to mount smaller filters or accessories on a camera lens of larger diameter.

step-up ring — An adapter ring designed to mount larger filters or accessories on a camera lens of smaller diameter.

stereograph — A marched pair of photographs made simultaneously with a camera with two lenses that, when viewed in special viewers, produces an apparently three-dimensional view of the subject. Stereographs were popular in the nineteenth and early twentieth centuries.

stochastic screening — *See* frequency-modulated (FM) screening, dithering.

stock images — Images available from a commercial source that can be used for a fee **—** either once or multiple times.

stock photography — Generic photography that is performed on speculation at the expense of the photographer. Stock photographs are usually held by a second party (a stock agency), who sells rights to the photographs to a wide range of clients and retains a commission. Some photographers market their own stock images.

stock solution — A solution of a photographic chemical that is at a dilution suitable for relatively long-term storage. Stock solutions may be used as is (straight) or diluted to a *working solution* for use.

stop — 1) Originally, the plates with holes that were used as apertures in early optical experiments. 2) A measure of change in exposure. One stop is a change in exposure by a factor of two. Opening up one stop means doubling the exposure. Closing down one stop means halving the exposure.

stop bath — A mildly acidic chemical solution, usually containing acetic acid, used after the developer to neutralize any developer still on the photosensitive material.

stop down — *See close down*.

straight photography — A style of photography in which manipulations of the photographic image are kept to a minimum for reasons of truthful documentation or as an aesthetic choice.

straight print — A print made with a single exposure time, without dodging or burning.

straight-line portion — The central portion of a characteristic curve that approximates a straight line. Not all characteristic curves have a straight-line portion.

strobe — A stroboscope, which is an electronic device containing a flash tube that can be fired repeatedly in rapid succession at a rate of many flashes per second. Inaccurately but frequently used to refer to the electronic flash units used for photographic purposes, which must recharge capacitors between each flash.

stroke — The width and color attributes of a line.

studio — An enclosed space that offers a photographer the opportunity to block out or control any natural light and the possibility of using artificial lights to achieve a desired lighting effect.

studio lights — Lights that are designed specifically for use in photographic studios or controlled location situations.

style — 1) In design, the distinctive way or manner in which a work of art is made. Style can be determined by choices in subject matter, materials, techniques, and visual design. 2) To make deliberate choices about the selection and arrangement of props, backdrops, furniture, and other materials used for the construction of photographic sets or as subjects for photographs, including the arrangement of hair or clothing for models appearing in photographs.

subject — 1) An object that appears in a photographic image. Also called subject matter. 2) The most important object in a photograph. 3) An activity or idea that is conveyed by a photograph, and that is the dominant aspect of the photograph.

subject brightness range (SBR) — *See subject luminance range*.

subject contrast — The difference between luminance readings from the darkest fully detailed subject tone to the lightest fully detailed subject tone. Some systems of exposure measure from the dark subject tone that will be represented as the first tone above the black of the paper to the light subject tone that will appear as the last tone before white. *See also normal subject contrast.*

subject luminance range — A measure of subject contrast. As it is used in this book, it refers to the difference in reflected-light meter readings between a fully detailed subject dark tone and a fully detailed subject light tone, given in stops.

sub-pixel — A point based on a calculated distance that is less than the size of a single pixel.

subsampling — A technique for reducing the amount of digital data used to represent an image; part of the data compression process.

substrate — Any surface that is being printed.

subtractive color — Color that is observed when light strikes pigments or dyes, which absorb certain wavelengths of light; the light that is reflected back is perceived as a color. See CMYK, process color.

Subtractive Color Mixture — Produced by combining color pigments or dyes, using the primaries of cyan, magenta and yellow. By combining all three primary colors, the resulting image appears black (since all light is absorbed).

subtractive color system — 1) A color printing system that uses a single exposure on the enlarger, with the color of the enlarger illumination controlled by a combination of cyan, magenta, or yellow filters. 2) Any color reproduction method that uses the superimposition of three image layers containing cyan, magenta, and yellow dyes.

subtractive primaries — *See primary colors*.

Subtractive Primaries: Cyan, magenta, and yellow. Used to create reflective color. Cyan absorbs (subtracts) all red light, reflecting blue and green. Magenta absorbs all green light, reflecting blue and red. Yellow absorbs all blue light, reflecting red and green.

sun-synch — *See synchro-sun.*

superblack — *See* rich black.

supplementary lens — A glass disc that is attached to the camera lens like a filter, but has a curved surface to produce a magnification of the mi.i^L'. allowing the lens to be used for close-up photography. Also called close-up lens or sometimes diopter.

supplementary light — Any artificial light supplied by the photographer in addition to preexisting light.

surface — In photographic printing papers, a description of the surface nature of the paper, using terms such as glossy, matte, lustre, pearl, and so on.

SVG — Scalable Vector Graphics. A language for the creation of graphics using only tags.

swatch book — A book of printed color samples; can be process-color swatches showing various combinations of the four primary inks, or spot-color swatches, showing samples of individual spot-color ink.

swing — The movement of the front or back standard of a view camera in a pivot about a vertical axis.

swipe file — *See idea book*.

SWOP — Specifications for Web Offset Publications. Industry standards for web-offset printing; SWOP specifications provide the necessary information to produce consistent high-quality printing.

symbol — An object, shape, or design that represents some-tiling cisc, often an abstract idea or concept.

symmetry — The appearance of the same arrangement of visual elements in mirror image in both halves of a photograph, Symmetry can be achieved horizontally, vertically, or diagonally.

synch cord — Synchronization cord. The electrical cord that connects a flash to the camera to synchronize flash and shutter.

synchronization — Timing the firing of a flash so that it reaches its maximum intensity while the shutter is open to its full extent, achieved by electrically connecting the flash to contacts in the camera. *See also X-synchronization.*

synchronize — To cause two activities to happen simultaneously, for example, making a flash fire while the shutter is fully open.

synchro-sun — Combining the illumination from the sun with the illumination from a flash unit to light a subject for photographic purposes.

system folder — The location of the operating system files on a computer.

system index (S.I.) — A personal exposure index that is set into the ISO scale of the meter to insure correct film exposure. This number is determined through personal testing using a given system (camera, lens, meter, film, developer, processing techniques, and so on), and is the exposure index that, when set into the meter, produces a density of 0.1 above base plus fog for a film exposure of REV —4. This number may differ from the ISO suggested by the film manufacturer, but it is not a new film speed because it includes variables in your system (for example equipment inaccuracies) different from the standard testing equipment and techniques used in determining ISO speeds. Sometimes called personal system index.

T — *Time* (shutter speed setting).

table — A grid used for displaying data or organizing information in columns and rows. It is also used to control placement of text and graphics. A row and column structure for organizing information.

tabular grain (T-grain) — A specially evolved silver-halide crystal structure, tabular in form and presenting a greater surface area for exposure than normal silver-halide crystals of the same size. The result is finer grain for equivalent sensitivity. Invented by the Eastman Kodak Company, it is used in several of their color films and in the black-and-white films designated T-Max.

tacking iron — A heated, wedge-shaped tool of small size used to tack dry-mounting materials to boards or prints.

taking lens — In a twin-lens reflex camera, the lens that forms the image on the film.

talbotype — An improved version of the *calotype*.

tank — A container used for processing film, usually deep compared to its area, as opposed to a tray. Can be rectangular or cylindrical. *See also drum, tube*.

target audience — The audience selected or desired to receive a specific message.

target market — The market to whom you hope to sell your product.

tear sheet — A photomechanically printed example of a photograph that has been used in an advertisement, article, or in some other published context.

teleconverter — *See converter*.

telephoto lens — A lens design in which the rear nodal point is located near the front of or out in front of the lens body. Used to make long-focus lenses of compact size. *See also long-focus lens*.

telephoto lens — An optical device that gives a narrow, close-up view of an event relatively far away from the camera. Also called long focal-length lens or narrow-angle lens.

template — A document file containing layout, styles, and repeating elements (such as logos) by which a series of documents can maintain the same look and feel. A model publication you can use as the basis for creating a new publication.

tent lighting — The use of a *light tent*.

tenting — To enclose a subject in a *light tent*.

test strip — A small piece of photosensitive material cut from a larger sheet, on which one or more trial exposures are made to determine the correct exposure for the full sheet of material.

Testchart — Collection of color patches that are used to generate ICC profiles for input and output devices. One of the frequently used testcharts is the IT8.7, which is available for monitors, scanners, digital cameras and printers. Testcharts are provided on paper or transparent materials, and also as files.

text — The characters and words that form the main body of a publication.

text attribute — A characteristic applied directly to a letter or letters in text, such as bold, italic, or underline.

text box — A box into which users can type.

text editor — An application used to create or make changes to text files.

text effects — Means by which the appearance of text can be modified, such as bolding, underlining, and italicizing.

texture — 1. A property of the surface of the substrate, such as the smoothness of paper. 2. Graphically, variation in tonal values to form image detail. 3. A class of fills in a graphics application that create various appearances, such as bricks, grass, tiles.

texture — A pattern of small repeated areas of shape, line, or tone.

texture – term used to describe the three dimensional qualities of a surface. emphasized by side lighting and minimized by front lighting.

T-grain — See *tabular grain*.

thin — Describes negatives that have an overall density that is lower than normal. This usually results from underexposure, but can also be caused by underdevelopment.

throughput — Measure of data transmission speed (in Kbps).

through-the-lens (TTL) metering — An in-camera metering system that measures the light after it has passed through the camera lens. Through-the-lens meters will provide corrected camera settings as necessary to compensate for lens changes, filters, or close-up attachments.

thumbnails — 1. The Preliminary sketches of a design. 2. Small images used to indicate the content of a computer file.

thyristor – electrical circuitry built into many flash units that measures light reflected from the subject to the camera and cuts off the flash burst when sufficient exposure is achieved, thus saving battery power and shortening recycle time.

TIFF — Tagged Image Format. A common format used for scanned or computer-generated bitmapped images.

tiff— common file format that uses a lossless (non-destructive) compression system to ensure optimal image quality. tiff files are much larger than jpegs, and usually a little larger than raw files.

tile — 1. Reproducing a number of pages of a document on one sheet. 2. Printing a large document overlapping on several smaller sheets of paper.

tilt — A movement of the front or back standards of a view camera that is a rotation about a horizontal axis.

time – every photograph is a frozen moment of time. a slow shutter speed can blur a moving subject and create an impression of time passing in the photograph.

time (T) — A setting on some shutter-speed control dials that provides for long exposure times. When set on T, the shutter will open on the first depression of the shutter release and will remain open until the shutter release is depressed a second time.

time exposure — A longer than normal film exposure time, usually of one second or more.

time-and-temperature development — A method for developing film in which testing provides the proper time and temperature for the desired amount of development, as opposed to development by *inspection.*

timer — Any device used for measuring intervals of time.

tint — 1. A halftone area that contains dots of uniform size; that is, no modeling or texture. 2. A percentage of a color; a 10% tint is one part of the original color and nine parts substrate color.

tintype — A variation of the wet-plate process, in which the collodion emulsion is coated on a black-lacquered metal sheet and exposed directly in the camera. When viewed with the proper light, the resulting silver image appears as a positive. An inexpensive and popular type of photograph in the nineteenth century. Also called ferrotype.

TLR — *Twin-lens reflex*.

T-number — A number determined by testing and assigned to an f-stop setting on a lens as an indication of the lens's true ability to transmit light at that setting.

toe — The curved area at the base of the characteristic curve corresponding to low film exposure and low densities.

toggle — A command that switches between either of the two states at each application. Switching between Hide and Show is a toggle.

tonal scale — A series of tones in steps for a print material. A *gray scale*. *See also full-scale, scale.*

tonal value — Visual perception of the luminance of a specific area in a subject, or the reflectance of an area in a print (lightness and darkness).

tone — 1) *See tonal value*. 2) To treat a processed print or film in a solution for the purpose of changing its color or protecting the image from degradation.

tone – refers to the lightness or darkness of an area. shadows consist of dark tones and highlights consist of light tones.

tone control — A system of exposure and development that depends on performing reflected-light meter readings from specific areas of the subject and then manipulating camera settings and film development to control the tonal appearance of these areas in the final photograph.

tone ruler — A print gray scale with ten steps of gray, from the maximum black of the paper to the maximum white of the paper. This ruler can be made from the patches produced for the normal developing time tests described in this book, each gray tone being the result of a different REV.

tone value increase — *See* dot gain.

tone-line process — A procedure in which negative and positive high-contrast images of a photograph are sandwiched together and then contact printed onto printing paper with oblique light, producing thin lines at the borders of dark and light tones.

toner — Any chemical solution used for toning processed prints or films. *See also tone*.

tool tip — Small text explaining the item to which the mouse is pointing.

Toyo — A special-color library commonly used in Japan.

tracking — Adjusting the spacing of letters in a line of text to achieve proper justification or general appearance.

trademark — A legal designation that identifies and protects the ownership of a specific device (such as a name, symbol, or mark).

trailer — A piece of paper or film at the end of a roll that protects the remainder of the roll from light, or allows for handling of the film without touching image areas.

transfer curve — A curve depicting the adjustment to be made to a particular printing plate when an image is printed.

translucent — A material that transmits light, but in the process scatters the light and absorbs some of it.

transmission — A measure of transparency defined as the fraction or percentage of light the material allows to pass. For example, if one-half of the light that strikes a given area of the film passes through it, the transmission for that area is 0.5 or 50 percent. Sometimes called transmittance.

transmittance — *See transmission*.

transparency — 1. A full-color photographically produced image on transparent film. 2. The quality of an image element that allows background elements to partially or entirely show through.

transparency — A photographic image, usually positive, on a transparent base.

transparent ink — An ink that allows light to be transmitted through it.

trapping — The process of creating an overlap between abutting inks to compensate for imprecise registration in the printing process. Extending the lighter colors of one object into the darker colors of an adjoining object.

tray — A flat, shallow container used to hold solutions for processing films or prints.

trim marks — Printer's marks that denote the edge of the layout before it is printed , folded, bound, and cut.

tripod — A collapsible three-legged stand on which a camera can be mounted to reduce movement.

Tristimulus Data: The three values used to define or create a color, such as Red 255, Green 0, Blue 0. Tristimulus values alone do not define a color unambiguously: The illuminant (light source) must also be defined. In the case of device-dependent tristimulus values such as monitor RGB, the primaries must also be defined in a device-independent system such as CIE XYZ or CIELAB. Tristimulus values can always be computed from spectral data, but spectral data cannot be inferred from tristumulus values.

Tristimulus: The practice of specifying or creating colors using three stimuli. These may be additive (RGB) or subtractive (CMY) primary colorants; three attributes such as Lightness, Chroma, and Hue; or three purely synthetic mathematical constructs, as with CIE XYZ (1931) or CIELAB.

TrueType — An outline font format used in both Macintosh and Windows systems that can be used both on the screen and on a printer.

Trumatch — A special-color library used in the United States.

T-stop — *T-number*.

TTL — *Through-the-lens.*

ttl flash – abbreviation for "through-the-lens" flash, referring to flash systems that control exposure by measuring light from the subject after it passes through the camera's lens.

tube — A cylindrical container, usually relatively long compared to its diameter, used for processing prints or films.

tungsten balance film — A color film designed to be used with illumination from studio photofloods with a color temperature of 3200 K, formerly designated as Type B films.

tungsten lamp — *See incandescent lamp*.

tungsten light — Illumination produced by studio incandescent lamps with a color temperature of 3200°K or 3400°K.

tungsten-halogen lamp — *See quartz-halogen*.

tweening — A process by which the in-between frames of an animation are automatically generated by the developing application.

twin-lens reflex camera — A camera with two identical lenses. One forms the image on the film. The image from the other is deflected by a mirror to a ground glass for viewing.

Type 1 fonts — PostScript fonts based on Bezier curves encrypted for compactness.

Type A — An obsolete color film designed to be used with 3400°K tungsten illumination.

Type B — A kind of color film designed to be used with 3200°K tungsten illumination.

Type C — A commonly used but outdated designation for color negative printing papers. Also called C-print.

type family — A set of typefaces created from the same basic design but in different variations, such as bold, light, italic, book, and heavy. 2. In Web design, a list of fonts that will be used to display text in a Web page. *See* CSS.

Type L — A kind of color film designed for long exposures and 3200°K tungsten illumination.

Type R — Used by some manufacturers to designate color reversal printing papers for printing directly from color transparencies.

Type S — A kind of color film designed for short exposures and 5500°K daylight balance illumination.

type size — Typeface as measured (in points) from the bottom of descenders to the body clearance line, which is slightly higher than the top of ascenders.

typeface — A unique and distinctive design of a font alphabet; the combined group of all the letters, figures, and punctuation of a specific font.

typesetting — The arrangement of individual characters of text into words, sentences, and paragraphs.

typographer's quotes — The curly quotation marks used by typographers, as opposed to the straight marks on the typewriter. Use of typographer's quotes is usually a setup option in a word-processing or page-layout application.

typography — The art and process of placing, arranging, and formatting type in a design.

UCR — Undercolor Removal. A technique for reducing the amount of magenta, cyan, and yellow inks in neutral or shadow areas and replacing them with black.

ultraviolet — Electromagnetic radiation with wavelengths just shorter than the blue-violet end of the visible spectrum. Not visible.

Ultraviolet — Radiant energy below just below the visible spectrum.

umbrella — Special parasol used in photography to modify light. Light can be reflected from the inner surface of the umbrella or, if the material in the umbrella is translucent transmitted through the umbrella for diffusion.

underdeveloped — Describes a photographic material that has received less than the necessary development. In a negative, underdevelopment results in excessively low contrast.

underexposed — Describes a photosensitive material that has received less than the optimum exposure. In a negative, underexposure results in loss of detail in the subject dark-tone areas and a loss of negative contrast. In a print from a negative, underexposure results in a print that is too light.

undertone — Color of ink printed in a thin film.

Uniform Color Space — A color space in which equivalent numerical differences represent equivalent visual differences, regardless of location within the color space. A truly uniform color space has been the goal of color scientists for many years. Most color spaces, though not perfectly uniform, are referred to as uniform color spaces, since they are more nearly uniform when compared to the chromaticity diagram.

unity — In design, a coherence of all of the visual elements in an image, promoting the impression that they belong together.

unsharp marking — A digital technique performed after scanning that locates the edge between sections of differing lightness and alters the values of the adjoining pixels to exaggerate the difference across the edge, thereby increasing edge contrast.

unsharp masking— software process that increases the apparent sharpness of an image by boosting the contrast of edges whilst leaving areas of solid color relatively untouched.

UV — *Ultraviolet.*

Value — An attribute of color used in the Munsell System to indicate the lightness of an object viewed in daylight, on a scale from 0 for the ideal black to 10 for the ideal white, in steps that are visually equal.

Visible Spectrum: The portion of the electromagnetic spectrum with wavelengths between 380 and 720 nanometers. Wavelengths in this range provoke the sense of color when they impinge on the photoreceptors in the human retina. The shorter wavelengths within this range produce blue and violet sensations; the longer wavelengths produce orange and red sensations.

value — The lightness or darkness of a color; its *luminance*. *See also print value, tonal value*.

variable-contrast paper — Black-and-white printing paper for which contrast can be altered by changing the color of the printing illumination with filters.

vector graphics — Graphics defined using coordinate points and mathematically drawn lines and curves, which may be freely scaled and rotated without image degradation in the final output.

vertical framing — Turning a camera with a rectangular format so that the long dimension of the image is vertical. Called portrait orientation for computer printers.

view camera — A camera design allowing direct viewing of the image on a ground glass viewing screen. The lens and back of a view camera can be tilted or swung to alter the focus or shape of the image. View cameras are usually of large format size.

viewfinder — An optical system on a camera separate from the taking lens, which gives a visual approximation of the subject matter that will appear in the photographic image.

viewfinder camera — A camera with a *viewfinder.*

viewfinder cutoff — A situation in which the viewfinder shows less of the subject than is recorded on the film.

Viewing Booth — A special, enclosed light box used for evaluating color samples, proofs, and printed material under controlled lighting conditions.

Viewing Conditions — When performing visual color evaluation, it is critical to control the conditions associated with viewing geometry (the angle at which the object is viewed and the direction from which light strikes the object) and sample surround.

viewing lens — In a twin-lens reflex camera, the lens that forms the image on the ground glass, as opposed to the taking lens.

viewing screen — A screen, usually of ground glass, onto which an aerial image is formed by the camera lens, making it visible to the eye.

viewpoint – the point of view from the camera position in relation to the subject.

vignette — An illustration in which the background gradually fades into the paper; that is, without a definite edge or border.

vignetting — The blocking of image-forming tight around the edges of the image in a specific pattern. This can be done intentionally for aesthetic reasons, or may happen accidentally when the wrong lens shade or filters are attached to a lens.

vignetting— darkening of the outer edges or corners of an image.

virtual — Simulation of the real thing. You will see this term appear before various computer terms to indicate simulation technology that enables you to cross boundaries and experience something without requiring its physical presence.

virtual image — An optical image that can be seen but cannot be projected on a surface for the purposes of viewing or making photographs. The image seen in a mirror or through a magnifying glass is a virtual image.

visual elements — In design, distinguishable features in a work of art, such us tone, color, line, shape, form, and so on. Also called design elements.

visual selection — Using camera position (point of view) and lens focal length to alter the arrangement of visual elements within the frame of the viewfinder.

visual structure — A sense of organization in a work of art that results from mental analysis of the spatial relationship of visual elements, the recognition of identifiable shapes, and the path of eye travel when viewing the photograph.

Volume — *See form.*

WAN — Wide Area Network. A network that connects computers over a large geographic area.

warm — Describes colors that contain red, yellow, or orange.

washed out — A phrase often used to describe the appearance of underexposed highlights in a print, which are too light and lack detail.

washing aid — An alkaline or salt solution in which film or print materials are treated to facilitate removal of residual fixer during washing. *See also hypo eliminator*.

water jacket — A container of water into which a processing tray or tank can be set for purposes of stabilizing the temperature of the processing solutions. The temperature of the water in the water jacket is monitored and controlled at the desired processing temperature.

watermark — An impression incorporated in paper during manufacturing showing the name of the paper and/or the company logo. A watermark can be applied digitally to printed output as a very light screened image.

watt-second — A unit used for measuring the power delivered by electronic flash power packs to the flash heads.

watt-seconds – measure of the amount of electrical energy converted into a flash burst, used to designate the power of a flash unit.

wavelength — In a wave motion, the distance from peak to peak or from trough to trough. The wavelength of visible light determines its color.

Wavelength — The distance between the crests of two adjacent waves.

White Point — The lightest color that can be reproduced. On monitors, the lightest color that can be reproduced, ideally with 100%RGB. If you compare 100% RGB on two monitors side-by-side, one may look distinctly blue compared to the other. On scanners, the definition of the color that the scanner should interpret as white. This is used to control highlight and shadow reproduction. In printing, the white point depends on the whiteness of the paper. In colorimetric terms, the white point is defined as the chromaticity of a white light source or other emissive object. The white point may be expressed in terms of correlated color temperature or chromaticity coordinates.

Web site — A digital document or set of documents residing on a computer that can be accessed through the *World Wide Web. See also home page*.

Web-safe color — A color palette used for images that will be displayed on the Internet; a specific set of colors that can be displayed by most computer-operating systems and monitors.

weight — 1) *See base weight.* 2) In design, the relative visual importance of various design elements.

weight — 1. The thickness of the strokes of a typeface. The weight of a typeface is usually denoted in the name of the font; for example, light, book, or ultra (thin, medium, and thick strokes, respectively). 2. The thickness of a line or rule.

wet-mounting — The use of liquid adhesives for attaching a photographic print to a support.

wet-plate process — A photographic process in which glass or metal places were coated with *collodion*, sensitized by being dipped in silver nitrate solution, exposed in a camera, and developed before the collodion could dry. Widely used from the 1850s into the 1880s.

wetting agent — A pure and mild detergent solution in which film is treated after washing to prevent water marks during drying.

white balance — Equal amounts of red, green, and blue light components to create white.

white balance— camera feature allowing adjustment of the colors in an image at the point of capture to remove any colorcast caused by variations in the color of the light source. auto white balance (awb) systems do this automatically.

white light — 1) In a darkroom, normal room illumination, as opposed to safelight illumination. 2) In color printing, the light from the enlarger when color printing filters are removed from the light path. 3) As a standard in the study of light, unaltered light as it comes from the sun.

white light — Light containing all wavelengths of the visible spectrum. Also known as 5000K lighting.

wide-angle lens — A lens with a shorter than normal focal length. On 35mm cameras, wide-angle lenses range from a moderate 35mm wide-angle to extreme-wide-angle lenses 14mm or less in focal length. Also called short lens or short-focus lens. *See also retrofocus lens*.

winder — *See motor drive*.

window mat — *See mat*.

woodburytype — A photomechanical technique for high quality reproduction of photographs in ink that is dependent upon the hardening action of light on a gelatin layer. A relief pattern is produced that is then transferred to lead plates for inking and printing. Seldom used today because of its difficulty and expense.

work for hire — Any creative product that is prepared by an employee as a normal part of employment, or any product commissioned for several purposes (such as a compilation or translation.

work for hire — Creative work (such as photography) that is done for an employer. The employer owns the copyright to any creative work done by the employee.

working life — For reusable photographic chemical solutions, the amount of material that can be processed before the chemical solution is depleted. Also called working capacity.

working solution — A photographic chemical solution that is at the proper dilution for use. *See also concentrate, stock solution.*

World Wide Web — The global network of computers that are connected to the *Internet* and can be accessed using HyperText Markup Language (HTML), a programming language that allows interaction with a remote computer via a graphical interface with icons, highlighted text, and menus activating *links* to allow navigation through the accessible documents. Also called the Web and often used interchangeably with Internet, though not all computers on the Internet are accessible using HTML.

XLin — An emerging specification defining advanced functionality for hypertext.

XML — An acronym for eXtensible Markup Language.

X-synchronization — The correct *synchronization* for use of electronic flash units.

Yellow: One of the subtractive primary colors. Yellow absorbs all blue light, reflecting red and green.

zone — In the Zone System, the designation given increments of film exposure, labeled with roman numerals.

zone focusing — Choosing an aperture and focal distance so that a specific range of subject distances is within the depth of field, and therefore acceptably sharp in the photograph.

Zone System — A tone control system devised by Ansel Adams in which relative film exposure values, called zones, are labeled with roman numerals.

zoom lens — A lens with a continuously variable focal length, usually controlled by sliding or turning a sleeve on the lens barrel.