GLOSSARY

Aperture Plate - Located between the lens and the film, a rectangular piece of metal or plastic with an indentation to accommodate the film stock. The indentation ensures a straight guide path for the film as it travels through the gate.

Boom/Crane Shot - A shot in which the camera is moved up or down, usually while mounted to a mobile crane or similar device.

Camera Aperture - A small rectangular hole in the aperture plate that allows light from the lens to expose the film. It also determines the area of each frame.

Claw/Shuttle - Small metal arm with a tiny hook on the end. The hook engages into a perforation and advances the film one frame at a time through the gate of the camera.

Depth of Field - Extent to which areas of an image are in acceptably sharp focus. An image with greater depth of field maintains focus from foreground to background. An image with shallow depth of field is sharp in either foreground, background, or middleground.

Diopter - Located on the eyepiece, an adjustment that sharpens the eyepiece viewing system to accommodate individual eyesight. To adjust the diopter, focus on the markings in the viewfinder, such as the video safe area; or remove the lens and focus on the pattern of the ground glass viewing screen. A third method for focussing the diopter is to zoom fully to telephoto, set the focus setting to infinity, aim the camera at an object fifty feet away, and turn the diopter adjustment until the image is in sharp focus. The diopter needs to be reset with each new camera operator.

Dolly - A wheeled device onto which the camera is mounted in order to execute moving camera shots.

Dolly Shot - A shot during which the camera is physically moved toward or away from the subject. This movement can be executed by handholding the camera, or by attaching the camera to a dolly.

Focal Length - Technically, the distance from the optical center of the lens to the point at which the parallel rays of light converge at the focal plane. Practically, it determines the magnifying power of the lens. Focal length (along with camera to subject distance) determines how large or small an object appears, and how much space is included around the object.

Focal Plane - Location in the camera where the image is formed on the film or CCD.

Focus - Adjustment of a lens to bend light rays to create a sharp image.

Focus Ring - A ring or barrel on the exterior of the lens. Adjusting it sharpens the image. Many video cameras have an autofocus option that overrides manual control of this ring.

F/Stop - Numerical value written as an “F/number”. It is used to express the size of the lens aperture/iris opening. A typical lens has stops from F/2 to F/22. Smaller numerical values (e.g. F/2) indicate larger diameter openings that pass more light. The standard range of F/stop values is: F/2, F/2,8, F/4, F/5.6, F/8, F/11, F/16, F/22. Each increment to a larger numerical value (F/11 to F/16) reduces the amount of light by one half.

Gate - Part of a film camera in which the film is exposed to light.

Lens - A transparent optical device that collects and bends light rays to form an image.

Lens Aperture - A circular opening in the rear of the lens.

Iris Opening - The diameter of this opening can be increased or decreased to allow more or less light to form the image. The size of the opening is expressed as an F/stop.

Normal Focal Length - A lens that reproduces the visual field with a perspective and angle of view (22-23 degrees) that is approximately that of the human eye. The specific focal length of this lens varies according to format.

Panning Shot - A camera movement that pivots the camera horizontally while the camera is mounted on a stationary spot. Panning is similar to turning your head from right to left or vice versa while standing in one place.

Perspective - Depiction of relative spatial relationships in depth. The apparent distance between objects.

Pressure Plate - A spring mounted piece of metal or plastic that gently pushes against the aperture plate to ensure the film travels smoothly through the gate.

Prime Lens - A lens with only one focal length.

Rack Focus - Altering the plane of focus from foreground to background or vice versa. Rack focus, also known as “pull” focus, can only be accomplished with shallow depth of field.

Registration Pin - A metal pin used in professional film cameras to engage into a perforation and hold the film steady in the gate during exposure. The pin retracts while the camera advances the next frame of film into the gate.

Sprockets - Small rectangular holes running along one edge of the film.

Perforations - Sprockets enable the claw and sprocket drive wheels to advance film through both camera and projector.

Telephoto Lens - A lens with a long focal length (also known as long lens) that makes objects appear large and close. This lens sees a relatively narrow angle of view, with minimal space included in the frame, and typically shows compressed or shallow depth of field.

Tilt Shot - A vertical movement of a camera mounted on a stationary spot. A tilt shot is similar to titling your head up and down while standing in one place.

Tracking Shot - A camera movement (also known as trucking) in which the camera is physically moved through space, following an action. An example is filming from a car to follow a person riding a bicycle.

Wide-Angle Lens - A lens with a short focal length (also known as short lens) that makes objects appear small and distant. This lens sees a relatively wide angle of view, with significant space, often distorted in perspective, included in the frame.

Zoom Lens - A lens with variable and adjustable focal lengths.

Zoom In - A shot that changes focal length, from longer to shorter, gradually decreasing the area in an image and increasing the size of objects.

Zoom Out - A shot that changes focal length, from shorter to longer, gradually increasing the area in an image and decreasing the size of objects.

Zoom Ring - An adjustable ring or barrel on a zoom lens. Turning it makes the image telephoto or wide angle. This ring is sometimes coupled to a lever on the side of the camera body, so that either mechanism can be used to zoom the lens.

TEACHER'S GUIDE QUESTIONS

1) Describe and explain the function of each of the components (aperture plate, pressure plate, aperture opening, claw, registration pin) of the film camera "gate".

2) Describe two different methods of focussing the diopter.

3) How often does the diopter need to be focussed?

4) When focussing a zoom lens, should you set the focus with the lens zoomed in or zoomed out?

5) Is a focal length of 12mm wide angle or telephoto?

6) How many focal lengths are contained in a prime lens?

7) In what ways does the image created with a tele photo lens differ from the image created with a wide-angle lens?

8) Describe how an image changes when you "zoom in".

9) As you "zoom in", does the focal length become more telephoto or more wide angle?

10) You want a composition in which you frame a whole person, from head to toe. The camera is positioned five feet from the person. What type of focal length would you select?

11) Describe what shallow depth of field looks like compared with wide depth of field.

12) What three elements affect depth of field?

13) Which focal length (wide angle, normal, or telephoto) will give you a shallow depth of field?

14) You are focussing a shot and find the depth of field too shallow. What can you do to increase depth of field?

15) What kind of depth of field do you need to execute a "rack focus" shot?

16) Describe what the perspective looks like in a shot taken with the camera close to the subject using a wide angle lens compared with a shot taken with the camera distant from the subject and using a telephoto lens.

17) In the above example, in which situation will motion toward or away from the camera seem faster?

18) Which action changes perspective; moving the camera closer or further from the subject, or changing focal length?

19) Describe the function of the lens aperture.

20) You are shooting in bright daylight. Which aperture is most likely the correct one for this bright light level: F/2 or F/11?

21) Compare the iris openings of F/2 and F/4 in terms of how much light each passes.

21) Which iris opening gives you more depth of field, F/2 or F/4?

23) How is a zoom shot executed differently from a dolly shot? In what ways do they "look" different?

24) How is a boom/crane shot executed differently from a tilt shot? In what ways do they "look" different?

25) How is a tracking shot executed differently from a pan shot? In what ways do they "look" different?

ACTIVITIES/ASSIGNMENTS

a) Have students collect pictures from magazines and analyze the pictures to determine what type of focal length was likely used.

b) Have students look at the camera movements in a movie and determine if those movements are zooms or dollies, booms or tilts, tracks or pans.

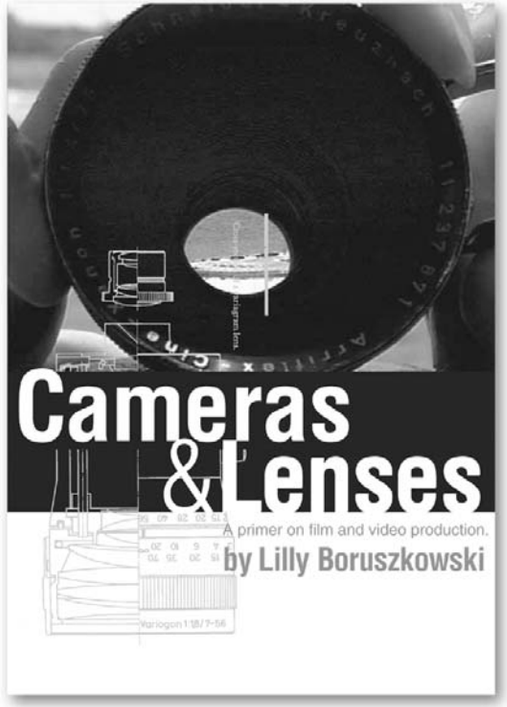
c) Have students find images with shallow and wide depths of field.

d) Using a camera with a zoom lens, have student's experiment with focal length.
   i) First, have them shoot a subject alternately with telephoto, normal and wide focal lengths while keeping the camera in the same position.
   ii) Next, shoot with the three different focal lengths but move the camera in order to keep the subject the same size in the frame.
   iii) Compare the perspective in all the above shots.

e) Using any type of camera with an adjustable iris, have students set up a camera at a fixed distance from the subject and alter the light level in order to shoot at different F/stops.
This is most easily accomplished by starting with several lights and then shutting them off one at a time. The individual shots at various F/stops will show how the F/stop or aperture size affects depth of field.

f) Bring a video camera to class and attach it to a video monitor. Use the various controls on the camera to demonstrate:
   i) How to focus a lens after you've zoomed all the way in to the subject.
   ii) How the image changes when you zoom from telephoto to wide angle and vice versa.
   iii) How to execute a rack focus shot.
   iv) How the iris adjustment alters image brightness.

Beginning Film & Video Making:



Teacher's Guide

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