

# Cinematography: everything you need to know

[Design](#), [Photography](#)



Title : Cinematography: Everything You Need To Know Essay :

Cinematography is the technique and art of making motion pictures, which are a sequence of photographs of a single subject that are taken over time and then projected in the same sequence to create an illusion of motion.

Each image of a moving object is slightly different from the preceding one.

Projector A motion-picture projector projects the sequence of picture frames, contained on a ribbon of film, in their proper order. A claw engages

perforations in the film and pulls the film down into the film gate, placing

each new frame in exactly the same position as the preceding one. When the

frame is in position, it is projected onto the screen by illuminating it with a

beam of light. The period of time between the projection of each still image

when no image is projected is normally not noticed by the viewer. Two

perceptual phenomena--persistence of vision and the critical flicker

frequency--cause a continuous image. Persistence of a vision is the ability of

the viewer to retain or in some way remember the impression of an image

after it has been withdrawn from view. The critical flicker frequency is the

minimum rate of interruption of the projected light beam that will not cause

the motion picture to appear to flicker. A frequency above about 48

interruptions a second will eliminate flicker. Camera Like a still camera (see

CAMERA), a movie camera shoots each picture individually. The movie

camera, however, must also move the film precisely and control the shutter,

keeping the amount of light reaching the film nearly constant from frame to

frame. The shutter of a movie camera is essentially a circular plate rotated

by an electric motor. An opening in the plate exposes the film frame only

after the film has been positioned and has come to rest. The plate itself

continues to rotate smoothly. Photographic materials must be manufactured with great precision. The perforations, or holes in the film, must be precisely positioned. The pitch--the distance from one hole to another--must be maintained by correct film storage. By the late 1920s, a sound-on-film system of synchronous SOUND RECORDING was developed and gained widespread popularity. In this process, the sound is recorded separately on a machine synchronized with the picture camera. Unlike the picture portion of the film, the sound portion is recorded and played back continuously rather than in intermittent motion. Although editing still makes use of perforated film for flexibility, a more modern technique uses conventional magnetic tape for original recording and synchronizes the recording to the picture electronically (see TAPE RECORDER). If the number of photographs projected per unit time (frame rate) differs from the number produced per unit time by the camera, an apparent speeding up or slowing down of the normal rate is created. Changes in the frame rates are used occasionally for comic effect or motion analysis. Cinematography becomes an art when the filmmaker attempts to make moving images that relate directly to human perception, provide visual significance and information, and provoke emotional response.

History of Film Technology Several parlor toys of the early 1800s used visual illusions similar to those of the motion picture. These include the thaumatrope (1825); the phenakistiscope (1832); the stroboscope (1832); and the zoetrope (1834). The photographic movie, however, was first used as a means of investigation rather than of theatrical illusion. Leland Stanford, then governor of California, hired photographer Eadweard MUYBRIDGE to prove that at some time in a horse's gallop all four legs are simultaneously

off the ground. Muybridge did so by using several cameras to produce a series of photographs with very short time intervals between them. Such a multiple photographic record was used in the kinoscope, which displayed a photographic moving image and was commercially successful for a time. The kinoscope was invented either by Thomas Alva EDISON or by his assistant William K. L. Dickson, both of whom had experimented originally with moving pictures as a supplement to the phonograph record. They later turned to George EASTMAN, who provided a flexible celluloid film base to store the large number of images necessary to create motion pictures. The mechanical means of cinematography were gradually perfected. It was discovered that it was better to display the sequence of images intermittently rather than continuously. This technique allowed a greater presentation time and more light for the projection of each frame. Another improvement was the loop above and below the film gate in both the camera and the projector, which prevented the film from tearing. By the late 1920s, synchronized sound was being introduced in movies. These sound films soon replaced silent films in popularity. To prevent the microphones from picking up camera noise, a portable housing was designed that muffled noises and allowed the camera to be moved about. In recent years, equipment, lighting, and film have all been improved, but the processes involved remain essentially the same.

RICHARD FLOBERG Bibliography Bibliography: Fielding, Raymond, ed., *A Technological History of Motion Pictures and Television* (1967); Happe, I. Bernard, *Basic Motion Picture Technology*, 2d ed. (1975); Malkiewicz, J. Kris, and Rogers, Robert E., *Cinematography* (1973); Wheeler, Leslie J., *Principles of Cinematography*, 4th ed. (1973).