

Understanding the Fundamentals of Cinematic Images

1970

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Cinema is the art of “sight” and “sound.” When it comes to the advancement of film art, more research and efforts have been dedicated to “sight” than to “sound.” Focusing on our senses of “sight” itself, I’d like to elaborate today on the fundamentals and functionalities of “images,” and why they matter for filmmaking. “Images,” simply put, are things that we see. To be able to see, there has to be light. As light rays hit objects and reflect to our eyes, the optic nerve transmits the visual information to the brain, forming the “images” that we perceive. But there are certain limits to human visual perception. For instance, without suitable instruments, our naked eyes cannot see objects as tiny as microorganisms. Nor can we see objects that are too near, too far, too bright, or too dark. Thus “seeing is believing” is a rather unscientific expression. There are numerous solid objects we cannot see. On the other hand, images we believe to be real are often optical deceptions.

Different individuals perceive the same things differently. Even just one person would have varying perceptions about the same thing under changing circumstances.

When we look from atop a mountain down to a skyscraper, the height and shape of the building must appear different than when we look at it from the ground floor up. With fluctuating levels of brightness and different surrounding environments, our perception of certain images would greatly differ. My presentation here is limited to the collective experience of how we see “images” through healthy eyes, without symptoms of myopia, hyperopia, or any use of visual aids. Hallucinations due to mental illness and substance abuse (such as LSD) are not part of this discussion.

Images can be portrayed through spoken words, written languages, paintings and sculptures, but not one of the above exemplifies images as accurately as photography. Nevertheless, images recorded through cameras do not look the same as the images seen by naked eyes. The pupil of the eye is like the aperture of a camera, it widens in the dark and contracts in bright light. When there’s barely any light, our eyes can still see something. In comparison, the aperture and shutter speed of a film camera are limited to fixed settings.

The currently available Kodak 5254¹ film stock is rated at a slow speed of ASA 100. It's not sensitive enough in low light conditions, and doesn't work well in bright light either. In order to achieve the most realistic looking images with it, we'd have to resort to artificial lighting, as well as corrective filters to balance the color temperature. Color negative film stocks are layered with chemical emulsions sensitive only to three colors,² they cannot reproduce the entire spectrum of colors that we see with our eyes.

Today's cinematography can only produce images that approximate our visual perception. It's impossible to mimic exactly what and how we see. For instance, a night scene shot without additional lights will only result in pitch-dark images. But with artificial lighting, a nocturnal ambiance can be simulated for the scene, thus delivering a more authentic viewing experience for the audience.

When the sun sets at seven o'clock in the evening, the color temperature drops lower and the pictures we shoot will appear warmer.³ The remedy is to add a blue-tinted lens filter to rebalance the color temperature, or to color correct in post production. It's a rather complicated and technical process. After all, we must do our best to reproduce images that closely resemble our visual perception.

Since human vision is not the same as camera vision, a director should understand what causes such differences. With this knowledge, better than anticipated results can be achieved. *Eye, Film & Camera in Color Photography* written by Ralph M. Evans has detailed explanation of the intricate correlations between visual perception and image enhancement. Those interested in this topic should read up on it.

Because images in cinema can be mechanically and deliberately manipulated, the responsibility of a film director is to be knowledgeable about how to effectively utilize, juxtapose and enhance certain sequences of images, and to apply cinematographic techniques using lights, camera angles, lenses, film processing, physical colors, etc., to make the images work for the film. Image manipulation is a cinematic art no less important than scriptwriting, acting and editing.

Sergei Eisenstein⁴ was the first filmmaker to pay attention to the effects of interrelated images. He understands the art of juxtaposition. A woman is seen dressed in black. Hiding her face behind a black veil, she weeps sorrowfully by a gravestone. This shot suggests to the viewers that she is a widow. Next, an old man walks over to console her, "Don't be too sad, there are so many good men out there who are better than your husband." This further establishes that she is indeed a widow, and implies that her husband is buried in the grave. In the third shot, the woman responds, "Yes, he's right in there!" The effects of interrelated images and juxtaposition are undoubtedly persuasive.

Many of you must be interested in taking photos. A wide angle lens can include a lot more objects in a shot. But with a narrow-angle telephoto lens, faraway objects will appear much closer. In cinematography, these two types of lenses can do a lot more tricks.

Filming a horse running towards the camera through a long telephoto lens compresses the depth of the image and makes the horse appear to be galloping incessantly, but not getting much closer to us. But through a wide-angle lens, the horse would appear to be approaching us rapidly. Conversely when filming a horse

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racing across the screen with a telephoto lens, the horse would traverse through the shot with great speed. But with a wide lens, its movement would appear a lot slower.

Indeed, through choice of lens, our impression of speed on screen can be greatly altered. When we need the performance of a speedy runner, we can simply have the actor racing towards the camera, and film the shot with a wide-angle lens to attain the effect of great speed. The wider the lens, the faster it appears.

Without having to resort to the ultra wide fisheye lens, the effect of speed has already been well demonstrated in Chinese cinema. When filming a horse running across the screen with a telephoto lens, and if greater speed is desired, inserting vertical objects such as fences or trees near the camera, will further enhance the impression of speed. Be careful not to misplace the vertical elements too far away, or they would appear to be moving backwards.

Old school filmmaking believes that the audience should be able to see all things clearly on screen. While the tone and mood is not so much of a priority, everything is expected to be front lit, straight on.

When I made my most recent film,⁵ I carried out a tiny experiment. Shots were backlit whenever possible. I pointed the camera towards the sun or sources of light, positioning my subjects in between, and I thought the resulting tone and mood was quite authentic. Not sure what you all think of it, but I have to convince myself first that the tone and mood is genuine, so you can appreciate it too. Even though it was very challenging to deal with the vastly contrasting levels of brightness, filming primarily with bounce boards and backlights effectively contoured my subjects in silhouettes, yielding a peculiar hint of mystery.

Transcribed by Du Liang Ti⁶.

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¹ Eastman Color Negative film 5254/7254 100T was introduced in 1964 and discontinued in March, 1977.

² Blue, green and red.

³ Color temperature of evening sunlight reads lower than 3500°K (degrees Kelvin) and appears warmer (orange-red) than daylight

at 5500°K.

⁴ Sergei Eisenstein (1898-1948). Russian director, film theorist, and educator.

⁵ *A Touch of Zen* (1969).

⁶ 杜良媿