

-Techniques of Television Camera

Camera & its Parts

A camera is an optical instrument that records images that can be stored directly, transmitted to another location, or both. These images may be still photographs or moving images such as videos or movies. The term *camera* comes from the word *camera obscura* (Latin for "dark chamber").

- Lens - It draws the light into the camera and focuses it on the film plane.
- Shutter - It opens and closes to control the length of time light strikes the film. There are two types of shutters: a leaf shutter, located between or just behind the lens elements, and a focal plane shutter, located in front of the film plane.
- Shutter Release - The button that releases or "trips" the shutter mechanism.
- Aperture - It dilates and contracts to control the diameter of the hole that the light passes through, to let in more or less light. It is controlled by the f-stop ring.
- Viewfinder - The "window" through which you look to frame your picture.
- Film Rewind Knob-This knob rewinds the film back into the film cassette.
- Camera Body - The casing of the camera which holds and encloses the camera parts.
- Flashes Shoe - This is the point at which the flash or flash cube is mounted or attached.
- Self-Timer - This mechanism trips the shutter after a short delay - usually 7 to 10 seconds - allowing everyone to be in the photograph.
- Shutter Speed Control - This knob controls the length of time the shutter remains open. Typical shutter speeds are measured in fractions of a second, such as: 1/30 1/60 1/125 1/250 1/500 and 1/1000 of a second.

Camera Features & Effects

This section deals with some of the important features of a camera and their effects

- Focal Length- The distance from the optical centre of the lens to the point where the image is seen in focus by the lens.
- Wide-Angle Lenses- The wide angle lens can show a large field of view. It is used to shoot large groups of people. It can also create an illusion of speed and is most suitable for high action shots such as speeding cars.
- Telephoto Lenses – It is just opposite to Wide-Angle lenses because it does not have a large field of view, it needs constant focussing and zooming makes the movements slower.
- Macro Setting- Zoom lenses often have a macro setting that allows to focus on an object very close to the front element of the lens.
- Focus- In lighting, to vary a spotlight's beam size and intensity; the sharpness with which a shot appears.

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- Depth of Field- The range in which all objects in front of the camera lens appear to be in focus is called depth of field.
- Aperture - It dilates and contracts to control the diameter of the hole that the light passes through, to let in more or less light. It is controlled by the f-stop ring.
- Shutter Speed- The length of time a shutter remains open to allow light to reach the CCD is called shutter speed.
- White Balance- A function that tells the camera what colour white looks like, achieved by the use of a white card when the camera shifts from one location to another with different colour temperature.
- Aspect Ratio- The ratio of the width of the frame to its height 4:3.

Camera Mounting Equipments

The two most common types of supporting or mounting device are Tripod and Human Shoulders. The following are Camera Mounting Equipments:-

- Tripods- It is a three-legged device for supporting the camera, Camera is mounted on the top of the three legs is a tripod head- a device with handle allows the camera to move smoothly. The adjustable legs allow for the tripod to be levelled even on uneven surface. The camera can be raised up from 2 to 6 feet.
- Dollies- Dollies come from various sizes. Usually, one person drives or pulls the dolly while another operates the camera. They are excellent for moves that involve forward and backward.
- Cranes & Jibs- Cranes are large pieces of equipment used in outdoor that can move the camera from very low to very high above the set. Cranes move forward, backward, sideways and in arcs. Jib-arms are known as Jibs they are the smaller version of cranes they are used to swing the camera out over an area. They are small and used for indoor shoot.
- Track & Trolley- The horizontal band across the time line window that graphically represents a series of clips. In this equipment the camera is mounted. It requires a great amount of practice to work on track & trolley since the speed and control are crucial factor in executing track shots.

Camera Movements

- Pan/Tilt- To include or exclude the subjects. To show spatial relationships. To shift attention. To build or clear suspense. To show panoramic views.
- Dolly/ Track In- To exclude some objects. To focus attention on part of action. To shift emphasis on an object or part of action. To create subjective movements. Increase emotional tension within the frames. To decrease field of view. To get closer to subject.
- Dolly/Track Out- To increase field of view. To go farther away from objects. To include more objects. To create subjective movements. Decrease tension.
- Truck/Crab Right or Left- To follow moving subjects across the screen. To reveal context. To create subjective movements. To emphasise depth of field.

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- Arc Left or Right-To provide fresh point of view. Exclude or include the background or foreground. To reframe a shot. To provide subjects position to the set/ location. To avoid transitions and maintain continuity.
- Zoom In/Out- To adjust framing by removing or including certain objects. To get a bigger view of far away objects or get a wider shot when the normal lens cannot provide the desired field. To increase the flexibility in terms of production. To produce distorted images or otherwise.
- Ped Up/Down- To show the relationship between foreground and background. Ped up helps in seeing foreground and overall action even while decreasing the significance of the primary subject. Ped down helps see primary subject in the foreground and lends significance to them. Ped up and Ped down together provide fresh view points.

Camera Angles

- Top Angle- It is not as extreme as a bird's eye view. The camera is elevated above the action using a crane to give a general overview. High angles make the object photographed seem smaller, and less significant (or scary). The object or character often gets swallowed up by their setting - they become part of a wider picture.
- Eye Level-A fairly neutral shot; the camera is positioned as though it is a human actually observing a scene, so that e.g. actors' heads are on a level with the focus. The camera will be placed approximately five to six feet from the ground.
- Low Angle - These increase height and give a sense of speeded motion. Low angles help give a sense of confusion to a viewer, of powerlessness within the action of a scene. The background of a low angle shot will tend to be just sky or ceiling, the lack of detail about the setting adding to the disorientation of the viewer.

Camera Distance

The actual distance of the lens from the objects is capable of resulting in different compositions. Different camera distances (normally it is altered through physical shifting of the camera or using a zoom lens) provide different perspectives of an object. Often the camera distance & the lens angle are adjusted simultaneously to produce changes to size relationships in shot.

Camera Lens & its Uses

- Zoom Lenses- is a mechanical assembly of lens elements for which the focal length (and thus angle of view) can be varied, as opposed to a fixed focal length (FFL) lens.
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- Telephoto Lenses – It is just opposite to Wide-Angle lenses because it does not have a large field of view, it needs constant focussing and zooming makes the movements slower.

Shot

A series of frames; the number of frames shot between the switching on and off the record button on the camera.

Different Types of Shots

- Extreme wide shot (EWS) -shows a broad view of the surroundings around the character and conveys scale, distance, and geographic location.
- Wide shot (WS) -shows an entire character from head to toe.
- Mid Long shot (MLS) - shows a character usually cut off across the legs above or below the knees. It is wide enough to show the physical setting in which the action is taking place, yet it is close enough to show facial expression.
- Medium shot (MS) -shows a character's upper-body, arms, and head.
- Medium Close-up (MCU) -shows reaction and indicates what subject is feeling.
- Close-up shot (CU) -shows a character's face and shoulders. It is close enough to show subtle facial expressions clearly.
- Extreme close-up shot (ECU) -shows only a part of a character's face. It fills the screen with the details of a subject.

Lighting Instruments

Sun is the primary source of light-even for video productions-unless shooting indoors. The early morning and the evening sun throw long shadows, whereas the shadows are shorter during afternoon. As the sun moves across the sky, there are subtle colour shifts.

There are numerous artificial lighting sources in the form of tungsten light. Not all tungsten is 3200 K. A common 100-watt light bulb, as seen earlier, is 2800K. Since fluorescent lamps produce greenish blue hue/light, colour balanced fluorescent tubes are now largely used in most studios because they produce cool & result in good picture

Following are the most common lighting instruments used in video production:-

- Sun Gun- They come in handy when they want to shoot in big area with light. Sun guns are very cost effective but produce a flat effect. To achieve softer results and avoid stark shadows, the light is best reflected off surface.
- Fresnel- They produce a lot of heat and are being slowly replaced by fluorescent lights, which are also called cool light. The light is controlled by using barn doors.
- HMIs- It stands for Hydrargyrum medium arc-length iodide. They are used to replace the day light. They are flood light used at indoor shoot whether its day or night shoot.
- Cool Fluorescent Lights- They score over the tungsten lamps because they produce less heat and are most useful in studio situations. The advantage is they produce 90% light and 10% heat only.

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- Soft Light- They are also known as soft-boxes or floodlights. Although these lights produce soft and diffused light to cover broad areas, their spread can hardly be controlled and require cutters to prevent undesirable areas being lit.
- Follow Spots- They throw narrow beams used to follow characters and find use in entertainment programmes.
- Gobos- These are small or big stencils or cut-outs used with lights, which throw pattern of leaves, windows and other decorative images.

Following are the most common lighting accessories used in video production:-

- Gels- Coloured gelatine sheets. They are placed in front of the lights will create different intensities of reds, yellows and blues.
- Diffusers- Flame-Proof 'Spun' fibreglass fixed over lamp as in frame, like butter sheets are supported in large frame.
- Reflectors- Including white umbrellas and handheld circular flexible material and white thermocoal. There are two types of reflectors hard & soft. The hard reflectors are a flat surface, either hand held or stand mounted with a polished surface to reflect light. Soft reflectors are flexible or foldable and fabric made. One side gold and the other silver or pure white.
- Reflectors Outdoors- Early morning & late afternoons are the best times to use reflectors.
- Reflectors Indoors- They are used to bounce off strong light from a window or even from the artificial lights.
- Scrims- They are perforated, thin metal sheets that reduce the intensity and soften light to certain extent.
- Barndoor- They are two or four panels in front of the light, used to shape the beam & shade the camera lens or scene.

Properties of Light

- Intensity-Light intensity refers to the luminous power of a light source and it is usually measured in candelas. This is the strength of light as transmitted from a source of light. Some of the more common measurements include radiant intensity and luminous intensity.
- Colour Quality- It is a quantitative measure of the ability of a light source to reproduce colours of illuminated objects. Developed by researchers at NIST, the measure is a possible answer to the criticism of the widely used colour rendering index. It is based on coloured samples used in the Colour Quality Scale. Predictions of the CQS and results from visual measurements were compared.
- Dispersion- Visible light is actually made up of different colours. Each colour bends by a different amount when refracted by glass. That's why visible light is split, or dispersed, into different colours when it passes through a lens or prism. Shorter wavelengths, like purple and blue light, bend the most. Longer wavelengths, like red and orange light, bend the least.
- Direction-
When it comes to the direction of light, there are 360 degrees of possibilities. When the

light isn't working for you, change it by moving your position, your subject's position, or the light itself, if possible.

- Scripting & Editing

Script

It always develops from the idea, a TV news copy that has voice over's, sound bites, stand-ups, the visuals list.

Treatment

A film treatment or treatment is a piece of prose, and the first draft of a screenplay for a motion picture, television program, or radio play. It is generally longer and more detailed than an outline or one-page synopsis, and it may include details of directorial style that an outline omits. Treatments read like a short story, except they are told in the present tense and describe events as they happen.

Storyboard

Pictorial representation of shots in a sequential order. It is very handy during shooting shorter videos like commercial or public service messages. In other words it is a graphic organizer in the form of illustrations or images displayed in sequence for the purpose of pre-visualizing a motion picture, animation, motion graphic or interactive media sequence.

Genres & Formats

TV genres are categories of programmes that have similar characteristics. They are broadly classified as fiction & non-fiction.

- Drama- Single episode dramas, serials and soap operas.
- Factual- Documentary, science, consumer programmes, business programmes, ethnographic films, crime investigation.
- News & Current Affairs- Daily newscast and all other programmes coming up on news channels.
- Arts-Theatre, music, dance, cinema, visual arts, photography and literature.
- Entertainment- Comedy, game show, sitcoms, popular music, chat shows, variety shows and satire.
- Children's Programmes- Shows drama, cartoons, and entertainment.
- Religion- Issues of mortality, faith and belief as well as acts of worship.
- Sports- Magazine and news programmes as well as coverage of sports events.
- Youth Programmes-Magazines on youth, college life, etc.
- Education-Programmes made for use by school and college students.

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- Women's Programmes- All programmes aimed at women. While there are several genres, they can be presented to audience in different forms. Producers normally use the following formats to present the above genres.
- Demonstration- As the name suggests, demonstration is a programme that focuses on demonstrating the way something is done or works. A demonstration may be shot in the studio or on the field.
- Documentary- A documentary explores a topic in depth. Most often, the treatment for a documentary is first written out and shot and the final script written before actually editing it.
- Dharma- A drama has actor playing the parts of a story's characters. The story, which develops through various events, involves audience. It demands considerable preparation time because the actors must learn their lines.
- Animation-Animation involves combining still drawings at the rate of 25 frames per second to produce the illusion of movement. The means 25 separate pictures of each second of picture is drawn out.
- Illustrated Talk- Usually involving an expert or a host, the illustrated talk normally uses a lot of illustrations as cutaways to show what the presenter is talking about.
- Puppets- Puppets are yet another effective and novel way of presenting interesting programmes. Rehearsal time is less than that required for drama or animation. However, if the puppets are not made attractively made, it can result in a damp show.
- Graphics- Graphics means painted pictures and words. They are done manually or by using software. The camera moves across the graphics to create a sense of movement. Care must be taken to draw all pictures in the right aspect ratio (4:3).

Introduction to Editing

Editing is the process of selecting and re-recording just the good footage, eliminating the bad. In other words it is a process in the post-production like including titling, effects etc. It is a process of joining a series of disjointed shots to create meaningful scenes and sequence in turn a film in totality. Omitting the unwanted, irrelevant scenes. Increase or Decrease the duration of the programme.

Editing Theories

Editing has travelled a long way- from simple continuity editing to complex and dynamic MTV style of editing. As long video is delivered on television, it can afford to show shots ranging from ECU to MLS and sometimes long shots. When a sequence concluded, there would be a fade-out or a title that would take us to the next sequence.

❖ Montage

- A single pictorial composition made by juxtaposing or superimposing many pictures or designs. The art or process of making a composition of different shots.
- A relatively rapid succession of different shots in a scene. The juxtaposition of such successive shots as a cinematic technique.

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- Metric Montage- The shots are joined together according to their length, with the absolute length if the piece already determined.
 - Rhythmic Montage- The action within the frame is given as much weight as the actual physical length of each shot.
 - Tonal Montage- The emotional tone of a sequence directs the montage. This montage follows the cognitive reaction audience members have to certain presentation of real-world experience.
 - Over Tonal Montage- It is a combination of all the three types of montage discussed above. It follows the cognitive component of the tonal montage, and then adds emotional response to it through additional montage elements.
- ❖ Linear Editing
- Linear video editing is a video editing post-production process of selecting, arranging and modifying images and sound in a predetermined, ordered sequence. In other words traditional form of tape to tape video editing.
- ❖ Non-Linear Editing
- A non-linear editing system is a video or audio editing, digital audio workstation system that performs non-destructive editing on source material. In other words the digitising & random access of clips to edit on a computer; is also known as digital editing.