AUDIO VISUAL PRODUCTION

Video Production (Production)

Diploma in Multimedia and Animation (DMA)
Audio Visual Production

Block – III: Video Production (Production)

Odisha State Open University
Audio Visual Production

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Course Overview

Welcome to Video-Production

Video production is an entry-level course that will serve as an introduction to basic video/film/audio production. The goal of the course is for the student to develop the ability to capture and audio relevant video images and audio, aspects and to be able to edit those elements into a harmonised and meaningful programme or film. This process involves shooting, composition, lighting, audio recording, editing and much more. Upon completion of this training production training course, students will gain a basic understanding of principles, techniques and essential elements of video production. Most important, the course will provide an opportunity for you to create a variety of video productions, allowing you to express personal creativity while developing the ability to conceptualize story, idea, send effectively translate these ideas into captivating visual forms.

Know your Equipment

Starting from the early days of analogue production to present digital era, the standard and quality of equipment may have varied but the basic process is almost the same. As we all are aware that the starting process is filming your subject, and this filming or shooting is carried out by a camera. So this unit of the course is dedicated to make you familiar to your shooting device.

Lights and Camera Support

The light creates images on the sensor of the camera through lenses. The light condition decides the quality of images that will be formed so it should always be kept in mind as to how to use the light according to our needs. The camera supports such as tripods, trolleys, rigs also are an important part of camera
handling. The other camera equipment creates different kind of effect in the image capturing process.

Clapboard & Sound Equipment

After camera and lights, clapboards, various audio equipments and field monitors are the necessities for proper and systematic production. These devices have evolved during course of time and change of technology.

Blocking & Rehearsal

Proper camera placement, proper lighting and proper rehearsal of subject could lead to a good production material. In case of fiction shoot it is advisable to rehearse your subject more and more so as to give perfect shot in less number of takes.

Course outcomes

Upon completion of Video-Production you will be able to:

- Learn to operate a Film/video camera.
- Capture well composed video images.
- Capture great quality sound.
- Edit video and audio into a compelling story.

Timeframe

This course will be completed within “2” classes.
This course is of “1” credits.
4 Hours of study time is required to complete this unit.
Study skills

Learning about the audio visual productions are a part of Multimedia Coaching. But, when it comes to creation of an output, there is no specific ABC formula for doing so. It is just like a painting in which the artists choose the colour and proportion according to the need, not as per a written plan.

In creating outputs for TV, Films etc. we have to utilize the software tools from one corner to another randomly. So for every project, the formula is different. There is no fixed recipe for all kind of output. So, the more and more you learn about the options, more variety you will get. Each and every option is explained step by step in the course material.

Apart from this course material, the learner has to adopt the tendency of learning from multiple sources i.e.,

- Internet tutorials
- Video tutorials on youtube
- Collaboration with people working in the industry etc.

Only classroom study will not make you a professional. You have to be active to grab the opportunity of learning wherever you get a chance.

Need help?

In case of any help needed you can browse the internet sites like youtube.com for video tutorials about the subject.
Assignments

There will be some assignments at the end of each unit. These assignments are mostly practical based and should be submitted in CD or DVD. Theoretical assignments are to be submitted neatly written on A4 size sheet.

All assignments will be submitted to respective study centre of Odisha State Open University or as directed by Co-ordinator.

All assignment should be unit wise on separate CD/DVDs clearly mentioning course title and unit on Top. Theoretical Assignment will be neatly filed or spiral bind with cover clearly mentioning necessary information of course.

Assessments

There will be “1” assessment for each unit.

All practical assessment will be submitted to OSOU.

Assessment will take place once at the end of each unit.

Learner will be allowed to complete the assessment within stipulated time frame given by the university.
Getting around this Course material

Margin icons

While working through this Course material you will notice the frequent use of margin icons. These icons serve to “signpost” a particular piece of text, a new task or change in activity; they have been included to help you to find your way around this Course material.

A complete icon set is shown below. We suggest that you familiarize yourself with the icons and their meaning before starting your study.

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Unit-1

Know your Equipment

Introduction

Every video production starts with a camera and ends on an editing table. Starting from the early days of analogue production to present digital era the standard and quality of equipment may have varied but the basic process is almost the same. As we all are aware that the starting process is filming your subject, and this filming or shooting is carried out by a camera. So this unit of the course is dedicated to make you familiar to your shooting device. You will be going through a full on theory and practical knowledge of various kind of cameras presently used in field. You will come across varieties of terminologies and use of the buttons of the cameras.

Outcomes

Upon completion of this unit you will be able to:

- Learn to operate a video camera
- Differentiate between types of camera used for shooting.
- Describe the Lens.
- Explain the characteristics of DSLR Camera.

Terminology

<table>
<thead>
<tr>
<th>Lens:</th>
<th>A transparent material which have at least one side spherical.</th>
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<tr>
<td>Camera:</td>
<td>A dark box with a hole to capture the image.</td>
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<tr>
<td>Filming:</td>
<td>The process of shooting a film.</td>
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**Cameras and accessories**

Camera is the first gateway to the world of filmmaking or video production. A camera is a dark box with a lens and a small opening for the light to enter. But the very first camera did not have a lens. Unbelievable! Yes the pinhole camera was the very first still camera to portray an image on a wall of a dark room just through a tiny hole. Such is the magical world of cameras or you can say you can create magic with light through cameras in your hand. In this course you will be having hands on knowledge on various types of cameras. Starting from regular video cameras to the still cameras which are also used for shooting video images Along with it the accessories required with a camera such as use of different kinds of lenses and tripods, trolleys, cranes, dolly, rigs and jimmy are also covered in this part.

**Different types of cameras**

The most common camera types used by professionals and semi-professionals are analogue and digital cameras.

**Analogue Camera**

The analogue cameras work on the principle of magnetic recording system. It converts the light images into magnetic information.

The two presently used analogue cameras are DVCAM and BETACAM

**DVCAM**

DVCAM is a variation of the DV format developed by Sony with an aim to function at the semi-professional and lower-end professional market. DVCAM uses the tape format for recording images. Sony HVR-Z7U is commonly used for this format. HD cameras record the pictures and sounds on the hard disc only.
BETACAM
BETACAM is a higher version of tape based image recording device designed by Sony for professionals with a half inch cassette. The image recorded and produced by BETACAM are superior in quality compared to DVCAM.

Digital cameras
The digital cameras work on the principle of pixels recording system. The light images are converted into pixels form on the recording device.

Now coming to the digital world of cameras we have a number of options to try with. Starting from daily use smartphones to highly sophisticated chip based cameras its so easy and fun to work with
and bring out your creativity. The various digital cameras are cinema cameras like RED, BLACKMAGIC, ARRI, then the studio and broadcast cameras, and the familiar camcorders, the newly popular mirrorless and DSLR cameras and nonetheless our mate in our pocket i.e. our cell phones.

**RED**

The RED camera is a 4K digital cinema camera. It is initially aimed at Cinema style shooting, meaning that it is in many ways like a traditional film camera. It uses traditional film lenses and other film hardware including matte boxes and follow focus systems. But instead of shooting film it shoots digitally means it records images on harddisks or digital storage devices. The RED camera comes in different models like ONE, EPIC, SCARLET.

![RED camera](https://www.flickr.com/photos/roge/14289690222/)

**Title**-RED 4K digital Cinema Camera  
**Attribution**-Roge  
**Source**-[https://www.flickr.com/photos/roge/14289690222/](https://www.flickr.com/photos/roge/14289690222/)  

**H.D. Cameras – These are High Dimensions Cameras presently used in various shootings without the necessity of inserting DVD’s or cassettes.**

**Blackmagic**

**Black magic** is an Australian digital cinema company. Like RED camera it is also a direct shoot and record camera. It provides an incomparable range of lenses compatibility. It also comes with an advantage that the
Company provides an editing platform to support easy editing of the recorded materials. It comes in 2K, 4K and 8K variants.

**Title**- Blackmagic Design Cinema Camera  
**Attribution**- Morio  

**ARRI ALEXA**  
ARRI ALEXA, a very familiar name among film makers aims at high class video image production. ARRI who was first into celluloid film cameras manufacturing came up with a digital version to cope up with the market with ALEXA model. This is the first camera of the Alexa product family. The ARRI ALEXA's CMOS Super-35mm sensor is rated at 2.8K and ISO 800. That sensitivity allows the camera to see a full seven stops of over exposure and another seven stops of underexposure, an unprecedented Dynamic Range. To take advantage of this, ARRI offers both industry-standard REC709 HD video output as well as the Log-C mode that shows the entire range of the chip’s sensitivity, allowing for an extreme range of colour correction options in post. It is used mostly in shooting films along with studio shoots and commercials.
Camcorders

The camcorders are the most user friendly device that can be operated by almost anyone. The semi-professional camcorders like Sony PWM and Panasonic P2 series are in regular use nowadays mostly in news and documentary shoot sectors.

The ease of working and budget affordability makes it a first choice. The HD quality video images produced without any extra lights are its plus points. One can just point and shoot with these cameras.

Mirrorless & DSLR Cameras

In last few years the DSLR cameras have evolved as a handy medium of capturing still as well as video images simultaneously. The DSLR cameras which were thought to be only still cameras are now a very effective video capturing device too.
The qualities of images captured are very high and nowadays most DSLR are providing 1080 pixel quality video images. So any amateur can also shoot great images with much ease. The mirrorless cameras are the same as DSLR but in the place of a mirror it comes with a sensor which decides how much light information to catch for the image. Canon 5D, Nikon D750 is most popular players. These cameras like other professional cameras come with interchangeable lenses required for different needs.

**Smart Phones**

The present day Smartphone’s, the one device which replaced almost all other gadgets which used to serve our daily needs starting from clock to compass and TV to radio has now also evolved as a replacement to the cameras. The everyday developments in Smartphone technology has made Smartphone so capable of filming still and videos that people are now shooting films with them. Pocket friendly device loaded with 20-30 megapixel camera and sensor are the most effective device for shooting. Nowadays editing can also be done on a Smartphone.
Most Important- Whether indoor or outdoor recording, it is extremely essential to have a white balancing, just before the shooting.

Camera Accessories

Now you are fully aware of different types of cameras, it’s now time that you also get to know about other accessories that are required for smooth and better shooting experience. Most of the compatible accessories come along with the camera itself. The accessories required with a camera such as use of different kinds of lenses and tripods, trolleys, cranes, dolly, rigs and jimmy are also covered in this part.

There are other accessories which are available in the market. The main accessories required for camera operation are lens, battery, microphone, tapes and micro cards or hard disks, headphones.

Lens

Lens is the eye of the camera. The light after falling upon the target subject enters through the lens and produces the image on the image plane. The lens contains an iris which controls the amount of light. The lens is mainly categorized as fixed lens, telephoto lens wide angle lens and normal lens.
Fixed Lens / Block Lens

A fixed lens also known as block lens and also referred as prime lens. The fixed focal length lens (FFL) has a focal length that is not adjustable. Photographers are unable to zoom in and out on a particular subject when using a prime lens. In other words we shoot what our normal eyes see from the specific position. Mostly the block lenses are available in 50mm and 85mm focal length.

Title-Lens
Attribution-fernandozhiminaicela

Telephoto lens

A telephoto lens is called so because it brings distant objects nearer to us through zooming on it. A telephoto or zoom lens is made up of number of lenses which helps the cameraman to zoom in or zoom out on a subject while not physically moving but still concentrating on the subject from a fixed point. The lenses with a focal length above 100mm are known as zoom lens. They may come up to 135-300mm.

Title-Telephoto Lens
Attribution-allupinc
Unit-1 Know your Equipment

Wide angle lens

In photography and cinematography, a wide-angle lens refers to a lens whose focal length is substantially smaller than the focal length of a normal lens for a given film plane. This type of lens allows more of the scene to be included in the photograph, which is useful in architectural, interior and landscape photography where the photographer may not be able to move farther from the scene to photograph it.

Another use is where the photographer wishes to emphasise the difference in size or distance between objects in the foreground and the background; nearby objects appear very large and objects at a moderate distance appear small and far away.

Specialist lenses

Other than these 3 types of lenses some lenses come with multi-function such as super telephoto, macro and fisheye shooting modes. They are collectively called specialist lens. Their zoom range may vary from 5mm-2000mm.
Tapes and Storage device

Depending on the cameras the images captured are recorded on tapes and digital storage devices such as memory cards and solid state hard disks. The analogue cameras usually use various kinds of tapes whereas digital cameras use digital recording mediums.

Tapes

The tapes used in video cameras are magnetic tapes on which the images shot are recorded using a rolling magnetic head which writes the visual and audio information on the tapes. There are two types of tapes mostly used in shooting which are quarter inch and half inch tapes, otherwise known as DV tape and BETA tape.

**DVcam** Sony’s variant of the DV (Digital Video) format. Developed for professional use, DVCAM improves quality by increasing the tape speed and track pitch. The increased track size uses more tape because DV tracks are recorded on the diagonal. In addition, it "locks the audio," which prevents the audio from drifting out of sync with the video. DVCAM uses the same metal evaporated (ME) tape as does DV and DVCAM cassettes can be played in DVCAM and DVCPRO tape decks. DVCAM VTRs can also play and record DV cassettes.

**Betacam** is a high-quality videotape technology introduced by Sony.
in 1982. Betacam evolved from Sony's Betamax consumer format, but with a large increase in tape speed and using component video signal separation rather than composite video. Betacam was designed for professional TV recording.

Digital Storage Devices

Most of the present day digital cameras starting from point and shoot to highly professional filmmaking cameras use digital devices to store recorded visual and audio materials as files in pixel formats. These devices are categorized as solid state hard disks and memory cards. These digital devices have an advantage that unwanted files can be deleted on the spot itself releasing more space for shoot and they are very sturdy as well as handy.
Unit Summary

In this unit we learnt about the first basic equipment required for video production that is the camera. We also learnt about different types of camera. We also came across the other camera accessories such as lens, tapes and digital storage devices which are also required for video production.

Assignments

- What is a camera?
- What are different types of camera depending on signal?
- What is the work of a lens?
- A camera can work without lens. True or false?
- Name the different type of lens.
- How mirror less camera is different from DSLR?
- What is the focal length of a fixed length?

Resources

Further reading:

- Mixing secrets for the small studio
  Senior, Mike.
- Fundamentals of Digital Audio
  Alan P. Kefauver and David Patschke
- Visual Studio 2013 Cookbook
  Bruce Johnson
- Audio Effects Workshop
  Geoffrey Francis
- How to shoot Video that doesn’t suck
  Stockman, Steve, 1958
- The Book of Audacity : record, edit, mix and master with the free audio editor
  Schroder, Carla
Unit 2

Lights and Camera Supports

Introduction

As we all know light is the main pivotal element behind photography or videography. The light creates images on the sensor of the camera through lenses. The light condition decides the quality of images that will be formed so it should always be kept in mind as to how to use the light according to our needs. Most of the cameras use available ambient light to record subject whereas some need extra artificial lights to create good images. The camera supports such as tripods, trolleys, rigs also are an important part of camera handling. The other camera equipment creates different kind of effect in the image capturing process. In this section you will come across some of these regular used lights and camera supports.

Outcomes

Upon completion of this unit you will be able to:

- Learn about different kinds of lights & the source used in outdoor and indoor shoot.
- Learn about different light accessories used along with the lights for shoot.
- Learn about different kinds of camera supports used.

Terminology

Gels: A gel is a transparent material with different colours which filters the source light and adds to focal variety of effective shooting.

Fluorescent A kind of lights used for shooting. It will
lights: capable of generating up to 100 lumens per watt.

LED: Light Emitting Diode.

Lights

As mentioned earlier the main factor for good images is good light condition. The lights are divided as natural and artificial depending on the source. The main source of natural light is sun whereas the artificial lights are manufactured according to the demand of intensity required. Some of the artificial lights used are soft lights, tungsten and hard lights. Some of the soft lights are fluorescent and LEDs

Fluorescent lights

A fluorescent lamp uses the excitement of low pressure mercury vapour to produce ultra-violet light, in turn causing a phosphor coating inside of the glass tube to glow radiating light in the visible spectrum. A fluorescent light is much more efficient than an incandescent light, and is capable of generating up to 100 lumens per watt, similar to the output of HMI.

Title-Fluorescent light
Attribution- Christian Taube
Link-https://commons.wikimedia.org/wiki/File:Leuchtstofflampen-chtaube050409.jpg
LED

LED stands for light emitting diode and is a solid-state semiconductor device. Only recently, LED’s of sufficient power have become available to make practical LED film lighting possible. LED’s are extremely efficient but are still limited in overall light output when compared to any of the other light sources.

LED lights can be daylight or tungsten balanced, sometimes switchable or having variable color temperature. Some have variable color through the entire RGB spectrum, which is something not possible with any other lighting technology. The CRI rating of LED lighting can be over 90. Some of the hard lights are open face lights, Fresnel lights and HMI. These lights cast very hard intensity of light and shadow.

Open Face lights

An open faced lighting fixture is used to create hard light that casts hard shadows. It is not much more than a housing and reflector for the bulb, and provides nothing in between the bulb and the subject. The commonly known 800W “Redhead” and 2000W “Blonde” are examples of open faced video lights.
Fresnel Lights

A Fresnel lens is a special type of lens which is divided into many concentric circles. It results in a much thinner lens compared to a conventional lens of the same power. This lens evenly throws out the light and allows for the beam to be varied from flood to spot, just by changing the distance between the lamp/reflector unit and the lens. It is also known as Baby lights.

HMI lights

HMI stands for Hydrargyrum medium-arc iodide and is a metal-halide gas discharge medium arc-length lamp. A HMI bulb contains mercury vapour mixed with metal halides. An electrical arc between two electrodes excites the mercury vapour and metal halides resulting in a very high light output and luminous efficiency. HMI lamps are potentially functional between 85 and 108 lumens per watt, up to four times that of conventional incandescent lamps. It almost casts a light of intensity like daylight.

Another kind of light is tungsten/ halogen also known as solar lights. Tungsten light sources are basically related to the same type of incandescent filament bulbs which until recently were common in homes and offices everywhere. These lights lamps operate at a higher temperature than normal incandescent tungsten bulbs, and
so they can achieve a higher colour temperature, and higher luminous efficiency. They naturally produce a warm light, but blue colour correction gels can be used to simulate daylight.

**Light Accessories**

Just getting the appropriate lights while shooting is not enough, you may need some more materials to get the perfect lighting mood and condition. These are called light accessories such as barn doors, gels, cookie, diffuser, flag, umbrella, scrim, silk, reflector, black wrap.

**Barn doors**

Based on the terminology of video and film, barn doors are not utilized for corral farm animals. Consider them like leaves - 2 to 4 of such, as a rule. Now place the entryways before a light source. They would be seen everywhere in lights utilized for TV, film, or Broadway creations. They would be utilized to shape the light and keep it in a place based on your requirement and mask the other where it is not needed. The specialty is that the equipment is very handy and won’t feel tired on utilizing it. Know that the lights may become hot upon use – so in case if there is a requirement for adjusting the barn doors, utilize gloves before using it. On a creation, people generally forgot to wear gloves and simply move the barn doors - that is an awful thought. It controls the quantum of light turning out.

**Gels**

Gel are related with many names - so it may be referred as color filter, color gel, lighting gel or simply gel. Regardless of the name, each element performs the same task. Gel is a material that is transparent with a color. Gels are broadly utilized on photography shoots, photography shoots, theater productions, videography shoots and, obviously, in film production. These gels can also be utilized for correcting the color or adding colour to a scene for a dramatic impact. Thin sheets of polyester or polycarbonate are used to make these gels. These can be placed straightforwardly before the lights. Gels won’t keep going forever; they blur or the greater part of them melt in view of the extreme warmth from the lights. It is used for colour balancing and bringing some dramatic effect.
Cookie

Cookie is basically a shape that is cut out and is put before a hard light. By hard light we mean a light which is small generally, and that can be focused and utilized to deliver shadows and highlights. So we can use these cut out shapes maybe abstract or geometrical place in front of the light to get such patterns in the background or foreground.

Diffuser

Similar to the gel, a diffuser is a translucent bit of material placed before a light for softening shadows and highlights. Likewise a diffuser is utilized to diminish contrast and to enhance the angle of beam. By contrast here we mean the differentiation among one intensity and another or among the lightest and darkest components of a scene. Diffused light means a light that comes via a diffuser. As compared to the hard uncovered light, the diffused light is more capable of creating softer shadows. It is utilized to lessen contrast.

Flag

Flag is called by different names by photographer such as siders, cutters or gobos. Basically its panel is opaque in nature due to which it is utilized to block light and shadow the subject, camera lens or the background. Likewise it can be utilized to hide lights within a scene.

Reflector

Reflectors are basically of two types. The former type is utilized for lightning the indoors. This reflector is bowl-shaped and is available in different sizes. Once in a while any hard white surfaced materials like thermocols are additionally utilized as reflectors. You can use this type of reflector to shape and intensify the light’s beam. For outdoor use the second type reflector is used. These reflectors are basically used to redirect light. They are flat and coloured in white, silver or gold. It is used to redirect and intensify the light beam.
Another very important and useful device that is necessary for good and proper light intensity and that is **light meter** or **exposure meter**. This small device is used to detect the amount of light falling on the subject and adjust the light condition accordingly.
Camera Support

The camera supports are the equipments used to balance and operate the camera other than handheld. They help in smooth operation and creating camera motion effects. Some of these are known as tripods, trolleys, dolly, rigs, jibs and stabilizers etc.

Tripod

A tripod is a portable three-legged frame, used as a platform for supporting the weight and maintaining the stability of camera. Many a times cameraman uses heavy lenses which makes smooth camera operation difficult in handheld condition.

Title-Tripod


The tripod serves the purpose. A tripod provides stability against downward forces and horizontal forces and movements about horizontal axes. It also gives proper level and balance to the camera.

Trolleys or Dolly

A camera dolly is a wheeled cart or similar device used in filmmaking and television production to create smooth horizontal camera movements. The camera is mounted to the
dolly and the camera operator and camera assistant usually ride on the dolly to push the dolly back and forth. The camera dolly is generally used to produce images which involve moving the camera toward or away from a subject while the camera is moving, a technique known as a "dolly shot."

Studio dollies are large and stable and can feature hydraulics. These are the first choice for studio, backlot and location shoots when using professional cameras. A studio dolly usually needs a specialized operator called a "dolly grip", and many are built for the camera operator to ride on the dolly with the camera.

Lightweight dolly systems are simpler, affordable and are best used with lighter-weight cameras. Lightweight systems are usually favoured by independent filmmakers and students because they are easier to carry and operate. These dollies support only the camera, and the operator needs to move alongside. Some lightweight dollies are small enough to be carried in a backpack. Most of the dolly tracks are either straight or circular and semi-circular.

**Cranes / Jibs**

In filmmaking and video production, a crane shot is a shot taken by a camera on a moving crane or jib. Most cranes accommodate both the camera and an operator, but some can be moved
by remote control. Camera cranes go back to the dawn of movie-making, and were frequently used in silent films to enhance the epic nature of large sets and massive crowds. Another use is to move up and away from the actors, a common way of ending a movie.

Crane shots are often found in what are supposed to be emotional or suspenseful scenes. A boom arm helps to move it around easily between ordinary setups.

The traditional design provided seats for both the director and the camera operator, and sometimes a third seat for the cinematographer as well. Large weights on the back of the crane compensate for the weight of the people riding the crane and must be adjusted carefully to avoid the possibility of accidents. During the 1960s, the tallest crane was the Chapman Titan crane, a massive design over 20 feet high that won an Academy Scientific & Engineering award. Most such cranes were manually operated, requiring an experienced boom operator who knew how to vertically raise, lower, and "crab" the camera alongside actors while the crane platform rolled on separate tracks. The crane operator and camera operator had to precisely coordinate their moves so that focus, pan, and camera position all
started and stopped at the same time, requiring great skill and rehearsal. Present day jibs are remote operated and much easier to use as it allows the access to any height and direction.

Rigs / Stabilizers

A rig is a modular piece of equipment used to extend the usefulness of a camera, whether through accommodating additional shooting styles, allowing for additional gear to be mounted safely, or for smoothing out the motion of the shot. To simplify rig is an equipment which not only gives support to camera but also could include additional gears such as microphone and viewfinder monitor. Most of the rigs are attached to body such as steadicam or shoulder rigs as it stabilizes the camera movement while handheld.

Title- Steadycam

Link- https://commons.wikimedia.org/wiki/File:Steadicam_Operator_John_Fr y_with_Master_Steadicam_%26_Arri_Alexa_camera.jpg
Unit summary

In this unit we learnt about different kind of professional and semi-professional lights that are used in day to day shooting or production. Along with the accessories used for various lighting conditions we also learnt about various camera supports such as dolly, jibs and rigs. We can decide which kind of light and camera support we can use according to our shot design.

Assessment

- What is a camera?
- What are different types of cameras depending on signal?
- What is the function of lens?
- A Camera can work without lens. True and False?
- Name different types of lens.
- How mirror less camera is different from DSLR?
- What is the focal length of a fixed length?

Resources

Further reading:

- Mixing secrets for the small studio
  Senior, Mike.
- Fundamentals of Digital Audio
  Alan P. Kefauver and David Patschke
- Visual Studio 2013 Cookbook
  Bruce Johnson
- Audio Effects Workshop
  Geoffrey Francis
- How to shoot Video that doesn’t suck
  Stockman, Steve, 1958
- The Book of Audacity : record, edit, mix and master
  with the free audio editor
  Schroder, Carla
Unit 3

Clapboard & Sound Equipment

Introduction

This unit introduces you to the functionality of clapboards, various audio equipments and field monitors. After camera and lights these are the necessities for proper and systematic production. These devices have evolved during course of time and change of technology.

Outcomes

Upon completion of this unit you will be able to:

• Identify various types of clapboards and their use.
• Identify different sound/audio equipments.
• Plan for audio recording.
• Choose different kind of field monitors.

Terminology

Clapboard: Clapboard is a hinged slate used for proper marking and description of the visuals.

Time Code: Time Code is the digital marking of the tape or celluloid depending upon the length of time it is shot.

Microphone: Microphone is an electromagnetic device used to convert sound energy to electrical energy.
Clapboards

Clapboard also called clapperboard is a device used in filmmaking and video production to assist in the synchronizing of picture and sound, and to designate and mark particular scenes and takes recorded during a production. The sharp "clap" noise that the clapperboard makes can be identified easily on the audio track, and the shutting of the clapstick can be identified easily on the separate visual track. The two tracks can then be precisely synchronised by matching the sound and movement. It is kind of a slate on which the production name, name of director, production title, scene, shot and takes are depicted. There are commonly two kinds of clapboards in use i.e. traditional and digital.

Historical Background of Clapperboards

The clapper board was invented sometime during the early 1920's. Sound was just being introduced to film, and film makers needed a way to synchronize sound with film. Striking the sticks would create a clap sound that would be recorded and later synchronized with the visual film allowing the picture and sound to run in sync. Clappers are still in use today and have become an historic symbol of the motion picture industry. However latest improvisations have brought about, novel methods as substitute to clapboards.

Traditional Clapboards

In the early days of film making, one person would hold a slate for the camera with the scene information, while another clapped two hinged sticks together in front of the camera. The combination of the two into one unit made it possible for one person to perform both tasks.

Title-Clapboard
Attribution- OpenClipart-Vectors

If each scene is tagged at the moment of filming with sufficient identifying information in both visual and audio form, then the film editor does not need to waste time guessing which film clips go with which audio recordings?

Digital clapboards

Digital clapboards are also known as Digislates. The electronic clapperboard is now the default for large film production sets and its main purpose is to transpose a digital timecode onto the clapperboard to communicate to the post-production staff. This allows for a direct connection between production and post-production so that the process can be streamlined and organized for very large-scale projects. You may also find electronic clapperboards that provide even more digital information, often costing up to a few hundred dollars. In general, you are going to find that the standard reflects a traditional clapperboard with the timecode for coordination, but if too much information has to be entered in without writing, it is not as responsive to the set.

The newest wave of the digital clapperboard is in the form of mobile apps, usually for the Apple iPad. Because of the iPad’s physical structure it can reflect the relative size and dimensions of
the clapperboard through the touch screen. Here you enter in the scene information directly as digital information that is then listed on the image of the clapperboard, and then the actual clap used for syncing sound can be done with a graphical imitation of the clap or a substitute like a bright whiteflash.

Sound Equipment

In the field of video production or filmmaking the role of sound or audio is as important as video or visuals. There are different kinds of sound around us which we come across in our daily life. Like the camera is used to video images, special instruments called microphone are used to record these sounds. Though innovation changes every single year, one thing is always constant: the sound is similarly as vital as the visual. Regardless of how inventive and highly executed the video part of the production might be, and wherever it may be posted on YouTube, copied to a DVD or shows up on a major, small or portable screen, the watcher’s experience can be absolutely destroyed by dull sound. A more noteworthy degree than a great many people acknowledge, audio could "make or break" any video or movie venture.

In the realm of expert sound for-video and sound for-movie, The first thing, is the catch, recording, and playback procedures are normally taken care of by various bits of hardware. Secondly, there is an extra transitional stage in which the sound is altered to dispose of errors or fit a specific time limitation, handled to improve quality of the audio, and organized to match a specific deployment medium, for example, online video or DVD.

In the following section we will come across the equipment which are used for recording and reproduction of sound.

Microphones

Microphones or mic are the device used to catch sound waves and amplify them. An exceptionally fundamental need is filled by the microphones i.e.: conversion of acoustic energy (sound) to electrical energy by the electromagnetic process. The sound waves are converted into an audio signal by them such that the product can be recorded, edited, deployed, and amplified for playback. As the microphone’s function is that general, that one may inquire as
to why there are such a large number of various types of microphones. This is on the grounds that a few sorts of amplifiers are more qualified to specific uses than others, similarly as a few cameras are more qualified for use on a tripod in a sufficiently bright studio whereas others are better for handheld use with accessible light. Some microphones are used to record voice while some are used to capture the ambient sounds. If one is familiar with the different types of microphones then one can use them to get the best effect, the productions will start sounding more professional. The microphones are mainly categorized upon their directionality i.e. in which the sound waves they can capture.

In order to speak to larger groups of people, a need arose to increase the volume of the human voice. The earliest devices used to achieve this were acoustic megaphones. Some of the first examples, from fifth century BC Greece, were theatre masks with horn-shaped mouth openings that acoustically amplified the voice of actors in amphitheatres. In 1665, the English physicist Robert Hooke was the first to experiment with a medium other than air with the invention of the "lovers' telephone" made of stretched wire with a cup attached at each end.

German inventor Johann Philipp Reis designed an early sound transmitter that used a metallic strip attached to a vibrating membrane that would produce intermittent current. Better results were achieved with the "liquid transmitter" design in Scottish-American Alexander Graham Bell's telephone of 1876 – the diaphragm was attached to a conductive rod in an acid solution. These systems, however, gave a very poor sound quality. David Edward Hughes invented a carbon microphone in the 1870s.

The first microphone that enabled proper voice telephony was the (loose-contact) carbon microphone. This was independently developed by David Edward Hughes in England and Emile Berliner and Thomas Edison in the US. Thomas Edison refined the carbon microphone into his carbon-button transmitter of 1886. This microphone was employed at the first ever radio broadcast, a performance at the New York Metropolitan Opera House in 1910.

In 1923, the ribbon microphone was introduced which was another type of electromagnetic microphone, believed to have
been developed by Harry F. Olson. It was a kind of reverse-engineered version of a ribbon speaker. These microphones were further developed by several companies but they were kind of raw microphones which would catch all the sound near them. RCA made advancements in pattern control of the diaphragm giving directionality to the microphones. With television and film technology booming there was demand for high fidelity microphones and greater directionality. Electro-Voice responded with their Academy Award-winning shotgun microphone in 1963.

Primarily microphones can be categorised as per the target directions used while recording or covering.

**Omni-directional**

By “Omni” we means “all”, this suggests that a microphone with Omnidirectional feature so it can grab sound from all directions equally. An Omni mic receives a 360 degree COVERAGE sphere, this implies it can grab sound from above, below, in front of, behind, and to the side of the mic. The polar example for an Omni, likewise, is generally spherical. It could have an additive advantage, as a single Omni-directional microphone could be utilized to grab voices from various directions, till every individual voice is roughly in a similar pitch and a similar separation from the microphone.

Largely, an Omni-directional mic grabs a portion of the mood of the circumstance, which can strengthen the visual setting. On the off chance that the scene is occurring on a road corner, and we require the sounds of the considerable number of exercises going around, the Omni-directional mic could be utilized. The handheld mouthpieces utilized by the reporters in news from field and games columnists or reporters are typically Omni directional, enabling the journalist and interviewee to be grabbed by one microphone receiver held amongst them, and conveying a specific measure of surrounding sound. But few disadvantages also exists in utilizing Omni-directional mic. Since they pick up sounds from every corner they cannot be used for those scenes where the dialogue or the sound of the main subject is more necessary. Hence the background noises can create disturbance. They also tend to get more noteworthy measures of room resonation when utilized as a part of rooms that have hard-surfaced dividers and
floors. This can once in a while result in a diffuse, empty, "inside a barrel" sound.

**Bi-directional**

Such microphones are generally used, in case of two persons, facing each other in an interview, live – interaction, or alternative bi-presentation, of a content to match a recording or live telecast.

**Unidirectional**

A microphone with unidirectional feature discards sound originating from back side of the mic whereas continue to grab up sound originating from the front. In other words it captures sound signals from only that direction in which they are faced. Hence, unidirectional microphones could grab only little noise of the background and room resonation and on utilization with the loudspeaker systems they show lesser sensitisation towards ‘feedback’. The ‘feedback’ is a situation of loop sound which occurs when the sound which comes out of the speaker is again caught by the microphone. As the same sound is caught between the mic and speaker it creates a noise like sound. There are different kinds of unidirectional, microphones every one possess a somewhat unique polar pattern and its own particular arrangement of points of strength and weaknesses. Till now cardioid is the highly common sort of unidirectional, it is named as cardioid, on the grounds that it’s polar pattern somehow look alike a heart-moulded figure. Many cardioid mic will grab lesser to as much as half as much sound from the sides, than from the front, and short of what one tenth as much sound from the back than from the front. In this way, the cardioid mic have a tendency to grab most of desired sound (where you are pointing the mic) and little of the undesired sound (where you are not pointing the mic).

**Transducer**

Again the microphones can be divided in two categories depending on the transducers used. The transducer is the mechanism which actually converts sound energy into electrical energy. The two types of transducer are dynamic and condenser.
a) Dynamic Microphones

Dynamic mouthpieces simply utilizes a magnet and loop of wire to change over sound waves into a flag or signal. At the point if a thin diaphragm is appended with a loop of fine wire it starts vibrating if got struck via sound waves. In turn it makes the loop of wire move forward and backward around a magnet, generating a little electricity, which streams out of the microphone’s connector and via the cable of microphone. Dynamic mics of great quality produces a great quality of sound; they can deliver sound with less measure of commotion, are exceptionally tough, and will as a rule endure unpleasant taking care of or extraordinary temperatures and stickiness exposure. Since the Dynamic amplifiers can't be made in little size, numerous handheld and voiceover mics are the dynamic sort, as here the size of the mic isn't a matter.

b) Condenser Microphones

In the Condenser microphones (once in a while called electrets condenser mouthpieces) does not use a dynamic diaphragm rather utilizes a significantly more slender diaphragm extended tight simply over a piece of flat metal or ceramic i.e. metal-coated, also known as back plate. At the point if an electrical charge is fixed electrical charge thereafter it is placed on the diaphragm/back plate assembly, now its electrical yield fluctuates relying upon the diaphragm movements, that in corresponding to sound waves will vibrate. The output signal is to a great degree feeble and reactionary to outside electrical obstruction, be that as it may, it must be altered and additionally amplified and opened up by a circuit called a preamplifier. The location of preamplifier could be the the handle of the mic or in a little outboard or detachable electronic tube or pack. Many advantages are offered by Condenser mouthpieces. Their most vital feature is that they can be built smaller, therefore all mini livelier mics are of condenser variety. Condensers have a tendency to be exceptionally touchy to the extraordinary low and high frequencies, and generally have an extremely fresh, clean sound that improves dialogue intelligibility and also numerous melodic instruments. Their implicit preamplifiers permit condenser microphones to give higher yield than dynamic mics, implying that
for a given sound level, resulting a output electrical signal of greater strength. This might be useful when you are endeavoring to record somebody who talks delicately, or who is more distant far from the mic.

**Handheld**

The most common kind of microphone for general use is the handheld type. While it can be held by the user, mounted on a floor or desk stand, or attached to a flexible “gooseneck” on a lectern, these options result in the mic being very visible, which is not practical in all video productions. A decent quality handheld mic ought to have an inward stun mount which will limit taking care of commotion or noise (pounding sounds transmitted through the handle and got by the mouthpiece cartridge), and it ought to be roughly built to withstand physical manhandle.

Models at the upper end of the value scale will typically produce clearer, more extensive sound range, better mounting of shock, and more strengthened. Sennheiser MD 42 is the most regularly utilized handheld mic.

**Lavalier**

It’s always suggestive to have a Lavalier type of microphone if you have only one microphone in your audio kit. This type of microphone can be attached to a user’s cloth, could be laid on a
podium or in a pinch could be clip to a mic stand. Lavalier mics frees the orator’s hands to signal or exhibit an item, and in light of the fact that they are little they have a tendency to vanish on camera. Likewise, utilizing a lavalier will keep the separation from the mic to the orator’s mouth genuinely consistent, diminishing the requirement for visit change once the levels have been set. In circumstances where the receiver can't be noticeable, it's typically conceivable to hide a lavalier mic under a shirt neckline or even below a thin layer of garments.

Title—Lapel Microphone
Attribution—Terodaktill
Link-https://commons.wikimedia.org/wiki/File:Lavalier_mikrofon.jpg

Besides, a miniature type, lapel microphones having cords can be very easily concealed in the artist’s dress. In addition cordless lapel microphones have been the latest trend giving free movement to the artists – inside or outside the studio. This facilitates, a cameraman, to take shorts from various angles, as per the desirable movement of the artist.

Head worn

A head worn microphone is of great need in situations where the orator’s hands should be free and essential. Head worn mouthpieces can be situated nearer to the orator’s mouth and keep up a steady separation and sound quality even during the movement of orators head while talking.

While headworn receivers are winding up perpetually undercover and are accessible in different skin tones (search for them in Broadway plays and musicals), they will at present be noticeable on camera.
Surface Mounted

Surface mounted mics are developed to grab the sound at a fixed or levelled surface. Surface mount mics are typically physically moulded to look less nosy on a meeting table or work area. The mic component is found near (yet not touching) the surface, with the goal that sound waves reflected from the surface land at the mic component in the meantime as the immediate sound. This viably duplicates the sensitization of the mic contrasted with an unsupported handheld write at a similar separation. (This affectability support accept that the surface is adequately substantial to reflect even sound waves of lower frequencies.)

Shotgun Microphone

The shotgun microphone is so named because the long, slotted tube in front of the microphone cartridge makes it resemble a shotgun.

The presence of “interference tube” helps it to be lesser sensitize for sounds originating from back and sides, compared to other directional mics. A shotgun mic is amazingly directional pickup design (called a line/inclination design) making these well known for news gathering, outside games scope and TV/movie creation.

Shotgun mouthpieces are not zooming focal points for sound or enhancers. They don't enable you to zoom in on a discussion from 100 feet away. Here's a considerably more precise similarity: envision looking through a long tube at a man standing 20 feet away. The individual's picture does not have all the earmarks of being any bigger or closer, but rather is to some degree easy to see, in light of the fact that the eye isn't diverted by things occurring off to either side. This is precisely what shotgun mics do best: screen out sounds originating from the sides, making the sound originating from the front easily audible.

Wireless Components

In short a wireless mic can be called as a mini radio station. The working starts with a conversion process of input sound waves into audio signal by the microphone cartridge. Now the signal is conveyed by a low-control transmitter, and after that grabbed by a receiver present close-by, that changes over the radiofrequency signal once more into sound. This transmitter could be placed in the receivers handle, in a little pack such that one can wear it in the body, or in a piece or tube which could be connected specifically to any standard mouthpiece with a XLR connector. A table top unit, a rack mount unit, or a convenient battery-worked
type that can mount on top or in the camera could be a receiver. A remote framework comprises of the mix of the mouthpiece, transmitter, and recipient. Than a link or wire associates the sound output of the receiver of the camera or sound recorder.

**Portable and Camera Mounted Receivers**

The battery powered portable mics can be accessed and used only with the presence of receiver and transmitter in and around. Such units size wise are very small about the extent of a deck of cards and could be worn on the body or mounted specifically to a camera. Connection is done via a short cable from the receiver’s portable output to the camera’s or recorders audio input. But today we have advanced models that provide a separate output for headphone or an earpiece with the goal that the camera administrator can screen the sound through earphones or an earpiece. A microphone having wireless system is an extremely helpful thing for a video shooting, as here both the camera and the subject might move. For bigger projects where various orators are involved, numerous portable receivers could be connected to an audio recorder that could be carried in a bag.

The other application for a wireless receiver that is portable is feeding sound from a blender to a camera situated over the room. If we take an example of an extensive gathering room, for instance, the sound blender is frequently situated at a side of the stage, whereas the camera is at the back of the room. During situation like this, the wireless transmitters input needs to be connected with the output of the mixer or the blender, and with the portable receiver attached to the camera. Thus the requirement to depend on the internal microphone of the camera or to put extra mics particularly for recording video is eliminated.

**Audio Mixers, Interface and Recorders**

If you view the videos streaming online you could sense that the sound quality is not up to the mark, this is because the video recording takes place via the inbuilt microphone of the camera. Generally the inbuilt cameras microphone are not of superior quality and moreover the mic is placed far from the orator and very close to the cameras autofocus and image stabilization system. What’s more, the sound hardware in the camera may
have excessively murmur and insufficient capacity to oversee changing sign levels for an expert sounding creation. On the off chance that you need better audio sound, you should utilize an external audio, and perhaps an outer sound interface or recorder.

**Audio Interface**

A sound interface is a little box that goes about as a middle of the road arrange between your mouthpiece and the audio input of the camera. One or two adjusted XLR mouthpiece inputs are there in many interfaces (sometimes equipped with phantom power for condenser mic), and a means of adjusting the audio imbalanced level.

Title- Audio Interface
Attribution- Nicolas Esposito
Source- Interface audio M-Audio FireWire Solo
Link- https://commons.wikimedia.org/wiki/File:Interface_audio_M-Audio_FireWire_Solo.jpg

The interface output can be an connection that is unbalanced that works with a DSLR, or a USB connection that enables you to record specifically to a PC. A sound interface is helpful in light of the fact that it gives you better control over sound levels and makes it easy to utilize proficient mics with XLR connectors.

**Audio Mixers**

On the off chance that we are utilizing a few receivers immediately, for instance to record a gathering or board discourse, prior to start recording it may be important to
consolidate the signal of the mic altogether. The audio blender here provides a single output that incorporates the consolidated output of all the mics and it also enables adjustment at individual level for every mic.

Title- Audio Mixer
Attribution- Evan-Amos

Link- https://commons.wikimedia.org/wiki/File:Behringer-Xenyx-1002FX.jpg

The downside of utilizing a blender is that it makes it hard to segregate the voice of one orator while editing.. There are different blenders relying upon their ability of tracks like 8, 16, 24 tracks. They additionally include some sound impacts like reverberate, reverb, bass and treble. These days advanced blenders are likewise accessible in type of PC applications

Audio Recorder

Nearly all cameras have sound recorder inbuilt in it however one might find that audio recording from the camera directly is not satisfactory, because of inordinate murmur, bending, or absence of control over sound levels. For this situation, video makers utilize a "double framework" in which the video is recorded on the camera, and the sound is recorded on an outside sound recorder. Utilizing an outside sound recorder enables you to have a powerful control over sound levels and less murmurs than generally cameras. Furthermore, a great sound recorder as a rule has adjusted mic input with XLR connectors, and frequent phantom control for condenser mics.
In huge projects, four or eight tracks recorders are accessible, enabling independent recording of every orator’s mic to empower more exact control of signal levels and enabling easy editing. An essential thing to be consider is the way to synchronize the recorders audio with the cameras video. The arrangement is to start each shot with a hand applaud that is picked by the mic and visualize by the camera. While editing, the sound track is adjusted by moving backward or forward such that the sound of the applaud matches perfectly with the visual. The sound recorder enables you to definitely modify for signals of various levels from different sources and safeguard them as isolated sound tracks that can be altered into the program as proper. A few recorders have an assortment of input connectors, developed to sort sounds of different levels and types.

Cables and Connectors

The most important link that connects the recorder or receiver and the microphone are the cables and connectors. These are likely the most ignored connection in the sound chain, but low quality cables or potentially damaged connectors are as often as possible the reason for real audio issues. Basically among audio devices for connection two types of connections are used:

- Balanced &
- Imbalanced

In a balanced connections there is a requirement of cable consisting of two wires (one for the “hot” signal and one for the “return”) this wires needs to be shielded with a mesh, braid, or metal foil. From different sources the random electrical signals are bombarded to the cable that is intercepted by the shield and then drain it in to the ground. Both the shield and the wires works together to avoid interference of the various audio signals. The quality of the audio depends on the types of connectors and cables utilized.

In an imbalanced connection a shielded single wire is used by a cable, however here the shield has to perform dual task i.e. it has to carry back the returned audio signal along with providing protection to the wire from electrical interference. Balanced audio connections are more stable than the imbalanced audio connection as these cables are prone to be affected via florescent light fixtures, some types of dimmer switches, and other audio or electrical cables present nearer to it.
So according to rule balanced connections are more reliable in terms of clean, free of noise output. In present era all the well-known connectors for proficient mics and audio devices trust and favour XLR and USB connectors

**XLR Connector**

There are two types of XLR Connectors 1) Male XLR connectors 2) Female XLR Connectors.

Male XLR Connectors consist of three pins, these are utilized for providing signal output; whereas female XLR connectors comprises of three sockets, utilized for provision of signal input. The XLR connector is strong, it generally don’t break or bend when connected, and many varieties have secure interlocks to make it free from accidental unplugging. A cable that has an XLR connector at both ends almost certainly indicates a balanced connection.

![XLR Connector Image](https://commons.wikimedia.org/wiki/File:Xlr-connectors.jpg)

*Title* - XLR Connector  
*Attribution* - Photographer: Michael Piotrowski (2005-06-04)

*Link* - [https://commons.wikimedia.org/wiki/File:Xlr-connectors.jpg](https://commons.wikimedia.org/wiki/File:Xlr-connectors.jpg)

Both low- and high-impedance microphones contains XLR connectors. High calibre and expert mics supports the XLR connector over the 1/4-inch telephone plug.

**USB Connector**

Universal Serial Bus (USB) connectors and links, which have turned out to be indistinguishable with PC peripherals, are obviously
winding up more typical for mics, since more sound and video recording is occurring specifically on PCs. This has made the requirement for XLR-to-USB connectors, which allows you to utilize your XLR cables and XLR mics with gadgets which contains USB ports.

Quarter inch phono plug

Another to some degree normal sound connector is the male 1/4-inch telephone plug, which mates with the female 1/4-inch telephone jack. The origin of the name is from utilization of this connector on early phone switchboards. These can be found on cables utilized with a sound hardware: earphones, amplifiers, loudspeakers, signal processing gear, and mics. As a rule, 1/4-inch telephone plugs are utilized on mics of lower ends.

Two-conductor types (at times referred as "TS" or "tip-sleeve", which alludes to the region of the connector utilized for each wire) comprises of two different portions and are utilized for imbalanced mono connections. Three-conductor types (at times referred as "TRS" or "tip-ring-sleeve") can be arranged to convey an adjusted mono signal or an unbalanced stereo signal. Microphones and microphone inputs on blenders utilizing 1/4-inch telephone connectors are quite often of the unbalanced high-impedance compose.

RCA Plug

The last sort of connector you'll likely keep running into is the male RCA plug or phono plug, which mates with the female phono jack. The prefix "phono" originates from the way that these are the standard for associating phonograph turntables (and also cassette players, CD players, et cetera) to home stereo hardware.

Miniplug or EP Jack

The Mini plug is available in two sizes: 3.5 millimetres (1/8 inch) and 2.5 millimetres. Mini plug of 3.5 millimeter form is similar to the normal attachment generally found on earphones and ear buds. Even though famously delicate for microphone applications, because of their little size, mini plug connectors are every now and again utilized on consumer and even semi-proficient video hardware, even in DSLR cameras. Quite often they show an unbalanced stereo sound association. Most mics that come
furnished with mini plugs are affordable units of low cost. Even if your equipment has a smaller than normal attachment port or 1/4-inch microphone input, you can at present utilize a decent quality expert mic. You simply need to acquire a cable with the proper connectors, or in certain instances, an impedance transformer.

**Field Monitors**

A field monitor is an external, portable, battery-powered display that replicates the picture being recorded to camera. We most often attach our monitor directly to the camera or camera rig, and sometimes we’ll attach it to a light stand as a stand-alone monitor for clients to view. Most field monitors available today range from five to nine inches in screen size, making them two to three times larger than most camera displays. When we’re moving quickly in the field, the extra pixels are extremely helpful for maintaining a focused image and seeing all the details within a frame.

It is very much difficult to monitor a picture while conducting an interview for a solo camera operator interviewing someone. As the interviewer, you’re often sitting beside the camera, making it difficult to keep an eye what’s being recorded. An external field monitor acts as a crucial piece of gear in these types of situations, allowing you to observe whether your subject is drifting out of frame or focus.

When shooting high-perspective shots above crowds with the camera is mounted much higher, it can be difficult or sometimes impossible to see our camera’s screen. So an external field monitor can potentially be the only option for framing a shot. We also regularly use jibs, sliders and stabilizers that require the use of an external monitor to direct camera movement.

**Necessity of Field Monitors**

The majority of field monitors use traditional LCD technology for their screens. However some of the newer, higher-end LCD panels integrate IPS (In-Plane Switching) technology, resulting in a higher contrast ratio and better, more accurate overall colour and better image quality. Lately, the monitor trend has been moving towards even newer, OLED (Organic Light-Emitting Diode) displays, which
according to Small HD, offer the richest colours and extremely high contrast ratios. The extra brightness of OLED monitors makes them a great choice for outdoor production.

The present day field monitors also coming with recorders. That means you don’t have to carry an extra video or audio recorder known as back pack such equipments help the spot-reporter or the artist to monitor the programme on air, locate his proper position and link the production control room with matching presentation, as per requirement.
Unit summary

In this unit we came across some necessary filmmaking and video shooting devices such as clapboard, various kinds of microphones and other audio equipments used from shooting to post production. We also came across the use of clapboard, sound equipment and field monitors. We learnt about the use of microphones according to the situation.

Assessment

1. What is a microphone?
2. Differentiate between Traditional and Digital Clapboards
3. Classify various types of microphones. Clipboards.
4. Write the functions of Field Monitors
5. How many columns are there in clapboard and name them.
6. Who developed electromagnetic type of microphone?
7. How many types of microphones are there depending on direction?
8. What is the other name for RCA plug connector?
9. What is a transducer in a microphone?

Resources

Further reading:

- Fundamentals of Digital Audio
  Alan P. Kefauver and David Patschke
- Visual Studio 2013 Cookbook
  Bruce Johnson
- How to shoot Video that doesn’t suck
  Stockman, Steve, 1958
- The Book of Audacity : record, edit, mix and master with the free audio editor
  Schroder, Carla
Unit 4

Blocking & Rehearsal

Introduction

Every video production requires proper research, planning, setup and on location decision. Proper camera placement, proper lighting and proper rehearsal of subject could lead to a good production material. Sometimes we have to shoot documentary or news material so it is mandatory to get a proper location idea as to cover the objective as nearly as possible. In case of fiction shoot it is advisable to rehearse your subject more and more so as to give perfect shot in less number of takes.

Outcomes

Upon completion of this unit you will be able to:

- Describe what is blocking
- Identify different kind of shots
- Use different techniques of lighting
- Examine different aspects, faced while shooting.

Terminology

Blocking: Blocking is the process of staging actors in reference to the foreground and background to get a frame.

Establishment shot: Establishment shots are the shot which shows the establishment between the subject and the surrounding.

Close shot: Close shot is the most nearest magnification of the subject being shot which shows the physical and emotional details.

Helicopter Shot: A 3600 shot of the sky or subjects in the high
Meaning of the Term “Blocking”

The term blocking came from theatres. In theatre, blocking is the precise staging of actors in order to facilitate the performance of a play, ballet, film or opera. In contemporary theatre, the director usually determines blocking during rehearsal, telling actors where they should move for the proper dramatic effect, ensure sight lines for the audience and work with the lighting design of the scene.

Each scene in a play is usually "blocked" as a unit, after which the director will move on to the next scene. The positioning of actors on stage in one scene will usually affect the possibilities for subsequent positioning unless the stage is cleared between scenes.

During the blocking rehearsal, the assistant director, stage manager or director take notes about where actors are positioned and their movements on stage. It is especially important for the stage manager to note the actors' positions, as a director is not usually present for each performance, and it becomes the stage manager's job to ensure that actors follow the assigned blocking from night to night.

In film, the term is sometimes used to speak of the arrangement of actors in the frame. In this context, there is also a need to
consider the movement of the camera as part of the blocking process.

Title-Shooting
Attribution- Yerpo
Link- https://commons.wikimedia.org/wiki/File:Premium_Rush_shooting.JPG

Overview of Evolution of Blocking

As we discussed earlier that the term blocking came from stage or theatre, in the theatre the stage is a fixed location and the characters are moving. So the characters have to be placed or staged in such a manner so that each character is clearly visible to audience at each point of movement. No one should overlap the other character. Likewise their entry and exit was also to be kept in continuity which means a character which exits from the left of the stage must come from right of the stage to mark the continuity of movement. So when coming to film making or video production the most of the things remain the same. The director has to plan the shot in such a manner that there should be enough space between characters, their continuity in the frame and their movement as well as entry and exit from one shot to the next. This is part of shot division in a screenplay.

Uses of Blocking

Blocking not only helps the director direct easily but also helps the actors to perform smoothly. Sometimes a motivated blocking helps create a twist in the scene. Blocking not only is fixed with actor and director but also with the camera. The movement of the camera in proper direction is also important. The proper
camera and subject movement can create a bigger impact. If the blocking is not proper the transition from shot to shot will be jerky.

Mostly the films or videos are made up of various scenes. These scenes are broken down into shots. Each shot is individual information of place, time and character. It means that we can know what our subject is doing in particular place at a particular time. Each shot can be taken up by the director according to the availability of place, time and character and connect in different manners to build up a scene. But sometimes director also tries to cover the whole scene in one take without breaking them into smaller shots. The various types of shots which are used are establishing shot, long shot, mid shot and close shot.

**Establishing shot**: An establishing shot in filmmaking and television establishes the scene by showing the relationship between its important figures and objects. It is generally a long or extreme-long shot at the beginning of a scene indicating where, and sometimes when, the remainder of the scene takes place.

Establishing shots were more common during the classical era of filmmaking than they are now. Today's filmmakers tend to skip the establishing shot in order to move the scene along more quickly. In addition, the expositional nature of the shot (as described above) may be unsuitable to scenes in mysteries, where details are intentionally obscured or left out.

**Uses of an Establishing Shot**

**Location**: Establishing shots may use famous landmarks to indicate the city where the action is taking place or has moved to, most probably it establishes the whole area where the shooting is going on or where the story is based. It creates an idea in the mind of the viewer about the location of the subject and other things going around in that particular location.

**Time of Day**: Sometimes the viewer is guided in their understanding of the action. For example, an exterior shot of a building at night followed by an interior shot of people talking implies that the conversation is taking place at night inside that building - the conversation may in fact have been filmed on a
studio set far from the apparent location, because of budget constraint or time limitations.

**Relationship:** An establishing shot might be a long shot of a room that shows all the characters from a particular scene. For example, a scene about a murder in a college lecture hall might begin with a shot that shows the entire room, including the lecturing professor and the students taking notes. A close-up shot can also be used at the beginning of a scene to establish the setting (such as, for the lecture hall scene, a shot of a pencil writing notes).

**Concept:** An establishing shot may also establish a concept, rather than a location. For example, opening with a martial arts drill visually establishes the theme of martial arts. A shot of rain falling could be an establishing shot, followed by more and more detailed look at the rain, culminating with individual raindrops falling. A film maker is colluding with their audience to provide a short hand learned through a common cinematic cultural background.

**Long Shot**

In photography, filmmaking and video production, a long shot (sometimes referred to as a full shot or, and to remove ambiguity it will be called a, wide shot) typically shows the entire object or human figure and is usually intended to place it in some relation to its surroundings. These are typically shot now using wide angle cameras. However due to the sheer distance establishing shots and extreme wide shots can use almost any camera type.

**Mid shot**

In film, a medium shot, mid shot (MS), or waist shot is a camera angle shot from a medium distance. Medium shots are favored in sequences where dialogues or a small group of people are acting, as they give the viewer a partial view of the background and also show the subjects' facial expressions in the context of their body language. Medium shots are also used when the subject in the shot is delivering information, such as news presenters. It is also used in interviews. It is the most common shot in movies, and it
usually follows the first establishing shots of a new scene or location.

A normal lens that sees what the human eye see is usually used for medium shots.

Medium shots are divided into singles (a waist-high shot of one actor), group shots, over-the-shoulders or two-shots (featuring two people). A medium wide shot, or American shot, shows a bit more of the background but is still close enough for facial expressions to be seen, although these facial expressions would be better seen in a waist-high shot.

**Master shot**

A master shot is a shot which covers all the characters along with the location or background. It is different from an establishing shot because in an establishing shot the whole location or all the characters may not be revealed, just a portion could be used. It may not establish the character to character relation.

**Close-upshot**

Close-upshot or closes hot in filmmaking or in television production, still photography is a type of shot, which tightly frames a person or an object. Close-ups are one of the standard shots used regularly with medium shots and long shots (cinematic techniques). Close-ups display the most detail, but they do not include the broader scene. Moving in to a close-up or away from a close-up is a common type of zooming.

Close-ups are used in many ways and for many reasons. They are often employed as cutaways from a more distant shot to show detail, such as characters' emotions, or some intricate activity with their hands. Close cuts to characters' faces are used far more often in television than in movies; they are especially common in soap operas. For a director to deliberately avoid close-ups may create in the audience an emotional distance from the subject matter.

Close-ups are used for distinguishing main characters. Major characters are often given a close-up when they are introduced as a way of indicating their importance. Leading characters will have multiple close-ups. There is a long-standing stereotype of insecure actors desiring a close-up at every opportunity and counting the
number of close-ups they received. Close-up shots do not show the subject in the broad context of its surroundings. If overused, they may leave viewers uncertain as to what they see. Close-ups are rarely done with wide-angle lenses, because perspective causes objects in the centre of the picture to be unnaturally enlarged. Certain times, different directors use wide-angle lenses, because they can convey the message of confusion, and bring life to certain characters.

Over Shoulder Shot

In film or video, an over the shoulder shot (also OTS, or third-person shot) is a shot of someone or something taken from the perspective or camera angle from the shoulder of another person. The back of the shoulder and head of this person is used to frame the image of whatever (or whomever) the camera is pointing toward. This type of shot is very common when two characters are having a discussion and will usually follow an establishing shot which helps the audience place the characters in their setting. It is an example of a camera angle.

Other than these basic shot or blocking techniques there are two other shots depending on camera movement i.e. Pan shot and Tilt Shot. In a Pan shot the Camera is moved from left to right or right to left to cover a subject or location. Similarly when the camera is tilted from up to down and vice versa the shot is called Tilt shot.

Rehearsal

The rehearsal is an activity in the performing arts that occurs as preparation for a performance in music, theatre, dance and related arts, such as opera, musical theatre and film production. It is undertaken as a form of practising, to ensure that all details of the subsequent performance are adequately prepared and coordinated. The term "rehearsal" typically refers to ensemble activities undertaken by a group of people. For example, when a musician is preparing a piano concerto alone in their music studio, this is called "practicing", but when they begin to practice the concerto with an orchestra, this activity is called a "rehearsal". The music rehearsal takes place in a music rehearsal space.
A rehearsal may involve as few as two people, as with a small play for two actors, an art song performance by a singer and a pianist or a folk music duo of a singer and a guitar player. On the other end of the spectrum, a rehearsal can be held for a very large orchestra with over 100 performers and a choir. A rehearsal can involve only performers of one type, as in an a cappella choir show, in which a group of singers perform without instrumental accompaniment or a play involving only theatre actors; it can involve performers of different instruments, as with an orchestra, rock band or jazz "big band"; vocal and instrumental performers, as with opera and choral works accompanied by orchestra; or a mix of actors, vocalists, instrumentalists and dancers, as with musical theatre.

While the term is most commonly used in the performing arts to refer to preparation for a public presentation or show, the term is also used to refer to the preparation for other anticipated activities.

In field of filmmaking or video production rehearsal not only means the practicing the acting skill for the scene but also practicing the camera and audio parts too to get the perfect take.

**Lighting**

Lighting is an essential tool for enhancing the video image. The subtle use of light creates atmosphere and mood, dimension, and texture. It can help to convey a plot line, enhance key elements such as set colour or skin tone, and signals the difference between comedy and drama, reality and fantasy.

The subject in a planned shoot can be lit up using various lighting techniques to achieve desirable result. In this unit we will discuss these lighting techniques.

Lighting, as with nearly every other aspect of Film & TV, is an integral part of the filmmaking process. Light can sculpt and describe a scene or character, it can hide or reveal key areas of your frame, it can enhance suspense and evoke emotion. It is as critical in directing the audiences’ attention or influencing their emotions as camera movement, acting, music and editing. Ignore it at your own loss.
Key light

The **key light** is the first and usually most important light that a photographer, cinematographer, lighting cameraman, or other scene composer will use in a lighting setup. The purpose of the key light is to highlight the form and dimension of the subject. The key light is not a rigid requirement; omitting the key light can result in a silhouette effect. Many key lights may be placed in a scene to illuminate a moving subject at opportune moments.

The key light can be "hard" (focused) or "soft" (diffused), and depending on the desired setup can be placed at different angles relative to the subject. When part of the most common setup—three-point lighting—the key light is placed at a 30–60° angle (with the camera marking 0 degrees). In addition to the horizontal angle, the key light can be placed high or low producing different effects. The most common vertical position for the key light is at a 30° angle (i.e. slightly above the eye line; the nose should not cast a shadow on the lips).

A key light positioned low appears to distort the actor's features, since most natural or ambient light is normally overhead. A dramatic effect used in horror or comedy cinematography is a key light illuminating the face from below. A high key light will result in more prominent cheek bones and long nose shadows.
In many cases, the key light is a stage light for indoor scenes, or sunlight for outdoors. A lighting instrument may also be used outdoors to supplement sunlight or as the primary light source with sunlight or skylight serving as fill lighting. Actual lamps, lighting fixtures, can serve as key lights, provided they are of sufficient brightness. They may also appear within the scene as props — in which case they are called "practical’s." Similarly, fire, candles and other natural sources of light can be used.

**Fill Light**

In television, film, stage, or photographic lighting, a **fill light** (often simply fill) may be used to reduce the contrast of a scene to match the dynamic range of the recording media and record the same amount of detail typically seen by eye in average lighting and considered normal. From that baseline of normality using more or less fill will make shadows seem lighter or darker than normal which will cause the viewer to react differently, by inferring both environmental and mood clues from the tone of the shadows.

Natural skylight fill is omnidirectional and diffuse, with lower rate of inverse-square fall-off than artificial sources. A common artificial lighting strategy which creates an overall appearance similar to natural fill places the fill light on the lens axis so it will appear to cast few if any shadows from the point of view of the camera, which allows the key light which overlaps it to create the illusion of 3D in a 2D photo with the same single source patterns typically seen with natural lighting where the sun acts as key light and the skylight as fill. The use of cantered near-axis "neutral" fill also prevents dark unfilled voids in the lighting pattern which can occur on faces if cheeks or brows block the fill source.

The positioning of the fill affects the overall appearance of the lighting pattern. When a cantered fill strategy is used the ratio is created by overlapping the key light over the foundation of fill. A key source of equal incident intensity to the fill, overlapping the even fill, will create a 2:1 reflected ratio (1 key + 1 fill over 1 Fill) = 2:1.
Back Light

In lighting design, **backlighting** is the process of illuminating the subject from the back. In other words, the lighting instrument and the viewer face each other, with the subject in between. This creates a glowing effect on the edges of the subject, while other areas are darker. The backlight can be a natural or artificial source of light. When artificial, the back light is usually placed directly behind the subject in a 4-point lighting setup. A back light, which lights foreground elements from the rear, is not to be confused with a background light, which lights background elements (such as scenery).

The **back light** is sometimes called **hair** or **shoulder light**, because when lighting an actor or an actress, backlighting makes the edges the subject’s hair glow if the hair is fuzzy. This can create an angelic halo type effect around the head. Television productions often use this effect in soap operas, news presentation, panel discussions, studio based interview where it has become something of a cliché of the genre. It is also sometimes called the **kicker** or **rim light**.

Ambient Lighting

Ambient light means the light that is already present in a scene, before any additional lighting is added. It usually refers to natural light, either outdoors or coming through windows etc. It can also mean artificial lights such as normal room lights.

Ambient light can be the photographer's friend and/or enemy. Clearly ambient light is important in photography and video work, as most shots rely largely or wholly on ambient lighting.

Unfortunately ambient light can be a real nuisance if it conflicts with what the photographer wants to achieve. For example, ambient light may be the wrong colour temperature, intensity or direction for the desired effect. In this case the photographer may choose to block out the ambient light completely and replace it with artificial light. Of course this isn't always practical and sometime compromises must be made.
On the other hand, many of history's greatest photographs and film shots have relied on interesting ambient light. Unusual lighting can turn an otherwise ordinary shot into something very powerful.

**Motivated Lighting**

Motivated lighting refers to the light in a scene which appears to have a source such as a window, a lamp and fireplace etc. In some cases the light will come from a source visible in the scene and in some cases, it will only appear to come from a source that is visible in the scene.

**Shooting**

Shooting otherwise known as production stage is the practical part. Now that we have a thorough knowledge about all things needed for a good production starting from a script to camera and lights and audio equipment we have to get in the field to make our production.

For a systematic production along with a good storyboard and shot division we also need a very well planned production design which includes the location details, the artist availability details and time details etc. which would make our work less time consuming and easy.

Before every shoot it is wise to have a location hunt which means the director or one who is in charge of the shoot should visit all the places and confirm them according to the demand of the script. On the other hand the script writer is supposed to collect the data available and improvise it, considering the nature of location; printed materials; experts on the location; time frame and conception of the director producer and the target audience.

The kind of location could be both indoor and outdoor. On one side it is to be seen that it justifies the need of the script whereas on the other hand it should also be kept in mind that whether it is possible to shoot in that place with all the production team.

After the location is finalized it comes to the availability of the artist. Sometimes it is impossible to get busy artist for shoot, so getting appropriate dates from them would confirm their availability. If we are shooting documentaries then we have to
deal with real life subjects so it is necessary that they should be there according to our shoot planning.

After these two points are ready we have to prepare a production schedule according to these two factors. In other words, we have to plan on which day at which place and at what time we have to shoot the particular part of the script. Sometimes a number of scenes or parts of the story or script is to be held at a particular location, so it will be cost-effective to complete all those scenes at that particular location in one go, so as to not visiting to the same place again and again.

**How much to film**

For things that don't move, or general shots of scenes or people, shoot at least ten seconds of each shot.

For scenes with people talking or acting, you need to keep the top and tail of your shots. Start the camera a few seconds before the action starts, and leave it running for a few seconds after it ends. This is called pre roll and post roll. If you’re working on your own, the best thing to do is to start the camera and check it’s recording. The count of ten seconds before and after the action can provide the excess length we require.

If you’re working as a team, you can follow some version of this drill:

- Get your shot set up and your actors in place.
- The camera operator says ‘Camera set’ when they’re ready.
- Then the director says ‘Silence please’.
- Once everyone’s silent, they say ‘Standby’ and then ‘Turn over’.
- The camera operator starts the camera and checks that it’s recording, then they say ‘Camera rolling’.
- The director counts to ten and then says ‘Action’ (or they can count the actors in with a hand signal).
- The actors or presenters do their thing, and then the director counts to ten again and says ‘Cut’.
- The camera operator stops the camera and the production assistant makes a note of the shot.
Get the location sound

You should always record some sound from the location, without dialogue. With any scene, leave the camera or audio recorder running to get half a minute or so of atmosphere or wild track, also known as room tone. It can help cover up audio problems when you edit. If you’re filming at a location with interesting or distinctive sounds, record them separately.

Don’t forget to record atmosphere/wild track, also known as room tone. This is the background sound of the room or location. You need at least half a minute of this: just leave your camera or audio recorder running with nothing happening. This can be really useful when you edit.
Unit summary

In this unit you learned the Basic of blocking, rehearsing, lighting and shooting. The type of shots and kind of lighting was also described. We also learnt the proper procedure for a planned production or shoot.

We discussed how lighting and kind of shot creates different impact on screen. The need of rehearsal and proper planning schedule to manage time and money was also explained.

Assessment

1. Describe the meaning of blocking?
2. Name the different types of shot.
3. Differentiate between master shot from establishing shot?
4. Identify the different kinds of lighting?
5. What is motivated lighting?
6. What is pre roll and post roll?

Resources

Further reading:

- Mixing secrets for the small studio
  Senior, Mike.
- Fundamentals of Digital Audio
  Alan P. Kefauver and David Patschke
- Visual Studio 2013 Cookbook
  Bruce Johnson
- Audio Effects Workshop
  Geoffrey Francis
- How to shoot Video that doesn’t suck
  Stockman, Steve, 1958
- The Book of Audacity : record, edit, mix and master with the free audio editor
  Schroder, Carla