



# Video 101

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## An Introduction for Techno-Fandom on Video Camera Work



# Introduction to Video

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- Who are all these people?
- What does a camera operator do?
- What do all those buttons and dials do?



# Video Crew Roles

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- Director
  - Chooses the images to be shot
  - Sets the pace
  - Gives direction to the rest of the crew
- Technical Director
  - Operates the switcher
  - Assists in tuning the cameras
  - Assists the director



# Video Crew Roles

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- Video Engineer
  - Remotely controls the camera image quality
    - Color balance (Painting the shot)
    - Light level (Iris)
  - Assists in tuning the cameras
  - Controls the video tape recorders
  - In charge of setting up the equipment



# Video Crew Roles

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- Camera Operator
  - Points camera at requested subject
  - Focuses camera
  - Composes image
    - Zoom
    - Positioning within frame
- Assists Director by choosing appropriate shots when not given explicit direction



# Video Crew Roles


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- Gaffer
  - Electrician on the set (official description)
  - Person who handles the camera cables (TF description)
    - Assistant to camera operator
    - Keeps cables out of the way of a mobile camera operator
    - Helps guide mobile camera operator



# Camera Operator Responsibilities

- Shot composition
  - Placement of subject in frame
  - Zoom
  - Focus
- Shot Selection
  - Handle choice of subject
  - Often given an assignment



# Camera Operator Responsibilities

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- Assist in set up of camera
- Stay unobtrusive
  - We are shooting a live event
  - You are not the show
- Stay Alert
  - The unexpected happens
- Follow Direction






# Basic Vocabulary

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- Zoom

Varying the focal length of the lens to change the amount of the subject(s) in the shot

- Wide Angle
- Telephoto



# Basic Vocabulary

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- Focus

Keeping the subject in the shot in focus as they move.

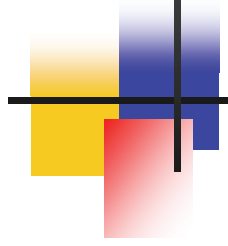
- Soft – Being out of focus. If you are told you are soft, fix your focus
- Rack, Pull (follow) – Tracking a moving subject changing focus as they move



# Basic Vocabulary

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- Pan
  - Left and right turning of the camera
- Tilt
  - Up and down turning of the camera
- Truck
  - Movement of the camera in a direction
- Dolly
  - Wheeled cart under tripod, also synonym for truck



# Basic Vocabulary

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- One Shot
  - Single person in frame
    - Generally a close-up
    - Head and shoulders only
  - Close-up
    - Head and shoulders shot
  - Extreme Close Up
    - Head only



# Basic Vocabulary

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- Two Shot
  - Grouping of two subjects in the frame
  - Shows more of the body to get both in frame
  - Keep subjects heads in the upper half of the frame



# Basic Vocabulary

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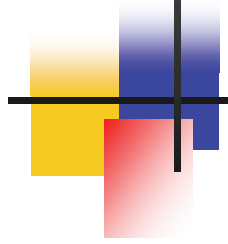
- Long Shot

Shows more than two people in frame

- Shows most if not all of the set
- Must be careful not to:
  - Show off set areas
  - Include unwanted equipment in the shot
  - Include unwanted people in the shot

- Establishing Shot

Long shot that shows the set-up at the start of a scene



# Basic Vocabulary

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- Tripod (Sticks)
  - Three-legged device used to steady camera
- Dolly
  - Wheeled cart under tripod
- Lockdown
  - Tightening all of the controls on the tripod so the camera doesn't move accidentally
  - Always required before camera operator leaves the camera unattended!!



# Basic Vocabulary

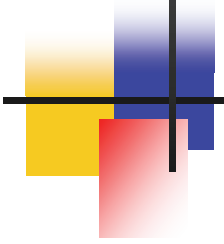
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- Tally Light

Red light on camera indicating image is being used

- Be careful not to adjust camera, except as directed, when lit
- Hot, Live, Program  
Camera image is being used
- Preview (Ready)  
Camera is next to be live, tally will not be lit





# Basic Vocabulary

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- **Color Balance**

Adjusting the timing of the video signal so multiple cameras show the same image with the same color

- **Painting**

Minor adjustment to the color balance of the camera in real time to match shots

- **Zebra Bars**

Black and white alternating bars on bright portions of image in viewfinder showing over exposed areas



# Basic Camera Technique

- Focus
  - Critical action only possible by camera operator
  - Cannot be corrected in post production
  - Relatively low light levels
    - Small depth of field
    - Only part of image will be in sharp focus

# Basic Camera Technique

## How To Focus

1. Point camera at face of principal subject in show
2. Zoom all the way in (telephoto)
3. Focus on nose of subject if possible
4. Zoom back to re-frame (compose) shot
  - If the image does not stay focused as you zoom back, seek assistance, the “back focus” of the lens needs adjustment
  - When assigned a camera
    - Practice focusing
    - Check back focus setting by focusing and zooming

# Basic Camera Technique

## How To Focus

- Hand held camera or no rear controls
  - Rotate the outer-most ring of the lens
    - Clockwise for closer objects
    - Counterclockwise for farther objects
- Tripod camera with rear controls
  - Focus control is twist grip
  - Practice – it has a tendency to overshoot
  - Can be stiff to twist – use gradual pressure

# Basic Camera Technique

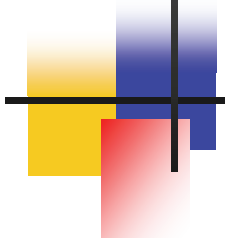
## Focus

- Pre-set Focus
  - When too dark or not enough time to focus on the fly
    - Focus on an expected shot
    - Read the distance on the lens
    - Record this and use the setting to quickly set up this shot

# Basic Camera Technique

## Focus

- Rack Focus (Follow Focus)
  - Adjust focus a subject moves to keep subject in focus
  - Turn clockwise as subject moves closer
  - Turn counter-clockwise as subject moves away
  - Practice this skill when not “live” before using it on a live shot



# Basic Camera Technique

- Zoom
  - Controlling the focal length of lens to compose shot
  - For stationary cameras only way to compose amount of subject in shot
  - Will change perspective
    - Tight zoom flattens field
    - Wide zoom exaggerates distances

# Basic Camera Technique

## How to Zoom

- Hand held camera or no rear controls
  - Toggle lever above hand grip
    - Push "T" side to zoom in (telephoto)
    - Push "W" side to zoom out (wide angle)
- Tripod camera with rear controls
  - Zoom control is thumb paddle on handle
  - Normally push left to zoom out, right to zoom in
- Farther you push – faster lens motor zooms



# Basic Camera Technique

## How to Zoom

- Zoom Quickly
  - When not live
    - To compose or frame shot
    - To check focus
- Zoom Slowly and Smoothly
  - When director asks you to widen (zoom out) or tighten (zoom in) shot when live
- Practice slow zooming – control can be touchy



# Basic Camera Technique

## Panning

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- Slowly and smoothly rotate camera from side to side
  - Follow instructions from director
  - Allow time from start of shot until pan starts
  - Allow time from end of pan until end of shot

# Basic Camera Technique

## How to Pan

- Hand Held Camera
  - Turn body to point to position at the end of the pan
  - Rotate body, without moving legs, back to start of pan
  - Slowly straighten out body until pan is complete
  - Allows for keeping shot steady at the end of the pan



# Basic Camera Technique

## How to Pan

- Tripod Mounted Camera
  - Loosen pan lock on tripod
    - Keep tight enough to provide some drag
  - Slowly push control handles to the side to move camera
  - Walk as necessary to keep yourself centered between handles
  - Always watch image in viewfinder as you pan/walk



# Basic Camera Technique

## How to Pan

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- Following Moving Subject
  - Zoom out a little to give you room for subject to move
  - As subject moves, lead subject slightly
  - Stop pan just before subject reaches end of movement
  - Do NOT re-adjust if you overshoot, allow director to take a different image if possible and then correct composition

# Basic Camera Technique



## Tilt

- Adjusting vertical angle of camera
  - Go slow
  - Practice keeping it smooth
  - Zoom out to make tilt less obvious
  - Zoom back in at end of tilt and re-center image as you do so

# Basic Camera Technique

## How to Tilt

- Hand Held Camera
  - Use arms and shoulders to tilt your upper body slightly
  - Straighten out as subject rises
  - Try not to overshoot the subject
  - Use Zoom to hide tilt as much as possible
  - Follow directors instructions

# Basic Camera Technique

## How to Tilt

- Tripod Mounted Camera
  - Loosen tilt lock on tripod
  - Tighten tilt drag to prevent camera slippage
  - Practice tilting until you get it smooth
  - Use Zoom to hide tilt as much as possible
  - Follow directors instructions



# Basic Camera Technique

## When to Tilt

- When subject sits or stands
- To show vertical range of a subject
  - Use to show all of a costume
  - Use to show foot work of a dance number
- When specifically requested to by director



# Basic Camera Technique

## Composing Your Shot

- Before going live
  - Zoom in and check focus quickly if time permits
  - Zoom to include requested grouping
  - Pan/Tilt to center grouping in frame
  - Try to keep faces in upper half of the frame
  - Remember “Safe Area”
    - Viewfinder shows more of image than most televisions
    - If camera does not display safe area frame, leave border around subject
- Rule of Thirds



# Basic Camera Technique

## Composing Your Shot

- After going live
  - Don't!!! – Unless explicitly instructed by director
  - If you must:
    - Be very slow and deliberate
    - Try not to overshoot correction
    - Use Zoom to hide pan/tilt corrections



# Basic Camera Technique

## Shot Stability

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- Hand Held Camera
  - Keep both eyes open
  - Keep legs spread slightly
  - For extended shots try and brace against an object
  - When kneeling, use knee or upper leg as a brace
  - Breathe



# Basic Camera Technique

## Shot Stability

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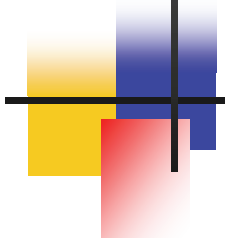
- Tripod Mounted Camera
  - Apply sufficient drag to avoid drift
  - Not too much drag to cause jerky movements
  - Do not lean on rear control arms
  - When tilting down
    - Go past a bit
    - Push down on control arms to re-frame



# Basic Camera Safety

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- Cable Management
  - Keep loop of cable near camera so you can move easily
  - If mobile handheld, use assistant to manage cable
  - Do not walk on or roll over cable
  - Pay cable behind you as you move with your free hand



# Basic Camera Safety

- Platform Work
  - Don't use a dolly
  - Lock down the tripod legs well
  - Leave room to stand
  - Make sure you fit between tripod legs as you pan from stage edge to stage edge
  - If using ENG viewfinder, keep other eye open so you know where you are standing



# Basic Camera Safety

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- Handheld on Stage
  - Always use an assistant
  - Have assistant be behind your back
    - Assistant will manage cable
    - Assistant can place palm of hand on your back to stop you when you get close to edge or wall
  - Move slowly





# Basic Camera Safety

- Handheld Camerawork and Your Back
  - Make sure the weight is well on your shoulder
  - Be balanced
  - Take breaks
    - Move camera off your shoulder
    - Kneel with the camera
    - Avoid telephoto and extended shots



# Basic Camera Safety

- When not at your camera
  - Tripod Cameras
    - Lock all adjustments on the tripod
    - Make sure the dolly wheels are also locked
  - Handhelds
    - Place on floor with shoulder rest on floor (standing up)
    - Make sure lens is where it cannot be kicked



# Basic Camera Safety

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- Where not to point camera
- Imager can be burned by bright lights
  - Don't point it towards the lights
  - Don't point it towards the sun
- Don't leave it with the iris open pointed at the same image for a long period of time
- Don't point it straight up or down
- Use the lens cap if available



# Working in a Live Shoot

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- Intercom
  - Often called 'Clearcom'
  - Party Line
  - Manners
    - Director talks
    - Others listen
      - with microphones muted
      - unless asked to respond

# Working on a Live Shoot

## Intercom



- What you will hear on the intercom
  - Shot calls
    - Some directors use names, some camera numbers
    - ECU = Extreme Close Up
    - Ready = Camera is next to go live, don't change the shot
    - Take = Camera switch
    - Dissolve = Slow switch (fade)



# Working on a Live Shoot Intercom

- What you will hear on the intercom
  - Shot corrections
    - Soft = Re-focus
    - Tighten up – Zoom in some
    - Loosen up – Zoom out some
    - Watch the head – too little or too much head room (space above the head in the frame)