


UNIT 2
Topic 1:
Video Formats: Analogue and Digital

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Analog Formats

- ✓ Tape is one medium that represents analog audio information; vinyl (a gramophone is known as a vinyl record) records are another example.
- ✓ When something is converted from analog to digital, that infinite detail is distilled into a finite number of values, so when you digitize analog sounds, you naturally lose some information.
- ✓ We used to live in a world of analog images and video, where we dealt with photographic film, analog TV sets, videocassette recorders (VCRs), and camcorders.
- ✓ For video distribution, we relied on analog TV broadcasts and analog cable TV, which transmitted predetermined programming at a fixed rate.
- ✓ We had to live with the NTSC/PAL/SECAM analog signal formats with their well-known artifacts and very low still-frame image quality.

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Analogue to Digital conversion process

- ✓ It is a four-step process:
 - ✓ Anti-aliasing
 - ✓ Sampling
 - ✓ Quantizing
 - ✓ Coding
- ✓ Anti-aliasing: In this step extreme frequencies of the analog signals that are unnecessary for its proper sampling are filtered out.

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VHS (Analog)


- ✓ This technology is so outdated that many people today have a hard time even remembering what VHS stands for.
- ✓ Vertical Helical Scan/Video Home System.
- ✓ Developed by JVC (Japan Victor Company in 1976)
- ✓ Width is 1/2 inch
- ✓ Lines of resolution – 180
- ✓ Consumer quality, became highly popular
- ✓ <https://youtu.be/zMtpnvZVxo8>



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BetaMax (Analog)


- ✓ Developed by SONY
- ✓ Width is 1/2 inch
- ✓ Lines of resolution – 180
- ✓ Difference between VHS & Betamax is just the casing
- ✓ Betamax is now obsolete.



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U-Matic (Analog)


- ✓ Width is 3/4 inch
- ✓ Lines of resolution –
- ✓ Low band - 220
- ✓ High band - 240
- ✓ Superior band - 280
- ✓ Initially used for industrial & broadcast purpose



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Betacam (Analog)


- ✓ Introduced by Sony
 - ✓ Betacam - 1982;
 - ✓ BetacamSP – 1986
- ✓ LoR – 550-700
 - ✓ UVW
 - ✓ PVW
 - ✓ BVW
- ✓ Tape width – ½ inch



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Super VHS (Analog)


- ✓ Developed by Panasonic
- ✓ LoR – 250-400
- ✓ Tape width – ¼ inch
- ✓ Comparable format to Hi-8, Obsolete from market now.



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Mini DV (Digital)

- ✓ Developed by Sony
- ✓ LoR – 500-600
- ✓ Tape width - 1/8th inch
- ✓ Small size, High quality, recordable on
 - ✓ DV – SP
 - ✓ DV – LP
 - ✓ DV – CAM



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DVC Pro (Digital)


- ✓ Developed by Panasonic
- ✓ LoR – 500-600
- ✓ Tape width - 1/8th inch
- ✓ Format comparable to DV-CAM, good format but expensive, low backup in delhi.



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Digi-Beta (Digital)


- ✓ Developed by Sony
- ✓ LoR – 800
- ✓ Tape width - 1/4th inch
- ✓ Combines the advantages of Beta and Digital recording.



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HDV (Digital)

- ✓ Developed by Sony
- ✓ LoR – 2000
- ✓ Tape width - 1/8th inch
- ✓ Video's answer to film, but incompatible with all other formats



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Digital Video Formats

- ✓ Digital video format is a combination of Video Codec and Container.
- ✓ CODEC is Coder-Decoder: algorithm used to digitally encode a video
- ✓ Container is a wrapper that is used to store video stream and content.
- ✓ Digital video is identified by the file extensions but not by the file formats.

Common Codecs	Common Containers
H.264/AVC	MP4
H.265/HEVC	AVI
H.262/MPEG-2 Part 2	MOV
M-JPEG	MXF
ProRes	3DP & 3G
DNxHD & DNxHR	MTS, M2TS

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Digital Video Formats

- ✓ Video formats are often called as a file's extension, for example the .mp4 in Video. mp4. Video formats are much more than that and include a whole package of files, including a file's video stream, the audio stream, and any metadata included with the file. All the data put together, both streams and the metadata, is read by a video player to stream video content for playback. A file's video stream includes the data necessary for motion video playback, while the audio stream includes any data related to sound. Metadata is any data outside of audio and sound, including bitrate, resolution, subtitles, device type, and date of creation.
- ✓ Formats are the entire set of storage rules that package a video file's container, codecs, and metadata. File formats are used so that a variety of devices, platforms, and players can process and playback any number of codecs.


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Digital Video Formats

- ✓ Here, the Mini DV tape is the container and it was supposed to store the video in 3 different ways.
- ✓ A mini DV tape can store the date in mini DV Codec.
- ✓ Standard definition codec called 'DV CAM', High definition codec called HDV.
- ✓ Similarly, if a file extension is .mp4 or .mov it only indicates container but not the codec.




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 **Container**


- ✓ The container describes the structure of the file: where the various pieces are stored, how they are interleaved, and which codecs are used by which pieces. It may specify an audio codec as well as video. It is used to package the video & its components (audio/metadata) and is identified (usually) by a file extension such as .AVI, .MP4 or .MOV.

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 **Codecs**

- ✓ A video is made up of a series of still frames played at a certain speed.
- ✓ A codec (Coder – Decoder) digitally encodes these frames.
- ✓ A video file contains a lot of information, sometimes the codec compresses the file to limit its size. It is not necessary that all the codec does the compression though.
- ✓ Method for encoding (wrapping) and decoding (unwrapping) compressed data in video/audio/stills. Encoding for transport and storage. Decoding for viewing or transcoding (re-wrapping) Raw Video and Audio or Uncompressed video/audio in huge! (1080i high definition video recorded at 60 frames per second eats up 410 gigabytes per hour of video)

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 **How do they work together?**

- ✓ Think of the container as the file itself. Think of the codec as its contents. The important thing to realize is that most good container formats can hold many codecs. For example a .MOV container can hold almost any kind of codec data. The same goes for .MP4 and even .AVI files can hold a wide variety of codecs as their contents. In no way does the container decide the quality or features of the video itself, that is up to the codec. The proper way to describe video is to indicate both: A .MOV file containing H.264 data. An .AVI file containing DivX data. Professionals use shorthand's for this, saying things like "Give me an H.264 Quicktime file (.mov)".

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- ✓ Bitrate or bit rate is the rate at which bits are processed or computed over time. The higher the bitrate, the more data there is, which generally means a higher quality video file. When choosing a bit rate, it is important to consider the device your videos will be played on.

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What Video Format Should I Use?

- ✓ **File size & quality**
 - ✓ Digital Storage Space - To calculate the amount of storage space you will need for a project, digital video requires approximately 200 MB per minute of footage, or roughly 12 GB per hour. Of course this varies according to your recording device and the quality it is set to record at.
 - ✓ Frames per Second – The standard for FPS is 29.97, increasing the FPS allows for more images per second thus a smoother image. Decreasing FPS will make the video a bit choppy and not nearly as smooth.
 - ✓ Video Bitrate - Bitrate is a measurement of the number of bits that are transmitted over a set length of time. Your overall bitrate is a combination of your video stream, audio stream & metadata in your file with the majority coming from your video stream. higher

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What Video Format Should I Use?

- ✓ Transmitting the media: deciding what codec you want to use depends on your means of transmitting the video so others can view it. This could be an external hard drive, jump drive, via email or uploading to a social media website/blog. See Appendix for instructions in uploading video to common websites.
- ✓ So what codec should I use?
 - ✓ Check the requirements from the Internet sites you wish to upload your video file. (Much of the internet supports a MP4 container with a H.264 codec) see appendix for specific media site requirements.
 - ✓ Is your video meant for mobile applications? If so, select a codec that supports all mobile devices (ex. Apple does not support flash videos)
 - ✓ Is your video going to be embedded in another application? What other applications will typically do is take the video and apply their own codec to the video so that it will be playable within their application but that does not mean the application will understand all types of codec. Check the applications help menu to determine the best codec for importing.

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Most Common Codecs

- ✓ MPEG (Moving Pictures Expert Group): three video formats, MPEG 1, 2, and 4.
 - ✓ MPEG-1: Old, supported by everything (at least up to 352x240), reasonably efficient. A good format for the web.
 - ✓ MPEG-2: A version of MPEG-1, with better compression. 720x480. Used in HDTV, DVD, and SVCD.
 - ✓ MPEG-4: A family of codecs, some of which are open, others Microsoft proprietary.
- ✓ H.264: Most commonly used codecs for videos uploaded to the web. Part of the MPEG-4 codec.
- ✓ MPEG spinoffs: mp3 (for music) and VideoCD.
- ✓ MJPEG (Motion JPEG): A codec consisting of a stream of JPEG images. Common in video from digital cameras, and a reasonable format for editing videos, but it doesn't compress well, so it's not good for web distribution.
- ✓ DV (Digital Video): Usually used for video grabbed via firewire off a video camera. Fixed at 720x480 @ 29.97FPS, or 720x576 @ 25 FPS. Not very highly compressed.

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Most Common Codecs


- ✓ WMV (Windows Media Video): A collection of Microsoft proprietary video codecs. Since version 7, it has used a special version of MPEG4.
- ✓ RM (Real Media): a closed codec developed by Real Networks for streaming video and audio.
- ✓ DivX: in early versions, essentially an ASF (incomplete early MPEG-4) codec inside an AVI container; DivX 4 and later are a more full MPEG-4 codec...no resolution limit. Requires more horsepower to play than mpeg1, but less than mpeg2. Hard to find mac and windows players.
- ✓ Sorenson 3: Apple's proprietary codec, commonly used for distributing movie trailers (inside a Quicktime container).
- ✓ Quicktime 6: Apple's implementation of an MPEG4 codec.
- ✓ RP9: a very efficient streaming proprietary codec from Real (not MPEG4).
- ✓ WMV9: a proprietary, non-MPEG4 codec from Microsoft.

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Most Common Containers


- ✓ AVI (Audio Video Interleave): a Windows' standard multimedia container.
- ✓ MPEG-4 Part 14 (known as .mp4): is the standardized container for MPEG-4.
- ✓ FLV (Flash Video): the format used to deliver MPEG video through Flash Player.
- ✓ MOV: Apple's QuickTime container format.
- ✓ OGG, OGM & OGV: open-standard containers.
- ✓ MKV (Mastroska): another open-specification container that you've seen if you've ever downloaded anime.
- ✓ VOB (DVD Video Object): It's DVD's standard container.
- ✓ ASF: a Microsoft format designed for WMV and WMA—files can end in .wmv or .asf

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 **Most Common Containers**

- ✓ 16 kbit/s – videophone quality (minimum necessary for a consumer-acceptable “talking head” picture using various video compression schemes)
- ✓ 128 – 384 kbit/s – business-oriented videoconferencing quality using video compression
- ✓ 1.5 Mbit/s max – VCD quality (using MPEG1 compression)
- ✓ 3.5 Mbit/s typ — Standard-definition television quality (with bit-rate reduction from MPEG-2 compression)
- ✓ 9.8 Mbit/s max – DVD (using MPEG2 compression)
- ✓ 8 to 15 Mbit/s typ – HDTV quality (with bit-rate reduction from MPEG-4 AVC compression)
- ✓ 19 Mbit/s approximate — HDV 720p (using MPEG2 compression)
- ✓ 24 Mbit/s max — AVCHD (using MPEG4 AVC compression)
- ✓ 25 Mbit/s approximate — HDV 1080i (using MPEG2 compression).
- ✓ 29.4 Mbit/s max – HD DVD
- ✓ 40 Mbit/s max – Blu-ray Disc (using MPEG2, AVC or VC-1 compression)

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 **Topic 2:**
Linear and Non-linear Video Editing:
Equipment and its functions

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 **Introduction**

✓ Postproduction editing is the third and final stage of the production process, in which the various video and audio segments are given structure and meaning. Editing offers you the final chance to clarify and intensify the intended message. Assuming that the pre-production and production phases went according to plan, you can now use your grasp of the program objective and your creativity to build a program that has clarity and impact.

✓ Editing goals

Basically, editing or postproduction is the process of combining individual shots in a specific order. It has several purposes:

- ✓ To assemble material in a sequential fashion. The shooting order may differ from the running order
- ✓ To correct mistakes by editing them out or by covering them with other footage.
- ✓ To create, enhance, embellish, and bring to life images and events that were once captured live. Tools such as visual effects, sound effects, and music can give the story more drama, thus more impact on the audience.

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Equipment used in the process of non-linear editing

- ✓ Editing with a computer can be a complex process. This tutorial provides an overview and general instructions — you may need to consult your manuals or support forums for some specific tasks related to your software and hardware.

The diagram illustrates the workflow of non-linear editing. In the 'Capture phase', a camcorder or video recorder feeds into a computer NLE. In the 'Export phase', the computer NLE outputs to either a VTR records edit master tape or a DVD recorder burners DVD master. A preview monitor and line monitor are also connected to the computer NLE.

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Non-Linear Editing System

- ✓ If you were to equip your editing suite, opt for a high-end desktop computer with a high-capacity hard drive and a high-speed processor.
- ✓ The typical nonlinear editing (NLE) system must also include two fairly large external monitors—one for the computer output and the other to show your edited sequences—and two small loudspeakers.
- ✓ It somehow seems easier to work with two separate screens than with a divided one. If you intend to control the volume of additional sound sources, or premix several of them before importing them to the NLE, you will also need a small audio mixer.
- ✓ A computer used for editing must have the necessary software to accomplish the three phases of nonlinear editing—capture, the actual editing, and export—as well as additional special-effects software for creating transitions, graphics, and titles.
- ✓ Once the information is on the hard drive, you can select clips and specify their order of play. You can also add new information, such as clips or audio segments from another shoot or source, to heighten the impact of your creation.

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Non-Linear Editing System

The photograph shows a person sitting at a workstation with several monitors. Labels point to: 'Computer monitor for editing palettes, tools, and files', 'Computer monitor for preview and line displays and editing timeline', 'Video monitor', 'Speaker', and 'Audio mixer'.

12.2 | EDITING
This non-linear editing system consists of a keyboard, a display, a mouse, and various other components. The video monitor displays the edited sequence, and the audio mixer is used for controlling the volume of the audio tracks.

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Non-Linear Editing System

- ✓ Phase 1: Capture/Digitise
- ✓ Before you can do any nonlinear editing, you need to transfer the content of the source media to the hard drive of the NLE computer. The source media can be videotape, hard drives, memory cards, or optical discs.
- ✓ Digital source tapes: You can transfer digital videotapes directly from the camcorder to the NLE hard drive. If, however, you intend to select shots from the source tapes to save space on the NLE hard drive, you should use a stand-alone videotape recorder (VTR) for the capture. This is where your field log comes in handy. Don't bother capturing shots that you marked as definitely no good, such as the one in which the talent showed the wrong book during an interview with the author.
- ✓ Once you have inserted the source tape in the sturdier VTR, you can connect it to the NLE system with RCA phono or S-video cables or, better yet, a FireWire (IEEE 1394) cable.

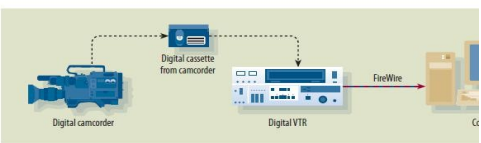
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Non-Linear Editing System

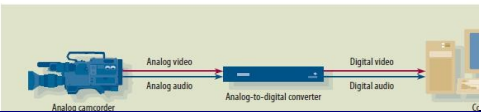
- ✓ Analogue source tapes: If you want to edit some of your old analog tapes, you first need to digitize them before capture by the NLE. To do this you can use RCA phono or S-video cables to connect the analog camcorder to a converter box, which changes the analogue content into digital data. A FireWire cable lets you connect the box with the hard drive of the NLE.
- ✓ Other digital source media: If the digital camcorder uses recording media other than videotape, you can transfer the source data directly to the hard drive of the NLE. Connect the tapeless camcorder via RCA phono, S-video, or FireWire to the NLE system or, if you use a compatible memory card, insert the cards directly into the slot of the NLE system.

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Non-Linear Editing System



12.3 CAPTURE FROM DIGITAL VTR
When played back on a digital VTR, the digital video and audio source material can be fed directly into the a two-way FireWire cable.



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Equipment used in the process of linear editing

- ✓ Two VCRs (video tape machines), preferably with AV (audio and video) outputs.
- ✓ At least one video monitor, but preferably two. Professional monitors are best but you can use televisions if necessary. Connecting cables.
- ✓ Edit Controller.
- ✓ CG- Character Generator- Graphics generator-Adding titles and other effects in linear editing normally require specialized equipment.
- ✓ Video tape recorder: A video tape recorder (VTR), is a tape recorder that can record video material. The video cassette recorder (VCR), where the videotape is enclosed in a user-friendly videocassette shell, is the most familiar type of VTR known to consumers. Professionals may use other types of video tapes and recorders.
- ✓ Recording device: USB drive, hard disc or a chip.

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Equipment used in the process of linear editing

Edit Controller/ Switcher


- ✓ This is a device which connects to and controls the source and record machines.
- ✓ The controls on the left (above and including the jog/shuttle ring) control the source machine.
- ✓ The corresponding controls on the right are for the record machine (notice the addition of a red record button).
- ✓ The controls in the middle are for various edit options such as marking in/out points, etc.
- ✓ The edit controller is an interface between the source and record VTRs. It displays elapsed tape time and frames, controls source and record VTR rolls, stores edit-in and edit-out points and tells the VTRs to locate them on the tape, and offers previewing before the edit and reviewing after the edit.

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Non-Linear Editing System



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 **Topic 3:**
Steps for Linear and Non-linear Video Editing


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 **Steps and systems of Editing**

Editing begins with sorting through the available material and doing the following:

1. Selecting the required shots
2. Deciding on the order and duration of each shot
3. Deciding on the cutting point (when one shot is to end and the next to begin)
4. Deciding on the type of transition between shots
5. Creating good continuity.

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 **Steps and systems of Linear Editing**

- When you want to locate a shot that is in the middle of the tape, for example, you need to roll through shots 1 and 2 before reaching shot 3.
- We cannot simply jump from shot 1 to 3. Because tape-based systems do not allow random access of shots or frames, all tape-based editing systems are linear.
- Linear editing is basically selecting shots from one tape and copying them in a specific order onto another tape. The operational principle of linear editing is copying.
- One or several VTR's play back portions of tape with the original footage and another VTR records on its own tape the selected material.

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Steps and systems of Linear Editing

- The different tape-based systems fall into three categories:
 - Single-source
 - The basic system that has only one VTR supplying the material to be edited is called a single-source or cuts-only editing system. The machine that plays back the tape with the original footage is called the source VTR or the play VTR and other one is called record VTR. The tapes are called source video tape and edit mater tape. For this two monitors are required.

Linear Editing System

Source (play) VTR monitor shows first frame of new shot Shot 3

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Steps and systems of Linear Editing

- You use the source VTR to find the exact in-and-out points of the footage you want to copy to the edit master tape. Record VTR also has to be told when to start recording (copying) the source material and when to stop. An 'in' and 'out' cue tell that which is done by an edit controller machine.
- Edit Controller**
This machine automates editing to a certain extent. It memorizes some of commands and executes them with precision and reliability. Control VTR search modes. (variable forward and reverse speeds) separately for the source and record VTRs to locate scenes. You use the source VTR to find the exact in-and-out points of the footage you want to copy to the edit master tape out points. Synchronizes tape speeds in VTRs.

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Steps and systems of Linear Editing

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Steps and systems of Linear Editing

- **Expanded Single-Source System**

In a documentary on rush hour traffic, you may want to add more traffic sounds to intensify the shots of a downtown gridlock or put some music on a wedding scene. Such effect can be achieved with the help of audio mixer. If titles need to be added, a character generator is required and a Switcher that can mix the titles with the scene from the source tape, without the edit master tape undergoing another generation. Switcher and audio mixer can offer variety of effects. It can facilitate a great variety of transitions, such as cuts, dissolves and wipes.

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Steps and systems of Linear Editing

The diagram illustrates a single-source editing system. It features a Source VTR connected to a Video switcher. A CD player and an Effects unit are also connected to the Video switcher. The Video switcher is connected to an Audio mixer, which is in turn connected to a Recorder. Blue arrows indicate the signal flow between these components.

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Steps and systems of Linear Editing

- The tape based multiple-source editing system consists of two or more source VTRs, a single record VTR, and a computer assisted edit controller. The computerized edit controller directs the functions of the source A and B VTR's, the C.G. or effects generator, the audio mixer, and finally the edit and record functions of the record VTR.

The diagram illustrates a multiple-source editing system. It features two source VTRs (Source A VTR and Source B VTR) connected to a Video switcher. A CD player and an Effects unit are also connected to the Video switcher. The Video switcher is connected to an Audio mixer, which is in turn connected to a Recorder. Blue arrows indicate the signal flow between these components.

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Non-linear editing systems and steps

- NLE is slightly elaborate process but most flexible editing system. It is like putting together a jig-saw puzzle – we arrange and rearrange pieces of scattered footage into a meaningful film. Editing video on a computer is basically NLE, that is film or video can be assembled in any order from beginning to end.

There are many inexpensive and expensive software available. But all follow basics:

- Digitizing
- Compressing & storing
- Juxtaposing, rearranging and applying effects to audio and video files. Copying edited programme back on to tape, DVD or hard drive.

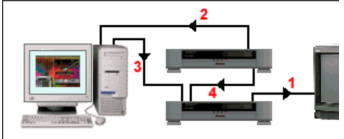
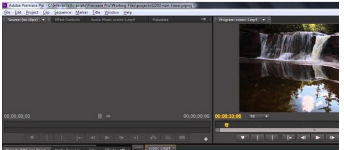
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Non-linear editing systems and steps

- Digitizing or capturing**
 - Transferring analogue videotaped information to a digital and storing the information on computer hard drive. It happens in real time but also with an option of batch capturing.
- Compression**
 - In video, the less compression there is, the higher quality the video and sound will be. Generally MPEG-2 compression standard makes it difficult to do precise frame-accurate editing.
- Juxtaposing and rearranging video and audio files**
 - NLE is comparable to rearrange letters, words, sentences, and paragraphs through word processing. For editing, we juxtapose images and rearrange video and audio files. We can juxtapose two frames or a series of frames to see how well they cut together.

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Non-linear editing systems and steps

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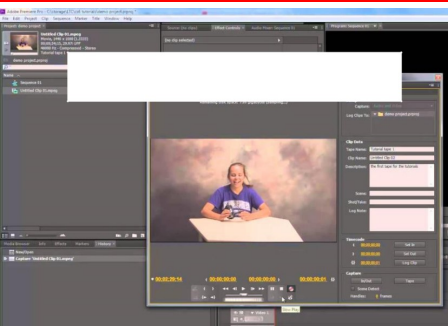
Non-linear editing systems and steps

- A NLE setup requires a fairly high-end computer that can handle audio, video, graphics, and a host of audio and video effects. A recorder that also serves as a player is connected to the CPU of the computer using FireWire cable.
- The editing software also works as an interface between the recorder/player and the editor can be controlled by the keyboard and mouse. The raw footage on tape is digitized, that is captured in digitizes form onto the computer's hard disk. Each shot needs to be named and arranged in different bins for easy editing.



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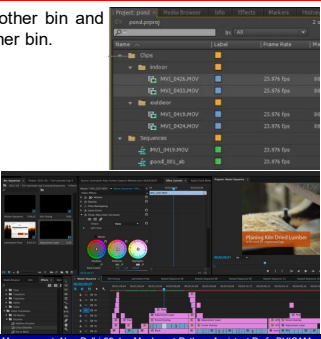
Non-linear editing systems and steps




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Non-linear editing systems and steps

- We can import music into another bin and store all graphics/titles in another bin.
- Editing timeline layout in NLE software




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 **Non-linear editing systems and steps**


- On the timeline, we can arrange shots side by side at random and rearrange them to our needs. Our shots and audio are arranged in what are known as audio and video layers. To apply effects, we go to the effects palette, select an effect and apply it by dragging to respective video or audio.
- **Rendering is the process** of allowing the computer to implement all of the audio, video, and digital effects, on a frame by frame basis. In video editing it is the computer process of combining your still pictures, video clips, audio clips and other visual elements into a single digital video frame.

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 **Non-linear editing systems and steps**

- Rendering is generally required for:
 - The use of filters, transitions, generators, or any combination of effects that exceeds your computer's real-time playback capabilities.
 - High-quality final output. Real-time effects that play back at preview quality must ultimately be rendered for high-quality video output.
 - Video clips using codecs that Premier Pro can't play in real time. Multiple audio tracks that exceed your real-time playback limit.
 - Clips with audio effects that require too much processing power.
 - Some nested sequences, which can include layered Photoshop files.
- The NLE software has the ability to adjust the volume of an audio clip. Fade-in, Fade-out, cross-fade or cross dissolve with audio on separate tracks.

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 **Topic 4:**
Editing Techniques: Types of Cuts and Transitions

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 **What is a cut in film and TV?**


- Video cuts (also called movie cuts or film cuts) are transitions in films and videos that allow filmmakers to weave multiple camera shots together.
- These transitions play a key role in visual storytelling, and it's on the editor to choose the best types of cuts to serve the film's core narrative.
- The term "cutting" dates back to the days of celluloid film, when directors and editors would spend their post-production time literally slicing and splicing strips of film to create smooth transitions between shots and scenes.
- In the modern film industry, video editors no longer wield utility knives.
- When you watch just about any new movie or TV show, you're seeing cuts that an editor digitally rendered on a computer.

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 **Standard Cut**

- The standard cut, also known as the hard cut, is a classic editing technique where one scene goes to the next with no visual transition. In a script, cuts like these are often called "smash cuts." You can see an assortment of smash cuts in Quentin Tarantino's Django Unchained (2012) in a dining room scene where ruthless slave owner Calvin J. Candie (Leonardo DiCaprio) loses his mind over deception from Django (Jamie Foxx) and Dr. Schultz (Christopher Waltz). Tarantino cuts to various angles in the scene without fanfare, which creates a sense of fluid continuity.

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Jump Cut

- Jump cuts are named for the fact that they “jump” ahead or backward in a film’s chronology.
- They indicate the passage of time.
- Like a match cut, a jump cut transition can be an effective film editing technique to portray a skip in time. When used properly, it can best help you tell the story you want to tell. We’ll start with a jump cut definition before moving onto some creative ways filmmakers like Spielberg and Guy Ritchie use them.
- A **jump cut** is when a single shot is broken with a cut that makes the subject appear to jump instantly forward in time. Whereas most editing techniques are designed to “hide” the edit, a jump cut is a stylistic choice that makes the edit completely visible.

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Jump Cut


- Some filmmakers believe jump cuts are inherently bad because they call attention to the constructed and edited nature of the film. They are seen as a violation to typical continuity editing, which seeks to give a seamless appearance of time and space to the story.
- The jump cut has been around since the birth of cinema. No jump cut definition would be complete without mentioning one filmmaker in particular. **Georges Méliès** utilized the technique to create the illusion of magic occurring on-screen. As a magician, Méliès took full advantage of this technique to create some striking and memorable “trick shots.”
- The more contemporary use of the jump cut began with **Jean-Luc Godard and his seminal 1960 film Breathless**, undoubtedly one of the best **French New Wave movies**. On its surface, Breathless is a criminal love story but the expectations one has for such a story are dismantled, one-by-one.

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Jump Cut


- Consider this early scene as we ride in a car with our two lead characters. The camera stays fixed on Patricia (Jean Seberg) but we jump cut multiple times to seemingly random and indeterminate points in the future.

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 **J Cut**


- A J-cut is a classic technique where the audio from the next clip overlaps with the video of the previous clip.
- For example, imagine you have two video clips: Clip A and Clip B. In a J-cut, the audio from Clip B will begin playing before the video from Clip A concludes.
- This type of editing is known as a split edit.
- This cut is named for the way it looks in a video editor: the new audio track sticks out to the left of the new video track above it to resemble the shape of the letter J.
- You can see a J-cut in action in a scene from *Eternal Sunshine of the Spotless Mind* (2004) where a tense sequence with Joel Barish (Jim Carrey) and Clementine Kruczynski (Kate Winslet) ends with the overlay of audio from young children playing outside.

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 **J Cut**

- A J-cut is an editing technique used for scene transitions or within a scene in which the audio of the next scene or shot precedes the image change. This means that the audience hears the next scene or shot before they see it. The term J-cut derives from the "J" shape the edit has on a timeline.
- The counterpart to the J-cut is the L-cut in which the audio from the preceding scene carries over into the next scene.
- J-cuts are used frequently in film editing. Nearly every film you watch will have these cuts if you listen and pay attention closely. These more frequent uses are often to help move the story along in an engaging way.
- Fandor breaks down the most common uses of this technique in this video below with examples from your favorite films.


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 **J Cut**

They can be used for different functions.

- 1. Dialogue**
 - Using J-cuts in a dialogue scene can help give the dialogue a more natural flow. Rather than cutting to each character when they say a line, dialogue can overlap on the character listening before cutting to the character talking. This can help create realistic dialogue scenes.
 - These cuts in dialogue scenes also allow use to see the reaction shots of the character listening while simultaneously hearing what they are hearing.
 - In this scene from **Good Will Hunting**, seeing the reactions of all characters involved and not involved in the dialogue is important to the scene. The J-Cut allows the opportunity for these reaction shots to hold weight.


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 **J Cut**

2. Scene Transitions

- When transitioning from one scene to the next, a J-cut can create intrigue in the audience for the upcoming scene through sound design. For instance, if they hear rain or gunshots before they see the scene, they are immediately engaged. This is commonly used when transitioning into a dream, flashback, or in the case of Blue Valentine, a flash forward.
- At the very end of the scene, listen for the subtle beep that is used to transition between scenes and jump in time.


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 **J Cut**

3. Opening shot

- Many films begin with a J-cut. Sound initially plays over black or a title card and then cuts to the picture. This captivates an audience's attention before they even see the first shot of the film.
- A classic example of this is the opening shot in David Fincher's The Social Network. We hear the ambient sound of the college bar and the opening lines of dialogue before we even see the first shot, captivating our curiosity.

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 **J Cut**

4. Create significance

- By using a J-cut, the editor inherently separates sound or dialogue from the picture it is attached to. This draws out significance in the sound or dialogue to the audience making those specific lines linger in the audience's mind.
- For example, in There Will Be Blood, one of PT Anderson's best movies, we get an excellent example. After about 15 minutes of a dialogue-free prologue of sorts, we hear Daniel Plainview's voice. For about 20 seconds, we hear Daniel introduce himself as an "oil man" while we watch an extended moment of tenderness between himself and his newly adopted son, H.W.

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L Cut

- An L-cut is the opposite of a J-cut, and it, too, qualifies as a split edit.
- It cuts to new visuals while the audio from the previous shot continues.
- So if you had Clip A and Clip B, you would continue audio from Clip A while cutting to the video of Clip B.
- In a famous L-Cut from the action film Predator (1987), a petrified scream from Al Dillon (Carl Weathers) continues into the next visual clip of soldiers elsewhere in the jungle.
- The term derives from the "L" shape that the edit looks like on a timeline. The opposite to this cut is the J cut in which the audio of the next scene precedes the shot change.

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L Cut


- Editors use L cuts more frequently than you think. They can be so subtle that the audience doesn't even notice them. However, they are important to the rhythm and flow of a scene. This technique is an essential way to understand how editors regulate the rhythm of a scene.
- Other times, these cuts are intentionally distinct. They can draw significance to the dialogue or sounds brought forward in juxtaposition with the image of a scene. This video summarizes these types of cuts and how editors use both as effective storytelling devices.

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Cross Cut


- Cross-cutting is the act of cutting back and forth between two sequences.
- You can cross-cut between a pair of scenes, or you can cross-cut among multiple scenes in multiple locations.
- You can even cross-cut between two events taking place in the same physical space and on the same exact timeline.
- In the 1990 horror-thriller Misery, director Rob Reiner uses cross-cutting to build suspense as novelist Paul Sheldon (James Caan) frantically wheels his wheelchair through the house while his captor Annie Wilkes (Kathy Bates) walks up the front path to the door.

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 **Cross Cut**


- Cross cutting in film is an editing technique that cuts separate actions together to illustrate moments that take place simultaneously within the narrative structure.
- The “rules” of cross cutting as far as their relation to scale and time are not overly strict, but the majority of cross cuts are used to show large scale events that occur across multiple locations.
- The distance of these separate locations could be rather short, for example in the same building, or can be as far as completely different planets. The main idea is to show the viewer multiple views across different locations.
- Take a look at the shot list example of cross cutting in Christopher Nolan’s [Inception](#). This cross cutting example will help show actions that occur simultaneously and combine to build more suspenseful scenes:

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 **Cross Cut – Inception**


- We begin in the first dream layer, with Yusuf behind the wheel of a van carrying the team, including Arthur. We see a motorcycle approaching from behind which begins a chase scene in dream layer one.
- We get our first cross cut to the second dream layer as Arthur can feel something is wrong in the above dream layer. Because these cuts are sequential, we automatically know that the actions of the above layer are directly affecting the second dream layer.
- Inception is a very specific case where the actions create direct changes in the other dream layers. But this could be the same as someone cutting the power to a building, and the effect across multiple locations.
- Through the use of cross cutting, we experience the suspense caused by the assault on the van as well as the fight between Arthur and the security forces that takes place in the second dream level.

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 **Parallel editing**


- Parallel editing uses the same back-and-forth technique found in cross-cutting, but its purpose is slightly different.
- Specifically, parallel editing does not necessarily strive for the illusion that two scenes are happening simultaneously. Instead, it intercuts to draw thematic comparisons.
- Alfred Hitchcock uses parallel editing masterfully in his opening scene of Strangers of a Train (1951). Showing only his characters’ legs and feet, he cuts back and forth between his two titular “strangers” arriving at a train station in taxis, exiting, walking through the terminal, boarding the train, and finally sitting down across from one another.
- The parallel editing doesn’t end until the characters are face-to-face.

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 **Parallel editing**


- Parallel editing is a specific cross cutting technique that creates a narrative parallel that the viewer may compare and contrast. For example, if one character is scrubbing toilets while the other is riding a jet ski across a scenic lake, the visuals will create an undeniably powerful narrative point of view through the use of editing both scenes next to and in between each other.
- Parallel editing can also generate suspense, but is more often used to illustrate similarities and differences for situations that occur at the same time.
- For instance, you could show a scene of a butcher as they prepare a chicken for a fancy meal while, in a separate location, a serial killer has captured a victim and prepares to carry out their heinous act. This draws a parallel between the two actions, and allows the viewer to compare.

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 **Parallel editing**


- In this scene from Rocky IV, the parallel cutting illustrates the differences between each fighter's training methods, while suggesting their similar results.
- Parallel editing works in a way that both compares and contrasts each image, so make sure to craft separate images that are able to be connected through similar actions that can provide meaning through the comparison. It is often used as a storytelling device to show the audience two or more different scenarios taking place simultaneously but in different locations, creating a parallel storyline.

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 **What Does Parallel Editing Convey?**


- Suspense:**
 - Cutting in and out of scenes builds suspense by momentarily leaving questions unanswered about how the scenes are connected and how they will intersect.
 - Parallel editing can also misdirect audiences to build suspense.
 - A good example of parallel editing comes from the 1991 Jonathan Demme film, The Silence of the Lambs. The movie contains a scene in which FBI agents surround a building while a serial killer inside dialogues with a victim.
 - Parallel editing leads the audience to believe that the agents are on the cusp of taking down the villain, only to reveal that the antagonist is actually in a different location.

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 **What Does Parallel Editing Convey?**


- **Speed:**
 - You can speed up the pacing of a slow scene by intercutting it with a more action-packed scene. This creates a sequence that is dramatic and drives the film forward.
 - A good example of this use of parallel editing comes from Francis Ford Coppola's 1972 film, *The Godfather*. While the film's protagonist, Michael Corleone, attends the baptism of his nephew, a string of murders is carried out at his behest.
 - The violent murders juxtaposed by the religious ceremony adds an intensity to the film that would otherwise not have been possible without parallel editing. A parallel edit that involves a split-screen can also literally speed up the action by showing twice as much information in half the time it would've taken to show each scene separately.

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 **What Does Parallel Editing Convey?**


- **Juxtaposition:**
 - Parallel editing is often used to present contrasting points of view.
 - One of the first films to employ parallel editing in this way is *A Corner in Wheat*, the 1909 short film by D.W. Griffith.
 - In this film, parallel editing is used to contrast scenes of wealthy businessmen with people waiting in line for bread. Parallel editing can also convey juxtaposition through cinematography—such as close-ups intercut by long shots, for example.

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 **Crosscutting vs. Parallel Editing: What's the Difference?**


- Crosscutting and parallel editing may be similar, but they are not synonyms. Crosscutting is a general term for any time a scene is intercut with another, while parallel editing refers to instances where two or more shots are depicting parallel actions happening simultaneously. A film editor using crosscutting may intercut multiple scenes happening at different times, whereas parallel editing typically intercuts two different scenes from two separate locations that are happening at the same time.
- **An example of parallel editing comes from Christopher Nolan's 2010 film *Inception*.** The film uses parallel editing to show four separate scenes that are taking place in four different locations all at the same time. Parallel editing allows the four scenes to play out as parallel actions rather than completely separate scenes.

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 **Crosscutting vs. Parallel Editing: What's the Difference?**


- Cross cutting is most often used to build anticipation and to show a large scale operation at work. If you have a big scene where a group of thieves carry out a heist, you can build rhythm, momentum, and anticipation.
- For example, you can cut between one thief cracking the vault, another thief crawling in the air duct, and the getaway driver waiting in the car. This does more than simply tell the story "quicker." It creates an even more tense situation that would be difficult to replicate if the scenes were presented one after the other.
- Each of these situations generate their own unique levels of stress and suspense, but when combined into a single sequence, that suspense can multiply. If you've seen any of Christopher Nolan's films, you know that cross cutting is a common technique, especially during the climaxes.

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 **Match Cut**


- A match cut connects two scenes by showing a common element in back-to-back shots. An example is one scene ending on the image of someone looking at a globe on a desk and the next scene showing astronauts viewing planet Earth from orbit. One of the most dramatic (and imitated) match cuts in all of cinematic history occurs in Stanley Kubrick's 1968 sci-fi space opera 2001: A Space Odyssey. A prehistoric ape tosses a bone in the air and then the film seems to jump roughly one million years into the future as the skybound bone becomes a spaceship in flight.
- Many of the best filmmakers shoot to edit, meaning they meticulously plan their shots in advance to ensure that they get all the footage needed for the editing process. A powerful editing technique that requires this kind of planning is the match cut.

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 **Match Cut**


- In the film *Lawrence of Arabia*, the cut from a shot of a burning match to a shot of a sunset is an iconic example of a match cut. Even when two scenes are in different locations or time periods, a match cut has the power to add thematic subtext and a sense of fluidity to the scenes.
- When editing a film, use a match cut to suggest a connection between scenes that otherwise appear to contain unrelated subject matter. Match cut between shots that, though different, have some visual, kinetic, or aural similarity that links them.
- You can also use a match cut to illustrate the passage of time. For instance, say you wanted to transition from a scene in a house to another scene in that same house years later.
- You could match cut from a painting on the wall in the first shot to the faded outline of where that painting used to hang in the second shot. This not only illustrates the passage of time, but it also eliminates the need for an establishing shot of the house because it's clear the new scene takes place in the same location.

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 **Types of Match Cuts**

- **Graphic match cuts:** Also called a “visual match cut,” a graphic match cut links two different scenes together through the use of aesthetically **similar elements like shapes, colors, or patterns**. A notable example of a graphic match cut appears in Alfred Hitchcock’s *Psycho* (1960) during the infamous shower scene; after Marion Crane (Janet Leigh) is murdered, Hitchcock dissolves from a close-up shot of blood flowing down the circular shower drain to a close-up of Marion’s lifeless eyeball.
- **Action match cuts:** A subcategory of graphic match cuts, action match cuts occur when two consecutive scenes are matched through **similarity of motion**. A famous example is from Stanley Kubrick’s 2001: *A Space Odyssey* (1968) wherein a primate throws a bone up into the sky and the shot cuts to a similarly-shaped spaceship soaring among the stars. This action match cut conveys the progress achieved by humanity in the time period between both scenes.

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 **Types of Match Cuts**

- **Audio match cuts:** Also known as an **audio bridge**, an audio match cut is when matching sound effects or dialogue overlap on both sides of a transition.
- A famous sound effect match cut occurs in Francis Ford Coppola’s *Apocalypse Now* (1979) when the sound of whirring helicopter blades during a battle continues into the next scene, where Captain Willard (Martin Sheen) lies in bed beneath a spinning ceiling fan.
- Matching the sound of spinning helicopter blades to the spinning ceiling fan suggests Willard’s inability to escape his memories of war. An example of a dialogue match cut occurs in Orson Welles’ *Citizen Kane* (1941) when a young Charles Kane (Buddy Swan) receives a sled for Christmas from his guardian Thatcher (George Coulouris). Kane wishes Thatcher a “Merry Christmas...” before the film cuts to a much older Thatcher in the future who completes Kane’s greeting by saying “... and a happy new year.” This match cut seamlessly indicates that many years have passed.

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Smash Cuts

- A smash cut is an abrupt and/or jarring edit that cuts from one scene to another without pause or warning. It is also known as a Gilligan cut, named after the show Gilligan's Island, where a character would protest against doing something but then the very next shot would be them in the middle of doing the thing they were protesting against. It is often used for comedic effect, but it can also be used effectively in horror and even drama.
- Smash Cut Characteristics Include:**
 - A character saying they will not do a thing but then immediately cut to them doing the thing.
 - Someone in danger (e.g. about to get stabbed) but then cutting to something safe and not at all dangerous.
 - A character saying something nice about someone and then cutting to that someone being not nice.

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Smash Cuts

- Smash cuts got their other name — Gilligan cut — from the show Gilligan's Island. In it, one of the characters, like Gilligan, would be adamant that they would not do something, only for the very next shot to be them doing the thing. This is an early smash cut example and plenty of television shows and movies have used them for comedic value.
- A smash cut, whether for comedy, horror, or drama, relies on a setup and a punchline each and every time. While this makes them great for comedies, a this type of cut is very versatile.
- These cuts are popular in horror films, where a character might be having a nightmare and they suddenly wake up from it. It is also often used to juxtapose two different scenarios, such as someone about to die but cutting just before that to something more innocuous.

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Cutting on action

- Cutting on action means inserting a cut in the middle of an action sequence, like when one person throws a punch and we cut to the point of view of their victim watching the fist hurtle toward them. For a multi-clip example of cutting on action, check out the scene in The Natural(1984) where Roy Hobbs (Robert Redford) strikes out a feared hitter nicknamed "The Whammer" at a county fair. The same single pitch involves six different cuts that show seven film clips — a clinic in seamless cutting from director Barry Levinson and editor Stu Linder.
- For example, let's say you are editing a scene where a man is kicking down a door. Cutting on action would be cutting from a shot of him kicking the door to a shot (from another view) of the door bursting open. Cutting on action doesn't always have to happen on an intense, aggressive action. In fact, it is often used in everyday scenes.

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Video Transitions

- A transition (Shift or Change) is a technique used in the post-production process of film editing and video editing by which scenes or shots are combined.
- Every film today is made up of hundreds of individual shots that are all placed together during editing to form the single film that is viewed by the audience.
- The shot transition is the way in which two of these individual shots are joined together.
- Often when a filmmaker wants to join two shots together, they use a basic cut where the first image is instantly replaced by the next.
- But what if the filmmaker wants to convey a particular mood, jump between storylines, switch to another point of view, spice up the narrative, or move backward or forward in time? This is where more artistic transitions are useful.

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Fade In/Out


- A fade is when the scene gradually turns to a single color — usually black or white — or when a scene gradually appears on screen. Fade-ins occur at the beginning of a film or scene, while fade-outs are at the end.
- A fade to black — the most common transition type — is a dramatic transition that often symbolizes the passage of time or signifies completion. Fading to black is used to move from a dramatic or emotional scene into another scene, or to the credits at the end of a film.
- Fading to white, on the other hand, can be used to create a sense of ambiguity or a sense of hope, as this montage shows.
- During a Fade Out transition, the shot starts at full brightness and gradually becomes invisible. Using the Fade In and Fade Out together is an effective way of conveying the passage of time. The stock transition for the end of a scene.

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Dissolves


- A dissolve overlaps two shots or scenes, gradually transitioning from one to the other. It's usually used at the end of one scene and the beginning of the next and can show that two narratives or scenes are linked. They can be used to show time passing, or to move from one location to another.
- Quick dissolves might be used to show the scenes occur a few minutes or hours later, while a long dissolve might symbolize a longer duration of months or years between the scenes.
- Dissolve transitions were a staple in Old Hollywood cinema, but they don't get used often these days.
- A slightly more advanced form of dissolve is the match dissolve, where a similarly-shaped and object will dissolve to another, such as slowly fading from a soccer ball to the moon, while matching their size and position on the screen.

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 **Cross-fades/Cross-dissolves**


- Fading one shot out while simultaneously fading the next shot in, instead of to white or black before fading into the next shot.
- With this type of transition, you'll see both clips on screen at the same time during the transition period. Cross-fades/cross-dissolves often make for excellent depictions of time passing or getting inside a character's thoughts.
- Editing software makes creating cross-dissolves easy – just position the beginning of one timeline clip event so that it overlaps the end of another event. The overlap between the clips automatically becomes a crossfade. The amount of overlap between the two events dictates how long the transition lasts.

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 **Wipes**


- The wipe is a more noticeable video transition as compared to the standard cut and fade. In this video transition, the second clip slides in from one side or either the top or bottom, as if wiping across the screen. The wipe video transition can work very well for your video if it is placed with intention - like in a travel video when you are shifting to another location or revealing a monument or waterfall. This video transition can also be used to give a vintage look to your video since it was heavily used in movies during the 60s and 70s.
- This video transition will look great if you're using it with motion in your scene. For example, the shot of an elevator door closing or someone walking across the scene can be paired with the wipe transition in the same direction to smoothly move from one shot to another.

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 **Whip Pan**


- A whip pan transition is when the camera quickly pans creating a blur effect between scenes. It's a bit similar to a wipe but tends to be much faster.
- Director Paul Thomas Anderson frequently uses whip pans in his films, but they're not always a transition from one shot to another, it's just changing to a different angle in one shot. This type of transition is often used for comedic effect or to convey fast-paced action.
- **Zoom**
- Like a whip pan, zoom transitions can be used to convey a frenetic pace, switching quickly from one scene to the next.

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 **Object Block**


- This video transition is one of the easiest to create and lets you visually transport your audience from one place to another. All you have to do is end your first clip by completely blocking the frame with an object, like a tree or wall. Then starting the second clip from a similar object.
- When you join the two clips, it can make for a smooth video transition from one space to another.
- This transition has now become very common with YouTubers using their hands or other everyday objects to block the frame and reveal their next location in the vlog or just move to another segment.

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 **Video Transition Tips**

- While it can be tempting to go crazy with transitions, especially if you're new to video making, it's best to avoid this. Here are a few quick tips for using video transitions well.
- **Keep them consistent:** There's nothing more amateur than using different transitions for every scene.
- **Keep them subtle:** Unless you're going for a specific effect, it's best to use transitions sparingly. Remember, most of the time, **directors use basic cuts** between scenes. Transitions are usually only used when they **serve a storytelling purpose** (and good design should go unnoticed.)
- **Keep the meaning of each transition type in mind:** While you can have some fun with transitions, as Edgar Wright did with his tooth brushing zoom cuts, it's best to bear in mind what different transitions symbolize and use them only where appropriate. For example, as fade to black is a dramatic transition that signifies completion, it would be odd to use it between two scenes that take place in the same time and space.

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THANK YOU

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