Training session

Editing 1/2

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A- introduction

The editor job is split into 2 sides.

Technical side	Theorical side
The hands: - paper and pen - film 35mm and Analog video editor - Computer software (Avid, premiere, Apple FCP…)	The brain (how to give a meaning): - a movie is a story; how to build a story ? - It's like building a sentence: subject, verb, complement… - Rules to respect to be understood: it's a language with grammatical rules! - How to give life? The human touch!
To know the tools so good that you forget it!	Being understood with a personal touch (somebody else cannot make the same movie)

It' like a good driver: anybody can buy or rent a car (how to start, go left, right, accelerate… the operating manual), but nobody drive like Michael Schumacher (the human touch)!

A good movie is made with:
- Technical knowledge (the manual of the software and the computer)
- Respect of the rules (grammatical…)
- Your touch (the meaning you gave)

News, Documentary, movie: same fight!
When you make an interview, it's not only about an interview, it's about the subject, the environment of the people you are interviewing, it's about his job…
It's like asking a friend 5 shekels: you don't go straight in front of your friend to say "5 shekels!"; you call him to know if he is at home, then you knock at the door, you salute him, and finally you explain your problem and ask him gently if he can give you 5 shekels to help you, then you thank him: introduction, action, conclusion, even for news!

An editor need to communicate with the people working on the movie: with the cameraman, to drive him in case of the lack of special needs ("I need a wide shot of the city…", "I need extra shots of the football player and the interview of the chairman…", "I need extra sound for the ambiance…"). When the cameraman is back with the pictures, talk with him about the problems, so he would try his best the next time he will shoot for you. A Cameraman who is also an editor know quite well what he has to shoot and will not forget the shot that is missing in your montage: first 15 seconds on a tape not used, 10 seconds shot min, no TC break (**End Search** function), tape number on each tape, audio setup mode to 48 Khz…

Not again! Once while shooting in Roma for a documentary, we did forget some cut away the day before in Brussels: We went back to Brussels (driving all the night long 1500 Kms), we took the cut away in the morning, then back again to Roma in the same day! Always write and prepare your shooting before, and don't come back until all the shoots are in the box!

An editor is the guy who makes a decision (with the Director agreement!):
- the choice of the good shots
- his point of view (another Editor will make another decision, so the movie will be different depending of the editor feeling and experience and background)

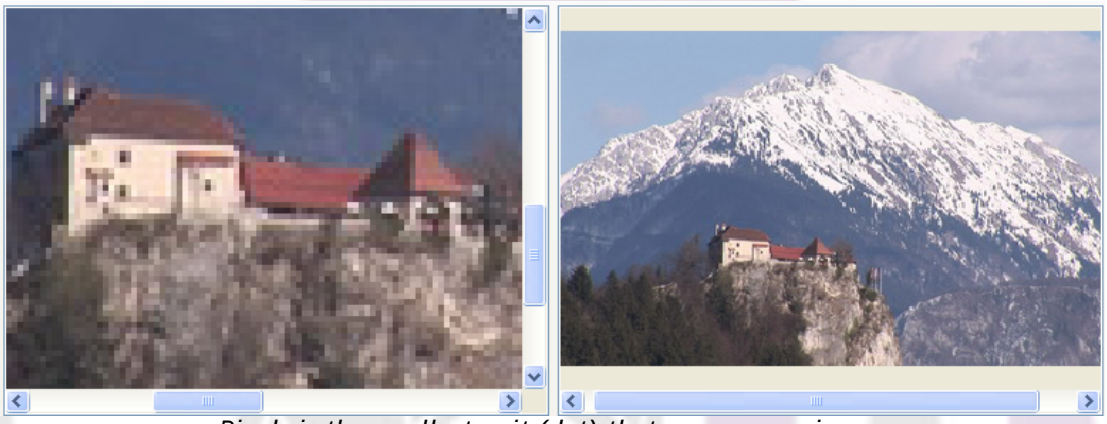
Note: it's better to make a bad decision than making no decision at all!

When you are shooting and you also plan to edit the movie, it's good to let someone else edit the movie: He will have an external point of view, fresh, without passion (THE beautiful shot you took early in the morning to catch the sun raise is fantastic, but your movie doesn't need it, and you are not able to know that!). The Montage will be different and usually better!

B- Technical bases

1- Video

A picture is made with small dots we call PIXELS (Pictures Elements).



Pixels is the smallest unit (dot) that compose an image

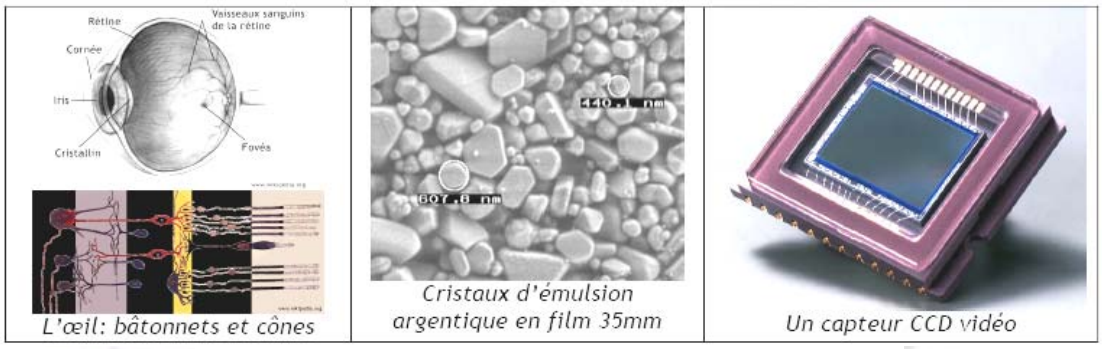
How can we compare pictures in terms of Quality?

- The number of pixels (440 000 for SDTV)
- The subjective quality of the picture

From the small DV to the biggest Digital Betacam, all camcorders share the same amount of pixels (440 000 pixels in SDTV, even with a 3Mpixels camcorder!), so the quality is something else:

- The Quality of the lens is the first point
- Quality of the CCD (old or new generation, mono or 3 CCD, CCD or CMOS…)
- Color fidelity
- Sharpness
- Contrast
- Stable picture (more difficult with small handycam)

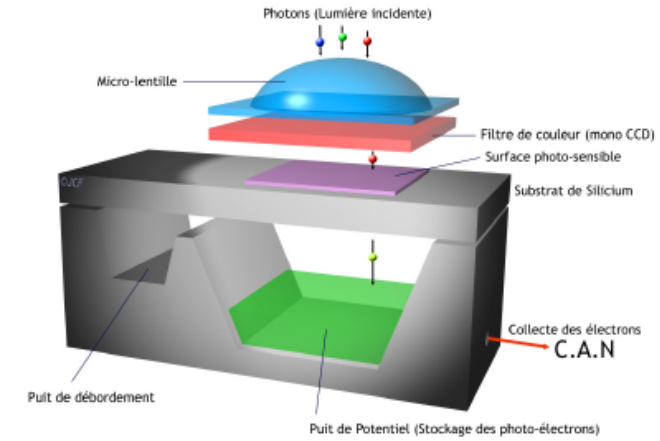
How the camera build a picture from the sun light?



L'œil: bâtonnets et cônes

Cristaux d'émulsion argentique en film 35mm

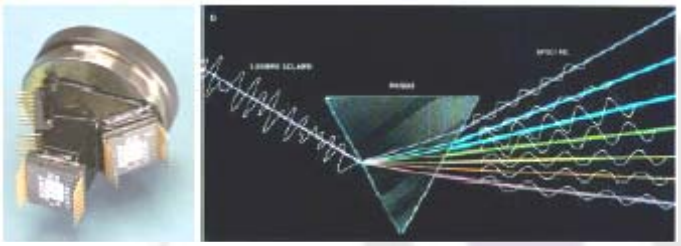
Un capteur CCD vidéo



Conversion from the photon power to the electron power

2 ways to transport video from the RGB CCD:
- Analog (Electricity: from 0 Volt to 1 Volt)
- Digital (Computer: ON or OFF, 1 or 0)

The picture will also depend on the generation of the CCD, and if it's a mono or a 3 CCD:



3CCD Camera head

3CCD and mono CCD differences

ANALOG TRANSPORT

- RGB or YUV (Broadcaster, TV channel…): 3 cables
- S-Video (YC): 2 cables
- Composite (yellow cable): 1 cable

Composite is easy to transport but you loose quality (color, sharpness…).

We have to cut the video workflow into 4 steps disconnected:

Capture	Recorder	Transport	Display
RGB	Digital Betacam	RGB	RGB
	DV	YUV	
	S-VHS	S-Video	
	VHS	Composite	

For example, I can record a video with a VHS tape and export the analog video signal with S-Video.

To convert a RGB signal into Composite signal, we use 3 technics:
- NTSC (USA and Japan)
- SECAM (french)
- PAL (german, and Europe)

For Audio signal, 2 cables for Right and left signals.

DIGITAL TRANSPORT

The conversion of the electrical signal into 0 and 1 basic informations: The camcorder become a computer and the tape is his Hard Drive (Every information is store in computer language: 0 and 1).

Digital Formats: DV, Betacam Digital, Betacam SX, IMX…

DV has a special connector to transport Video and audio from camcorder to Computer or to another camcorder: the name is IEEE1394, but Apple call it FIREWIRE and Sony I LINK (4 or 6 pins).

To input analog video into a computer that has IEEE1394 input, simply copy analog source to the DV camcorder, then copy the DV to the computer with IEEE1394.

2- Computer

How to transform a normal computer into an Editing Station?

1- Add a firewire PCI card 30 Euros
2- Add an extra hard drive (from 200 to 500 GB)

Minimum Requirement for your PC to Edit (Desktop):

- RAM: 1 GB
- Processor: AMD AThlon 3,2 Ghz or Intel Pentium IV 3,2 Ghz
- 2 Hard disks: one for the system (+ softwares), one for the datas only (audio, video, etc…)
- Audio card Sound Blaster (Prodigy for example)
- Simple DV card
- Any graphic card

If you want to edit with a notebook, use the same specifications but with with a PCMCIA Firewire Card, and an USB2 external drive.

Note: There is no difference between a PC and a Mac (you can install Windows on a new Mac).

Note: Prefer to connect the external disk with USB2 connection rather than Firewire because:
- Usually there is only 1 firewire connector available on a laptop
- Firewire is not as flexible as USB when you connect or disconnect a camcorder or a drive

Softwares

MAC	PC
Apple final cut pro Avid Xpress Pro Free software or basic: I MOVIE	Avid Xpress Pro Adobe Premiere Pro Sony Vegas Avid Liquid Free or basic software: Windows Movie Maker Pinnacle Edition

1 Hour of DV = 11 GB of disk space (ON LINE Quality).

Binary basics

A computer is very simple, it does only understand the presence of electricity or not (ON or OFF). For him, it's like two letters in an alphabet: 1 or 0. That's the binary language (BIT= Binary digits).
1 bit = 1 or 0.

To make it more intelligent, we are making words with these two letters:
0 can be 00, also 000 or 0000.
1 can be 11, also 111 or 1111, etc…
But these words allow me to make different combinations between 0000 and 1111: 0001, 0011, 0111, etc…

In computers world, the basic word has 8 letters: 00100110.
This word of 8 bits is called a Byte.

8 bits = 1 Byte

1 Byte	1 B
1 000 Bytes (in fact 1024!)	1 KB
1 million Bytes	1 MB
1 billion Bytes	1 GB
1 trillion Bytes	1 TB

To know the correspondence between the binary language and the human language, we did make standards in Picture files, Audio files, Text files, Video files…

Picture	Sound	Text	Video
.Bmp	.wav	.txt	.Avi
.pic	.aif	.doc	.Mov
.gif		.rtf	.mpg
.jpg	.mp3		…

PICTURE definition

A normal PAL video size is 768x576 with a square pixel (pixel ratio = 1, H/V).

In DV, we use a special size: 720x576, with a special pixel ratio = 1.067. The picture is stretched to 720 pixels (Horizontal) during the recording, and then stretched to 768 during the playback.

1 PAL picture on a hard drive = 1.3 MB (.bmp).

Need 15% of extra disk space to store:
- Rendered media (audio effects, video effects)
- Titles
- Graphics
- Etc…

ON LINE Quality / OFF LINE quality to store more tapes (conformation to ON LINE quality after editing):
- Write a correct number on each tape
- Do not make any TC break on a tape (End Search)

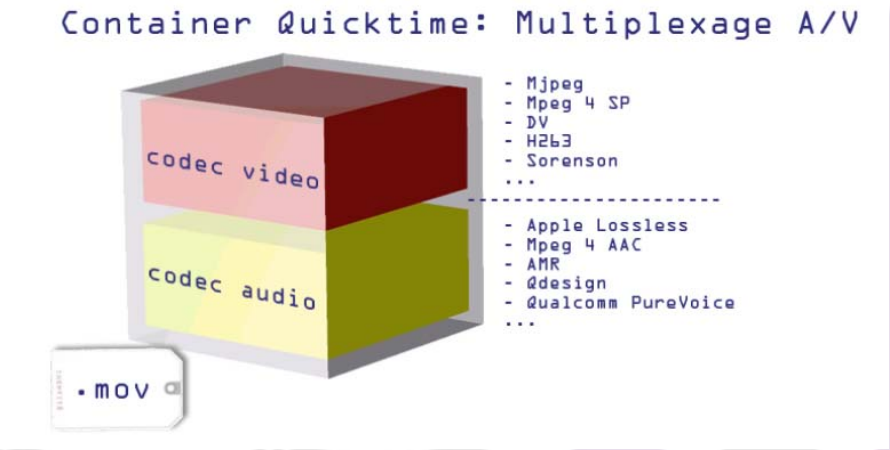
AUDIO

CD Audio = 44 Khz / 16 bits
DV audio = 48 Khz / 16 bits (Switch from 32 Khz to 48 Khz before shooting: Camera menu)

FILE FORMATS

Editing	Broadcasting
.avi .mov	VCD = Mpeg1 DVD = Mpeg2 Internet = wmv / mpeg4 / real

Inside the .avi and .mov format, we are using co-decs: DV, Sorenson, etc…



Inside the 'format' box: the codecs used to compress images and sound

NON LINEAR EDITING (VIRTUAL) / LINEAR VIDEO SYSTEM

We still use linear systems: a player and a recorder connected to copy sequences and build the montage; for example, in News production field, linear systems are used because that's the fastest way to broadcast (No need to digitize tapes to drive, then edit, then print to video…).

In a virtual system, only the rushes exist on the hard drive: the 'Montage' is an edit List (text) that show the montage live from the rushes (jump from sequence to sequence, with real-time effects and titles).

HOW TO BUILD A STORY ?

Making a movie is like telling a story, and it's like building a sentence: we need a construction, we follow rules to be understood!

Simple structure:

1- Introduction (once upon a time…): **Where, Who, When, What?**
2- Action and interview (Some characters are doing something special or talking about a specific subject)
3- Conclusion (funny or open?)

Example: Someone waking up, going to his job; do I have to show every step? Storyboard and direction.

What are the different steps to edit a movie ?

1- Pre-production step: Prepare and Write your project (+ questions)
2- Production step: Shooting (with the list of the shot to take, like in a supermarket !)
3- Post Production step:
    a. Preview your pictures: Watch all the material to get a global view
        i. Make directories and bins in your Global Bin
        ii. Make subclips and give names
        iii. Select the best shots
    b. Having all the piece of the puzzle in front of you, build a virtual montage on a paper
    c. Using computer, concretize your puzzle: edit and finalize a 'Monster': rough (cut) of the final movie, a first CUT.
    d. Finalize your movie, adding dissolve, fade, titles, color correction, music… The Final CUT !
    e. Exporting to tape (or to DVD, VCD, Internet): Ready To Broadcast !

Image report (footage log)
Montage sheet (project on paper sheet: storyboard)

Editing rules: 30 deg/180 deg, axe, cut, fade, ellipse, rhythm, breath, feeling, effects…

Note about the effects: The more effect you show on screen, the less you have to say. That's the difference between a local program and an 'universal' and international program (without hundred of wipes, 3d effects, echo…). Let's have a look to Al Jazira for example.

EXERCICES

- Find a subject for a 30 seconds news subject
- Write the shots to take (interview, Long Shot, city, street, shops, close up, cut away… illustration shots)
- Shoot (do not come back until you have shot everything planned)
- Derush during capture (project choice, hard drive target…)
- Debriefing of the shots
- Build a montage on a Montage sheet
- Debrief each Montage sheet
- Group of 2 people: Edit (Basic tools: Capture, Bins, Timeline, IN and OUT, Insert, overlay, move…)
- Export to DV

Examples: Capture and Editing in Premiere/Avid/Final Cut Pro

GLOSSARY

ADC: Analog-to-Digital Converter. An electronic device used at the input of digital audio equipment to convert analog electrical signals to digital values whose numbers represent the level and frequency information contained in the original analog signal. (Sound)

Analog: An electrical signal that continuously varies in strength as related to some form of input.

Angle of View: This is the size of the field covered by a lens, measured in degrees. However, because of the aperture masks in film, the angle of view for a given lens is generally described in terms of the height and width of a lens. (Cinematography).

Bin: A reference to a storage container lined with a cloth bag, into which cut film or sound stock may be arranged and hung. In digital audio and video terms, this can be related to a film and/or directory from which stored shots or sound segments are selected for use.

CMYK As much as the primary colors of light are red, green, and blue, the primary colors of pigments such as ink or paint are Cyan, Magenta, and Yellow. Adding all three pigments together should produce black. In printing or painting the quality of black created by combining cyan, magenta and yellow is not nearly as good as a real black from sources such as carbon. For this reason a fourth "primary" is added to the printing process. The letter K is used for black. The grouping of the letters CMYK is usually associated with the color print industry.

CODEC (EnCOder/DECoder) A process or device by which or in which a signal is encoded for transmission or storage, then decoded for playback. As a process it is the algorithm that handles the compression and decompression of video or audio files. As a device it could be a box or computer card that accomplishes the encode/decode process.

Composite Video A single video signal that contains luminance, color, and synchronization information. NTSC, PAL, and SECAM are all examples of composite video systems.

Crossfade: The gradual mix of sound sources accomplished by the simultaneous manipulation of two or more mix console faders. (Post Production)

Crossover: The frequency at which a signal is split in order to feed separate parts of a loudspeaker system. (Sound)

Cutaway: A single shot inserted into a sequence of shots that momentarily interrupts the flow of action, usually introducing a pertinent detail. (Production/Editing)

Cutting: The selection and assembly of the various shots or sequences for a reel of film.

DEPTH OF FIELD: The range of objects in front of a camera lens which are in focus. Smaller f-stops provide greater depth of field, i.e., more of the scene, near to far, will be in focus.

Dissolve: A transition between two scenes where the first merges imperceptibly into the second. (Film/Video)

Dub: To make a taped copy of any progam source record, CD, tape. Also, the copy itself.

EDL (Edit Decision List): A list of a video production's edit points. An EDL is a record of all original videotape scene location time references, corresponding to a production's transition events. EDLs are usually generated by computerized editing equipment and saved for later use and modification.

Frame Rate: The frequency at which film or video frames run (i.e. 24 fps; 29.97 Hz in NTSC; 25 Hz in PAL European format).

GENERATION: The number of duplication steps between an original recording and a given copy. A second generation duplicate is a copy of the original master and a third generation duplicate is a copy of a copy of the original master, etc.

Iris: A variable aperture that controls exposure or the amount of light which is released from a lighting unit. (Camera/Lighting)

JPEG (Joint Photographic Experts Group) This was (and is) a group of experts nominated by national standards bodies and major companies to work to produce standards for continuous tone image coding.

Jump cut: editing together of two similar shots of same person or action, with subject in slightly different position in each shot, so subject appears to abruptly move or jump from one part of screen to another

Lead room: space in front of main object, so camera "leads" it into the empty space.

LINEAR EDITING: Editing using media like tape, in which material must be accessed in order (e.g., to access scene 5 from the beginning of the tape, one must proceed from scene 1 through scene 4).

long shot (LS): a shot composition that captures most (if not all) of the subject. A long shot is relative to what is considered a medium shot and an extreme long shot.

Master: Video industry term for the tape containing the finished (edited) program.

medium shot (MS): a shot composition that shows about half of the complete subject. A medium shot is relative to what is considered a close-up shot and a long shot.

Montage: The assembly of shots and the portrayal of action or ideas through the use of many short shots. (Film Editing)

MPEG (Moving Picture Experts Group) It is the nickname given to a family of International Standards used for coding audio-visual information in a digital compressed format. MPEG standards include MPEG-1, MPEG-2 and MPEG-4.

NONLINEAR EDITING: The process of editing using rapid retrieval (random access) computer controlled media such as hard disks, CD-ROMs and laser discs. Its main advantages are: a.) allows you to reorganize clips or make changes to sections without having to redo the entire production; and b.) very fast random access to any point on the hard disk (typically 20-40 ms)

Offline: The videotape editing process whereby the final edit list is compiled, usually in a more inexpensive edit room, in preparation for the on-line edit. (Video)

Online: The videotape editing process that creates the final video edit master, including effects, from the offline edit list. (Video)

OVERSCAN: Video images generally exceed the size of the physical screen. The edge of the picture may or may not be displayed, to allow variations in television sets. The extra area is called the overscan area. Video productions are planned so critical action only occurs in the center safe title area. Professional monitors are capable of displaying the entire video image including the overscan area.

Pan: A horizontal movement of a camera on a fixed axis.

PRIMARY COLORS: The basic colors used in TV and video systems of red, green and blue.

RGB: Red, green & blue, the primary color components of the additive color system used in color television.

Rule of Thirds: composing the camera shot so the most important elements are one third of the way in from any side.

Rushes: This refers to daily prints of a film used for evaluation purposes. Materials, rough pictures from the tapes.

"shoot to edit": a strategy used during recording with the knowledge that bad segments can be overlooked during the post-production editing process. Several different takes can be recorded knowing that during post-production the best segment can be selected.

S-Video (Separated Video) or Y/C (Luminance and Chrominance): A term used to describe the separation of video signal components used in systems such as Hi-8 and S-VHS. Generically called S-Video.

Synopsis: a summary of the video story that includes the plot—beginning, middle, end—along with character profiles and character movements

TALLY LAMP: A signal lamp or LED installed on a video camera which informs performers and crew members that the camera is currently live.

Talent: people in front of camera, also called anchors or reporters.

Tilt: move camera vertically.

TIME CODE (TC): A digital code number recorded onto a videotape for editing purposes.

Voice-over: Narration or non-synchronous dialog taking place over the action onscreen.

ZEBRA: alternating stripes of white and black signals appear on a viewfinder only.