DANCE-FILM TECH GUIDE
by Mitchell Rose

Canon Vixia Cameras

The department has two types of Canon cameras. While they differ slightly, the functionality and layout is pretty similar between the two.

BATTERY   Attach a charged battery. The release button is on the left side under the LCD screen. Plug in the camera when you can—battery life is short and you may need it later. Power on the camera needs to be off for it to charge.

When you close the LCD screen, the camera goes into standby mode using 1/3 the amount of battery. But it isn't OFF.

DISPLAY BUTTON   Some cameras have a Display Button. Pressing it toggles the amount of information displayed on the LCD screen (if you want a less busy screen). If you hold it down for 2 seconds, it toggles the screen brighter which might be useful when shooting in sunlight.

LENS COVER   It opens and closes automatically when turning on or waking from standby mode.

SMART AUTO MODE   Some cameras have a switch that turns on Smart Auto Mode which does everything automatically—too automatically. Don't use it—take control. Leave the switch towards M.

TOUCHSCREEN   Camera settings are controlled by the LCD touchscreen. Please have **CLEAN HANDS** when touching the LCD Screen. No fries with that video.
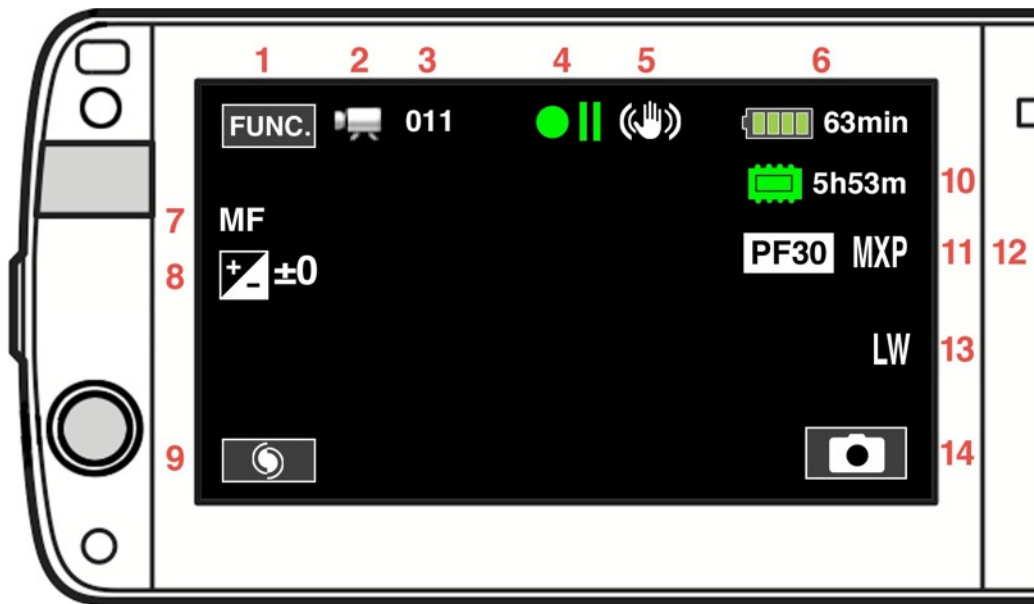
This is the display for the HF M32.

The HF M500 does not have #9 & #14

1.	**FUNCTION Button**	Brings up a screen where you can choose Focus, Exposure, White Balance, and other Menu settings.
2.	**Operating Mode**	This icon indicates you're in Movie Mode (as opposed to taking photos).
3.	**Clip Number**	How many clips are in the memory.
4.	**Record/Pause**	Duh.
5.	**Image Stabilizer**	This shows it's on.
6.	**Battery Life**	And how many minutes of battery you have left.
7.	**Focus Mode**	This shows that Manual Focus is on. The other possibility is I.AF. (Instant Auto-Focus)
8.	**Exposure**	This icon appears if you've selected Manual Exposure. The number shows how light/dark you've chosen.
9.	**Shortcut Button** HF M32 only	This shows the last function you chose, in this case Focus (that's the Focus icon). Let's say you're adjusting exposure. If you decide to tweak your adjustment a little, this gets you back there quickly.
10.	**Memory**	Shows how much recording time is available in memory.
11.	**Frame Rate**	Shows you're shooting progressive frames at 30fps.
12.	**Recording Quality**	Should always say MXP.
13.	**Ignore**	It's only for photos.
14.	**Camera Mode**	Switches between movie and photo mode.

Camera: Recommended Settings

You can access most of what you need for shooting by just pressing **FUNC**. But for other settings and general setup, there are three setup menus.
Press **FUNC > MENU**   Then touch the Tab of the menu you want.

To scroll through the list of options, drag your finger up and down the names. It doesn't behave beautifully.

Here is a list of recommended settings to use as a starting point. You can always change them to suit your needs. (But put them back afterwards.) Items that don't matter (like for photos) are left blank.

You can read more about these options in "Canon_HF_M32 Manual.pdf."

The Camera Menu

To close a menu, touch the **X**
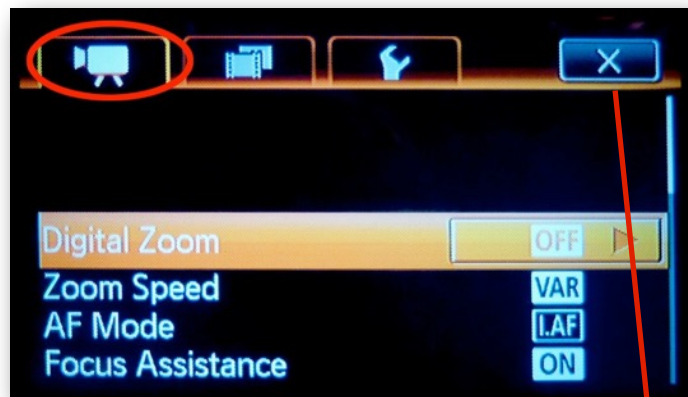
Digital Zoom	Off
Zoom Speed	Variable
AF Mode	I.AF Instant Auto-Focus
Focus Assistance	On
Face Detection	Off
Auto Backlight Correction	On
Auto Slow Shutter	On
Image Effects	Off
Wind Screen	Automatic
Microphone Attenuator	Off
Onscreen Markers	Off
Powered IS Button	ON Press and Hold

The Recording Menu

Self Timer	Off
Video Snapshot	—
Rec Media for Movies	Built-In Memory
Recording Mode	MXP 24 Mbps (crucial)
Frame Rate	PF30 (30 progressive frames per sec)
Rec Media for Photos	—
Simultaneous Recording	—
Memory Info	
x.v. Color	Off
Photo Numbering	—

The System Setup Menu

Font Size	Small
Output Onscreen Displays	—
Language	Su elección
LCD Brightness	center
LCD Screen Dimmer	Off
A/V Headphones	AV
Volume	—
Notification Sounds	Low
Wireless Remote	On
Power Saving Mode	10 min
Initialize Memory	—
Time Zone/DST	New York/sun icon (in Sept and spring)
Date/Time	the date and time

Camera: Basic Operation — Record Mode

FOCUS   Auto-Focus doesn't always do a great job. Outdoors in the bright light it matters less—almost everything will be in focus. In darker conditions, Auto-Focus can mess up and you'll see the focus "breathe" — go in and out of focus. That won't happen in Manual Focus where the focus is locked to a distance you set.

To set Manual Focus: touch **FUNC** > **FOCUS**

A rectangle appears on the screen. Inside it, press the thing you want to be in focus. An orange light comes on at the bottom indication that MF is on. You can touch that to turn it off and go back to Auto.

EXPOSURE   Auto-Exposure adjusts the exposure to medium gray. But if your scene is in an all white room, it will darken it to gray and look wrong. Or if you pan and a bright light enters the frame, the exposure will turn dark. Or if your subject is standing in front of a bright window, they'll end up in silhouette. So often you want to control exposure manually where you lock it to the setting you want.

To set Manual Exposure: touch **FUNC** > **EXPOSURE**

A rectangle appears on the screen. Inside it, press the thing you want to expose for. To further adjust it, drag the slider scale on the left up or down. An orange light comes on at the bottom indication that Manual is on. You can touch that to turn it off and go back to Auto.

WHITE BALANCE   What we see as white light can actually be many colors. Sunlight is blueish, incandescent lightbulbs are yellowish. Our brains adjust and tell us it's white. White Balance is how we tell the cameras knows what white is in a certain lighting condition. Auto-White Balance does a decent job. But it too can change as you pan or make wrong determinations.

To set White Balance: touch **FUNC** > **WHITE BALANCE**

Select your lighting condition. You can scroll the screen down too to find two more options, including CUSTOM. To set Custom, aim the camera at something white in the scene and zoom in until the white fills the screen. Then touch Custom.

IMAGE STABILIZER   Further down the **FUNC** screen is Image Stabilizer. Leave this on **Standard**. (Dynamic overdoes it.)

Camera: Basic Operation — Playback Mode

PLAYBACK   Switch to playback mode by pressing the button in the center of the left side under the LCD screen. A screen of six thumbnails of clips comes up. You can scroll to see more by dragging the page left or right. Touch the thumbnail you want and it'll play, and then continue to play through all the clips until you touch the screen and use the VCR buttons to stop it.

DELETE CLIPS Stay organized by getting rid of clips you know you're not going to use. With the screen of six thumbnails on, press the checkmark icon in the lower right. Now you're in selection mode. Touch the clips you want to delete and a white checkmark appears in the lower left of the thumbnails. (Or press **SELECT ALL** to select all six. **REMOVE ALL** will uncheck the six selections.) Press **EDIT** > **DELETE.**   Obviously, be careful.

The playback/delete system is not well designed. Sorry.

While it's good to keep the clip collection tidy, don't obsess about deleting clips you probably won't use. Later, when you're ingesting the clips into Final Cut, you can always choose to not import certain clips.

DELETE ALL CLIPS   Before starting a new project, you'll want to delete the old clips to start fresh. That can take a long time with this checkmark method. You can initialize the memory (wipe out everything) as a shortcut. Switch to record mode. Press **FUNC** > **MENU** > **MONKEY WRENCH TAB**, and then scroll down to **INITIALIZE**. Be super careful with this—there's no going back.

Formatting Your Hard Drive

New iMacs use USB 3 and Thunderbolt connections for hard disks; older Macs use FireWire and USB 2. If you are connecting to an older Mac, use FireWire. USB 2 is not fast enough for video.

You have your own hard drive to use in class. To work as a media drive with Final Cut, the drive needs to be formatted when you first buy it. (Some drives come in a format for PCs, such as FAT32.) Formatting will erase all the memory on it, so if you have files you want, copy them to another hard drive beforehand.

Connect your hard drive.

Go to the Applications Folder > Utilities Folder.

Launch the program there called **Disk Utility**.

You'll see your hard drive in the sidebar window on the upper left. Single-click it to select it. (If it has two icons, select the top one.)
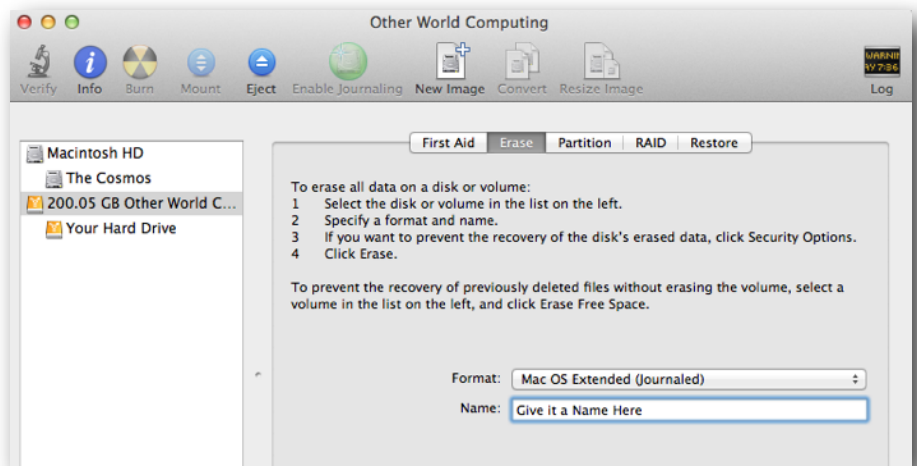
Click the ERASE menu button at the top.

Select from the Format menu:
MAC OS EXTENDED—JOURNALED)

Choose a name for your drive.

Click the **ERASE** button at the bottom.

FCPX: Libraries, Events, and Projects

(This information describes FCPX 10.1. Earlier versions have a different file structure.)

Libraries contain Events, and Events contain Projects and media. Here's an example to illustrate these terms:

You're choreographing a dance called "Bark" and are keeping track of the process by videoing your choreography sessions, rehearsals, and the performance.

So you have a LIBRARY you named BARK. It's the grand container of everything.

Inside the Bark Library are EVENTS you named CHOREOGRAPHY, REHEARSAL, PERFORMANCE. These act like folders.

Inside the Rehearsal Event are PROJECTS you named MARCH 3, MARCH 7, etc. These Projects are the timelines where you took the clips you transferred into the Rehearsal Event and edited it down, adding text captions, etc.
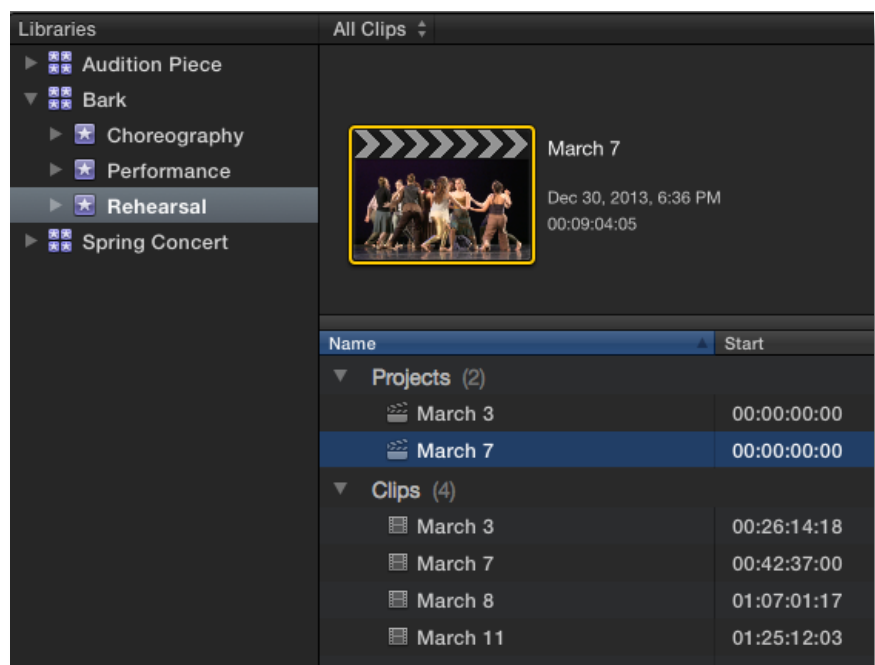
You can have as many Libraries as you want and they can live on whatever hard drive you want. By default, FCPX will put them in the MOVIES folder of your HOME folder on your internal drive. But you want them to go on your external hard drive so that you can work on any computer just by carrying around the hard drive.

Never move these folders using the Finder. Don't rename them or change anything about them in the Finder. Always do these things within FCPX, or you'll severely mess up the database.

If you hold down the OPTION key when you first click FCPX in the Dock, you can select which Libraries will open. Those Libraries will be the ones that load, until the next time you hold down the Option key while launching.

FCPX: Importing Clips

Connect your hard drive.

Launch FCPX

Under the FILE menu, choose NEW > LIBRARY (if you need it) and name it.

Choose NEW > EVENT (if you need it) and name it.

Choose NEW > PROJECT (if you need it) and name it.

Plug your camera into AC with the power cord.

Connect the camera to the Mac with the USB cable. The USB port is under the HDMI flap beneath the hand grip.

Power on the camera and put it in **Play Mode**. A menu on the screen will come up asking for which type of USB connection. Choose **Computer/Printer**.

(At this point, iPhoto may launch. If it does, just Quit it.)

Below the Browser (in the Toolbar), click the leftmost icon.

This window opens up, with a list of all the clips in the camera's memory:
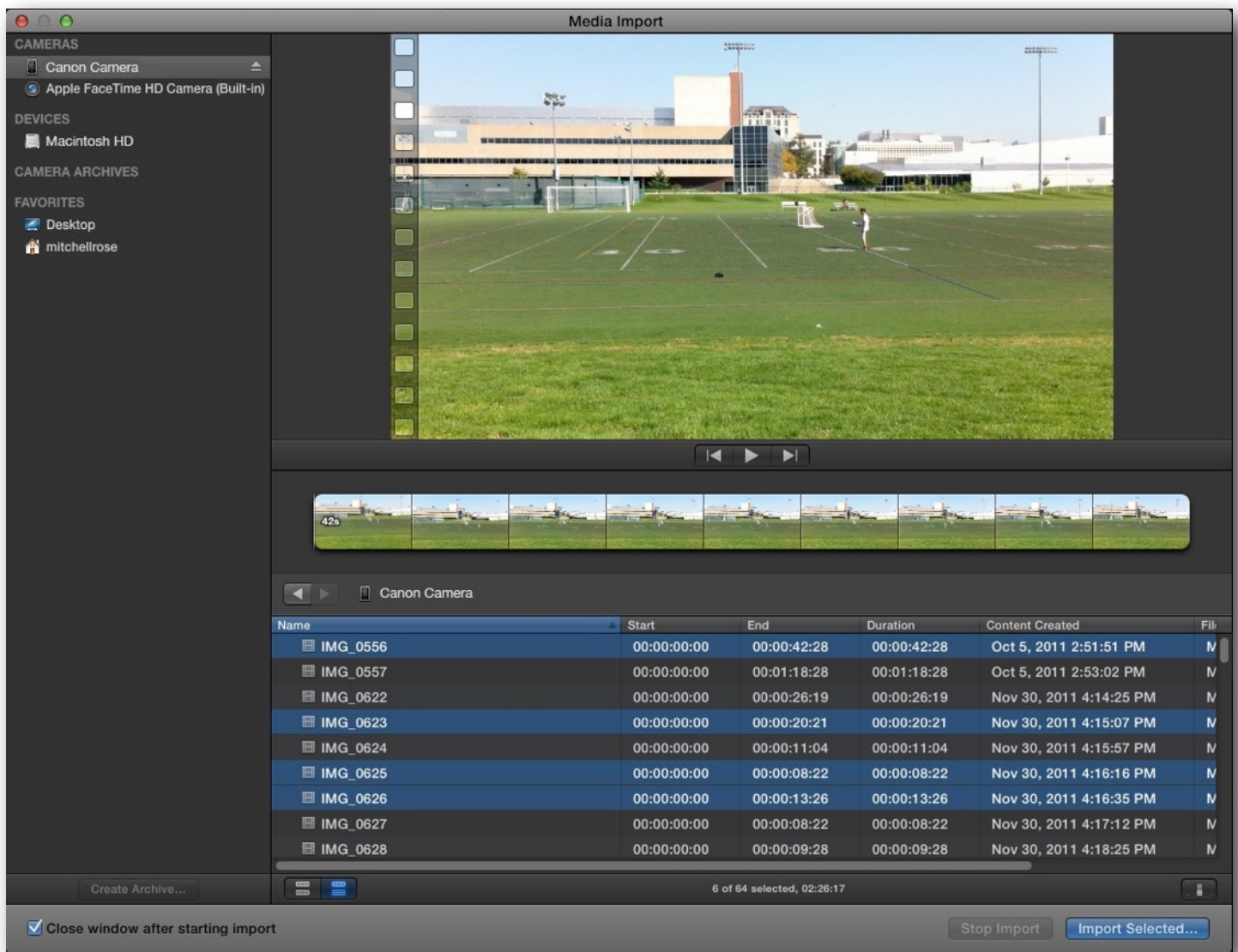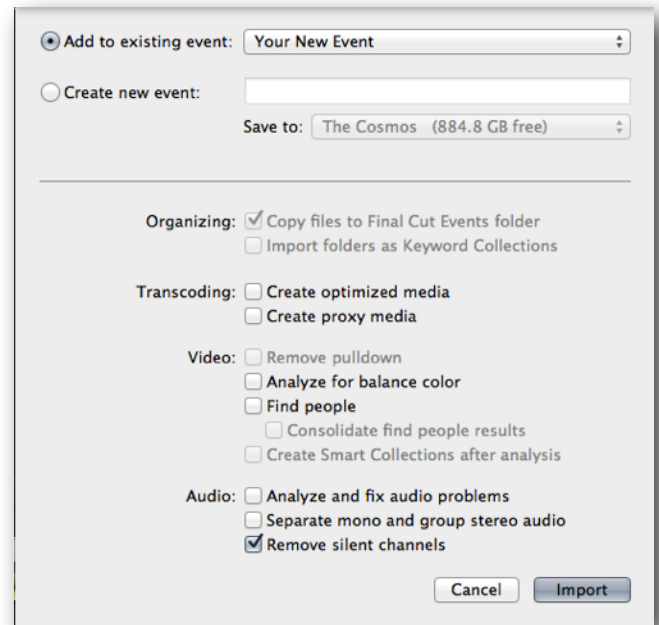
You can select a clip and preview it with the controls at the bottom of the preview window.

Select all the clips you want (by holding down the Command key). Click the IMPORT SELECTED button.

This window opens:

Make sure that you will "ADD TO EXISTING EVENT" and choose the new event that you made. Uncheck everything except REMOVE SILENT CHANNELS.

Click Import.

You can start editing right away — even while the clips are importing.

FCPX: Starting to Edit a Sequence

The settings for your Project should agree with the QuickTime format of your clips. If you chose this when making a New Project…

…then before you bring in music or anything else, bring one video clip into the Project. Our cameras shoot in H264 (named AVCHD) codec. Having brought in one H264 video clip, the Project is now set to natively edit H264.
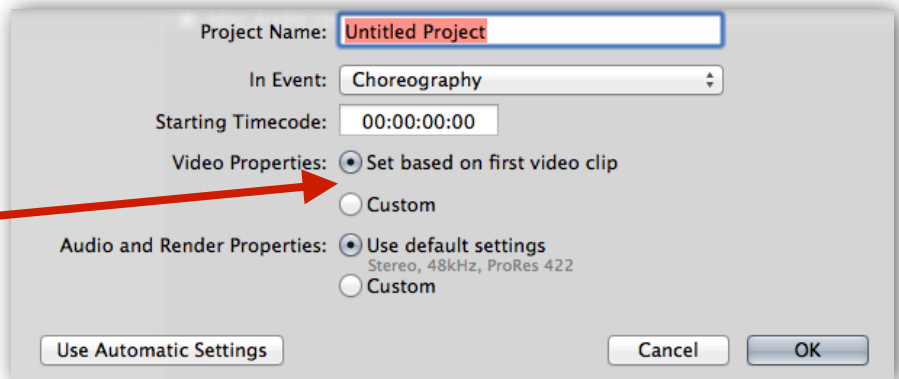
The point of this guide is to help people get generally set up. I can't get into how to actually edit. There are many online tutorials that can give you the basics of how to edit, such as this one. (At this writing, FCPX 10.1 has just come out and it handles Events and Projects differently. So most YouTube tutorials still deal with these the old way. Ignore that part of the discussion and just use the videos for help with actual editing.)

FCPX: Importing Music

There are two ways:

1. Use the Music and Sound Browser in the Toolbar.

You can preview tracks with the Play button at the bottom.
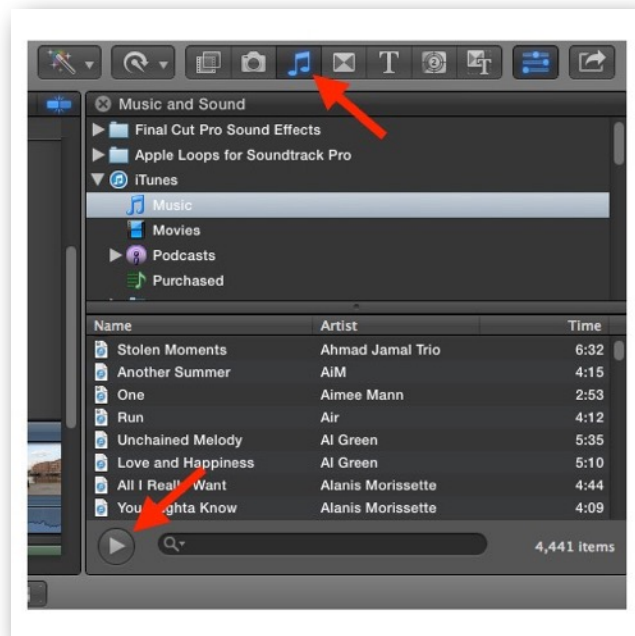
2. If you have an audio file on your hard drive, or to import a file directly from a CD, press Command-I in FCPX to IMPORT the file directly into your Event.

When music is imported into FCPX, the track is copied into your Events folder on your hard drive. So even if you change computers or remove the CD, the file will go with you.

FCPX: Exporting Your Movie

There are many ways to export your movie out of Final Cut. Here are three.

How Much to Export   There's one thing you should do before you start. Sometimes people put clip experiments later in the Project after the end of the movie. You don't want to export that. If the whole Project is clean—just your movie—you can go ahead and export. But if you have garbage at the beginning or end that shouldn't be exported, then set an IN and OUT point around your project in the Project to tell Final Cut to only export what's in between. (If there's no IN and OUT point set, it will export the whole thing.)

Method 1 — H.264 QuickTime Movie for YouTube/Vimeo

Note: **Vimeo** "Basic" account users can upload 500 MB a week. That's not very big for an HD video. **Vimeo "Plus"** costs $60/year and users can upload 5 GB per week. The compression quality of Plus is also better.

If your Project doesn't upload because it's more than 500 MB (it shows you how big it's actually going to be before it starts uploading it), you can try reducing the resolution to RESOLUTION: LARGE. More about that below.

YouTube has a limit of 15 minutes. More generous.

I personally greatly prefer **Vimeo** which has a cleaner interface and is taken more seriously in the art world. I don't mind spending $60/year for a quality representation of my work.

In FCPX, choose the SHARE icon at the far right of the Toolbar. Choose VIMEO or YOUTUBE.

Click SETTINGS in the window that opens.

Click DETAILS or LOG-IN to log in.

Choose RESOLUTION: HD 720P. (If your file doesn't upload because it's too big, lower the resolution to LARGE.

With Vimeo, I leave VIEWABLE BY set to NOBODY, and then I change it once I've entered in the title, description and other info on the Vimeo website.

Naturally, it takes a little while to compress the movie and upload it. You can watch the progress on the Background Tasks window:

Method 2 — H.264 QuickTime Movie for Projection and Desktop Viewing

This is how you can make an HD QuickTime movie if you're planning to use a projector. This is also the good quality movie for viewing on a computer. The file is small enough to move easily — like with a flash drive.

In FCPX, choose the SHARE icon at the far right of the Toolbar. Choose EXPORT FILE. Click SETTINGS and set it up like this:
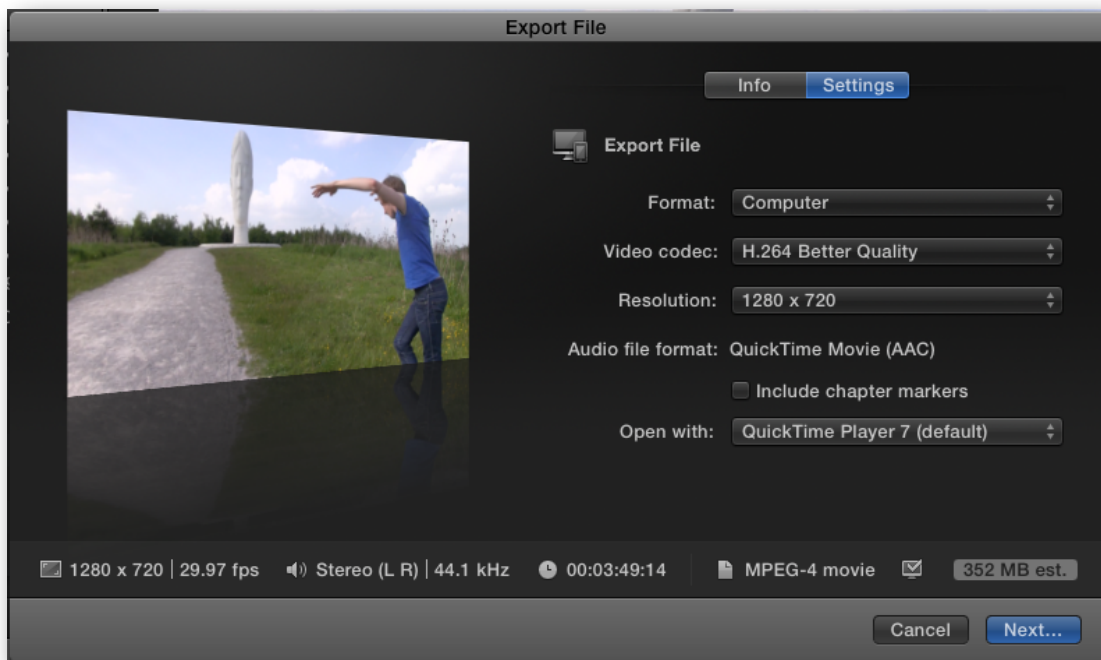
Click NEXT, name the file and give it a place to go.

I have more information on projection and the program QLab later. If you are using Isadora to project multiple video streams, I suggest making smaller movies. This will make a smaller file that will be less taxing on the processor.

Method 3 — Making a DVD

It's easy to make a very basic DVD in FCPX. Choose the SHARE icon at the far right of the Toolbar. Choose DVD. Click SETTINGS and set up the parameters as you'd like. If there is not a DVD burner connected to the Mac, the only option for OUTPUT DEVICE will be HARD DRIVE. (In that case it makes a .IMG file — a virtual DVD. See how to burn this to a physical DVD in a later section.)
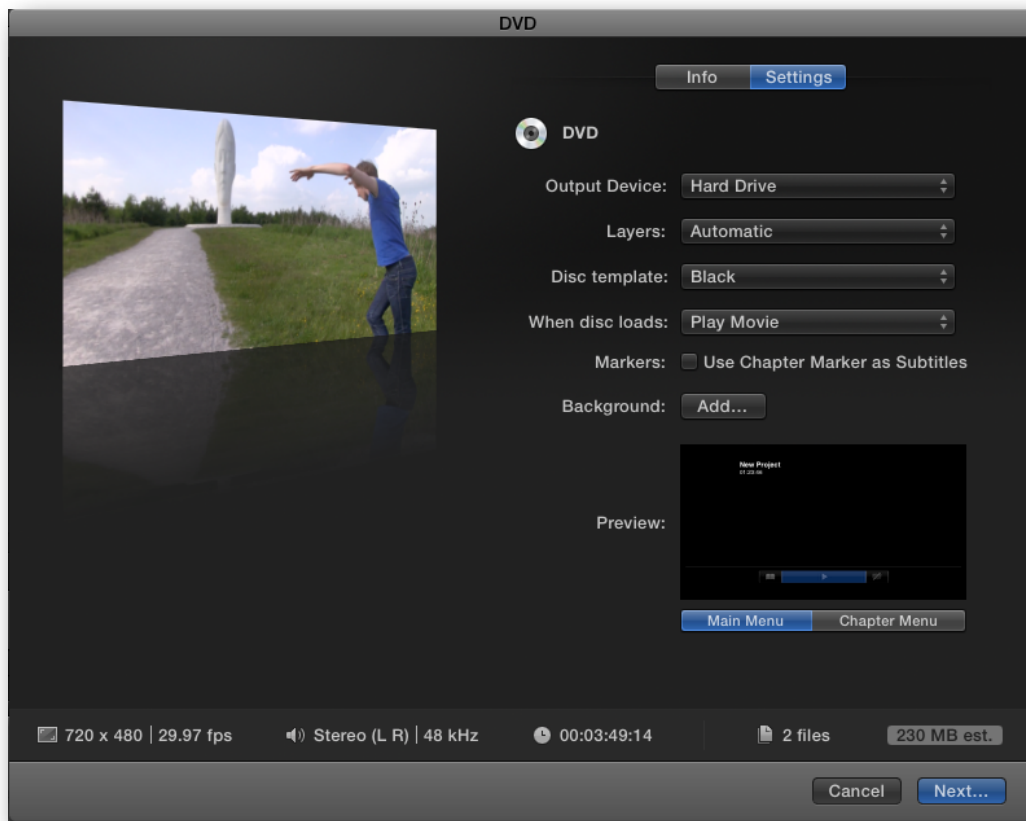
FCPX: Moving Libraries/Events Between Hard Drives

Whenever you import footage from a camera, you should select the correct Event on the correct hard drive to make sure you transfer the camera files to your hard drive. If you forget, the footage can end up on one Mac, and then you change labs and you haven't brought the footage with you. If this happens to you, you can move a Library or Event from one Mac to another.

To move a Library, quit FCPX and drag the Library in the Finder to the location you want it in,—just as you'd move any file. Double-click the Library and it will launch in FCPX.

To move an Event from one Library to another, in the FCPX Browser, just drag the Event (or individual clips) from the wrong to the right Library or Event.

Burning a .IMG Disk Image to a DVD

A .img file, also called a Disk Image, is a virtual disk. If you didn't have a DVD burner on your Mac when you chose the DVD export option in FCPX above, you created a .img file. You can actually play this .img file as if it's a regular DVD: Double-click the .img file and it will mount. Now when you open the DVD PLAYER application, the virtual DVD will play.

But if you want to take the .img to a Mac that has a DVD burner to burn a physical DVD, do this:

Run the program DISK UTILITY which is located in the Utilities Folder inside the Applications Folder.
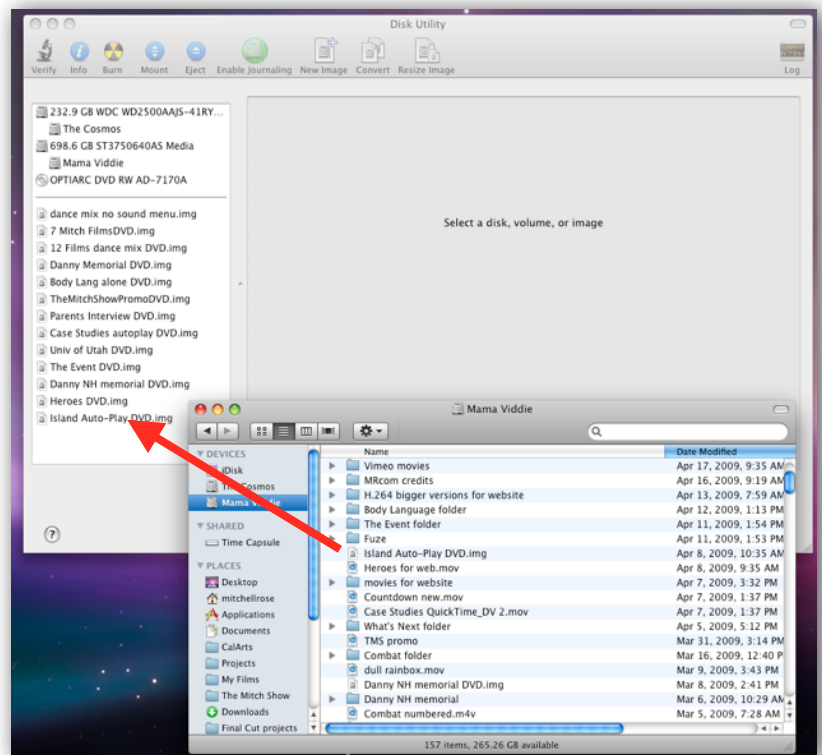
Position the Disk Utility window and the Finder window that contains your Disk Image file so that you can see both of them.

Drag the Disk Image file from the Finder into the white column in Disk Utility. (It will stay there forever, until you delete it.)
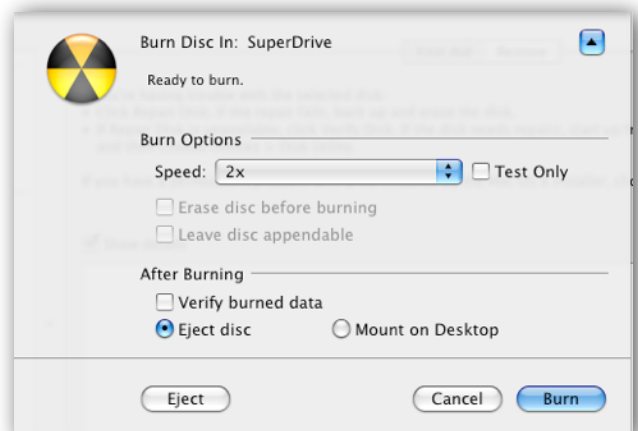
At the top of Disk Utility, click BURN.

Insert a blank DVD–R (DVD "minus" R).

Select the slowest speed possible.

Uncheck VERIFY BURNED DATA. (Because if there were errors in the burn, the DVD just wouldn't work.)

QLab: Intro

CDs and DVDs are an unreliable way to play music or show a film in live performance — they're slow to load, can skip or stall, and are hard to cue accurately.

Many theaters now use QLab, a fantastic, simple application which plays any type of QuickTime movie — audio or video. It's like iTunes on steroids.

If you're only interested in playing audio cues, QLab 3 is free and can be downloaded here:

http://figure53.com/qlab/download/

But to use video cues with it, you have to rent a video license for $3/day, or buy it for $179 (that's the educational price).

Note: To project a video you should have a fairly recent Mac with at least 256 MBs of video RAM (VRAM) in its graphics card so the video plays without stuttering. To find out if your Mac does, go to:

Apple Menu > About This Mac > More Info > System Report > Graphics/ Displays > VRAM

Most current consumer projectors (like the ones used in classrooms, pictured at the right) have a horizontal resolution of 1024 pixels. Projectors can scale up or scale down videos that have a different resolution than that, but they will play smoother if they don't have to do any scaling. So the best thing is to make movies that have the same resolution as your projector. If you can't, then try to have it be a slightly bigger resolution so it scales down, not up.

For smooth video performance with a projector, you should be using a fast external hard drive (Firewire, or USB 3 if your Mac supports it) with a spin rate of 7200rpm. If you're only doing audio cues, you can use your Mac's internal hard drive if you want.

QLab: Set Up

Attach the projector to the Mac and turn it on. (For audio-only cues, obviously omit this and skip to ➤.)

Under the APPLE MENU, go to System Preferences and choose DISPLAYS.

Click ARRANGEMENT and turn off MIRRORING.

Note: Sometimes it takes some experimentation to get the resolution of the Mac and the projector correct, so if things look weird, come back to this paragraph. If you click GATHER DISPLAYS, you'll see windows for both the Mac screen and the projector. By default the resolution will be set to BEST FOR DISPLAY. But if things are looking strange, experiment. You would click SCALED and try different resolutions until you find one that displays at full size without distortion. Make sure that resolution is in the 16:9 aspect ratio.
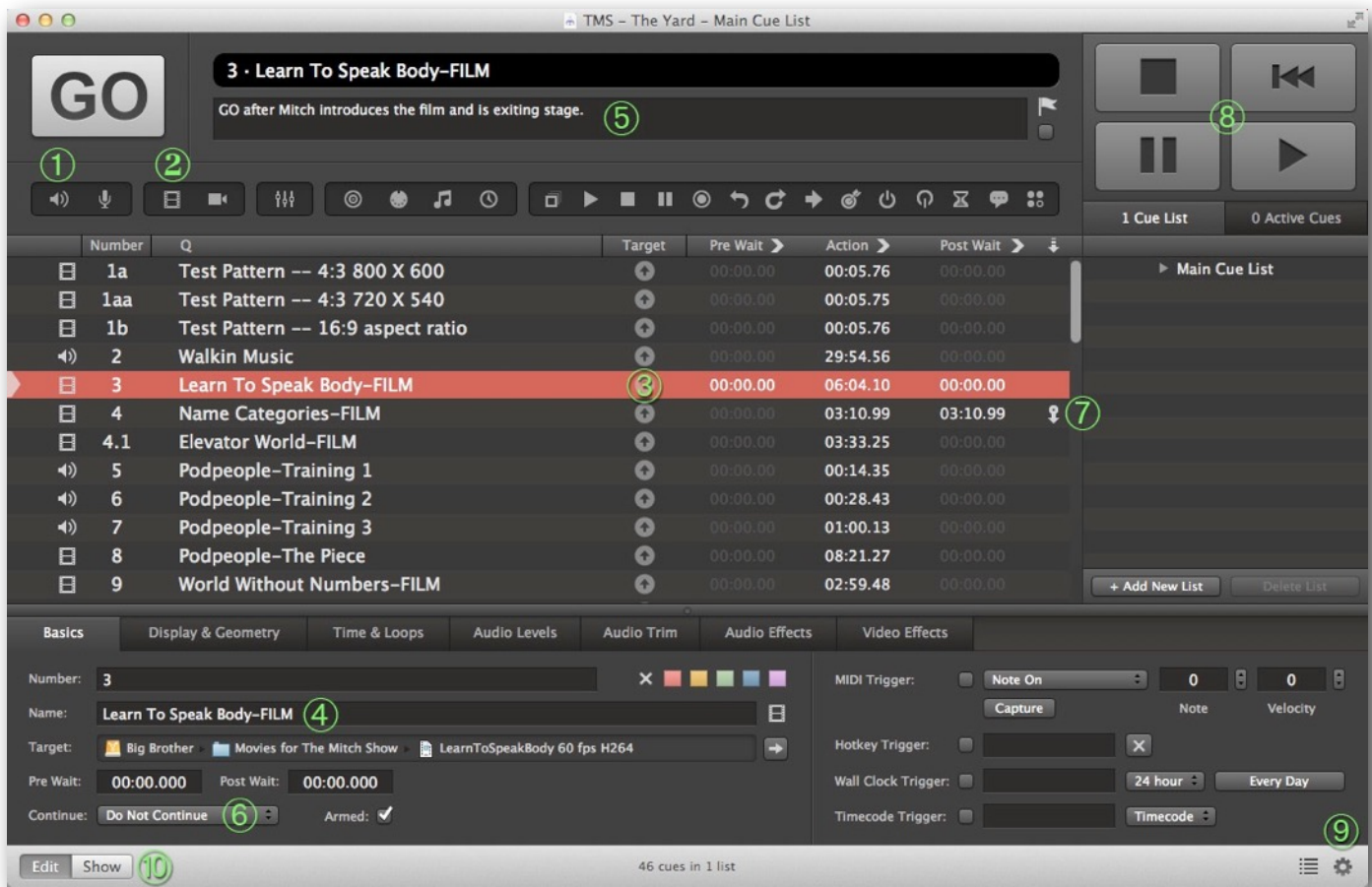
➤ Turn on your hard drive.

Launch QLab.

Under the FILE menu, choose NEW WORKSPACE.

Click the gear icon in the lower right to open WORKSPACE SETTINGS.

Click VIDEO. Under DEFAULT SURFACE, choose the projector. Click DONE.

You'll want to have the projector display black when there's no cue running (so you don't project the Apple galaxy photo). So under the TOOLs menu, choose BLACK OUT DESKTOP BACKGROUNDS. (When you're done, you can choose RESTORE SAVED DESKTOP BACKGROUNDS.)

1. Icon creates a blank audio cue.

2. Icon creates a blank video cue.

3. Click the arrow icon to import your QuickTime movie from your hard drive.

4. Name the cue.

5. Write any notes for the show operator.

6. If you want a cue to automatically trigger the next cue when it's done, pull down the CONTINUE MENU and select AUTO-CONTINUE.

7. When you do choose AUTO-CONTINUE, you'll see this down-arrow icon next to a cue.

8. These buttons pause and restart a cue that's playing. (For a video cue, you'll only see this when a projector is connected.)

9. Opens WORKSPACE SETTINGS.

10. Simplifies the interface for performance.

If you want to trim the beginning or ending of a cue, you can do it under the cue's TIME & LOOPS tab.
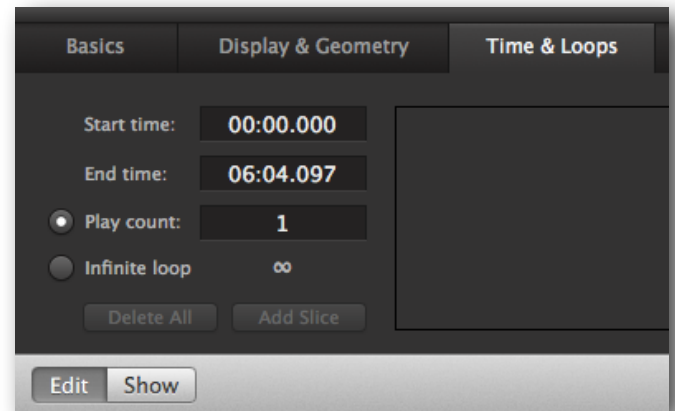
SAVE   SAVE   SAVE

QLab: Operation

Press the SHOW button (#10 above) to simplify the interface.

Press GO or the SPACEBAR to trigger a cue.

Press the Stop icon or the ESC key to stop all cues.

(The tendency may be to press the SPACEBAR again to stop a cue, but this triggers the next cue and they'll both play at the same time. This is necessary for audio cues in theater. In rapid succession the operator triggers sound effects cues for a thunder clap, footsteps, a gun shot...   These all have to overlap with precise timing.)

If you ever need to pause or restart a cue, you can use the PAUSE controls (#8 above). You'd probably only use that for emergencies or in rehearsal.

NOTES:

QLab isn't fussy about what QuickTime movies you feed it. Any codec is fine (although interlaced footage, including DV, never displays well from a projector). Whether you have a 16:9 or 4:3 aspect ratio, QLab will scale both to fit the full width of the projection.

You can number your cues however you want, or do so automatically under the TOOLs menu. Personally, when I have multiple cues in one piece in a big program, I number them: 3a, 3b, 3c, etc.

If you were doing an AUTO-CONTINUE as described in #6 above, you can add in PRE-WAIT or POST-WAIT to add a little space between cues. Do that under the BASICS tab.

You can add FADE CUES to manually begin a fade in or out of a cue, in lieu of turning the volume down on the amplifier during a piece. Briefly, here's how you'd fade out an audio cue:

- Select the Audio Cue you want to fade.
- Click the ADD FADE CUE from the Cue Bar. It creates an empty Fade Cue beneath your Audio Cue.
- Drag your Audio Cue onto the empty Fade Cue. The Fade Cue now targets the Audio Cue.
- Go to the CURVE SHAPE tab, and set the FADE DURATION. You probably also want to check STOP TARGET WHEN DONE.

QLAB can also display still images. To make a still image stop, you need to add in a Fade Cue or Stop Cue. Otherwise it keeps displaying.

Here are more tutorials in how to use Qlab (these are also under the HELP menu):

http://figure53.com/qlab/documentation/