



RICE

Fondren Library
Digital Media Commons

Advanced Video Editing with Final Cut Pro X

Digital Media Commons

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Course Outline

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Note: For basic workflow and editing tools in Final Cut Pro X, please refer to our online guide “Introduction to Final Cut Pro X” at DMC website (dmc.rice.edu) > Guides > Video Editing section.

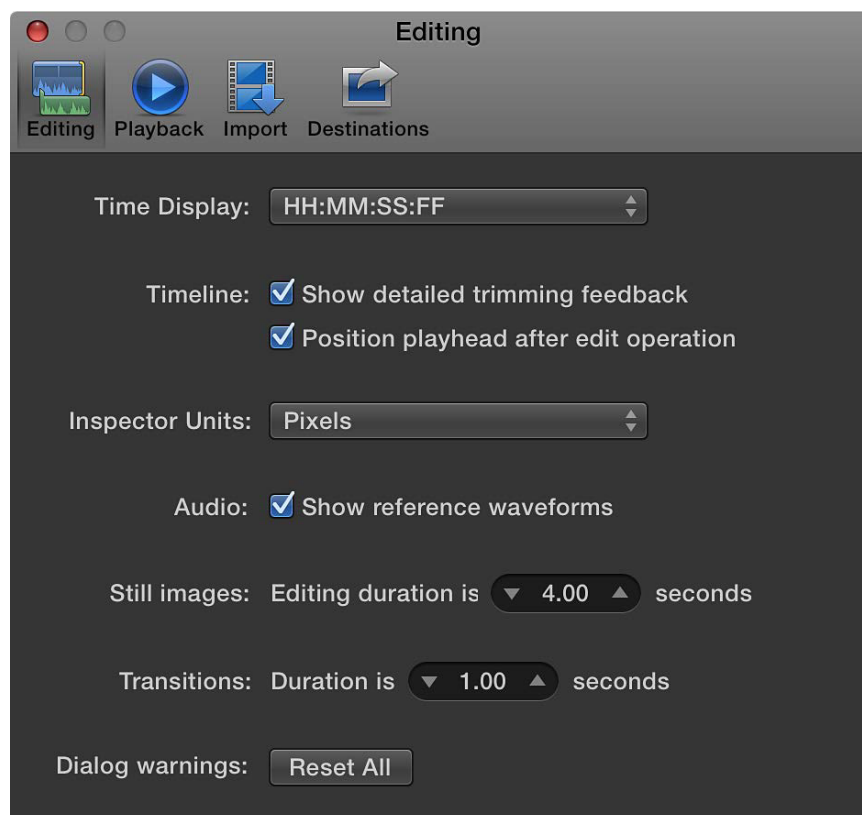
Part I: Advanced Editing Tools

1. Preferences

In Final Cut Pro, you can modify preference settings to specify how your source media is imported into the application, how your clips play back, and how you edit your clips in the Timeline.

Final Cut Pro > Preferences (or press Command-Comma) to open it.

1st tab is Editing. Suggested settings are shown in below screenshot:



Time Display: Use this pop-up menu to choose the time mode for Final Cut Pro. Changes in this setting affect the time display (for the position of the skimmer or the playhead) in the Dashboard in the center of the toolbar, as well as trimming and navigation operations in Final Cut Pro. Timecode reads hours:minutes:seconds:frames

Timeline:

Show detailed trimming feedback: Select this checkbox to show the “two-up” display in the Viewer for more accurate feedback on an edit point involving two contiguous clips.

Position playhead after edit operation: Select this checkbox to have the playhead automatically positioned in the Timeline at the end of your last edit.

Audio: *Show reference waveforms:* Select this checkbox to change the background appearance of the audio portion of a clip to show reference waveforms. Reference waveforms let you see the shape of the sound more clearly.

Still Images: Use this value slider to set the default editing duration of still-image in seconds.

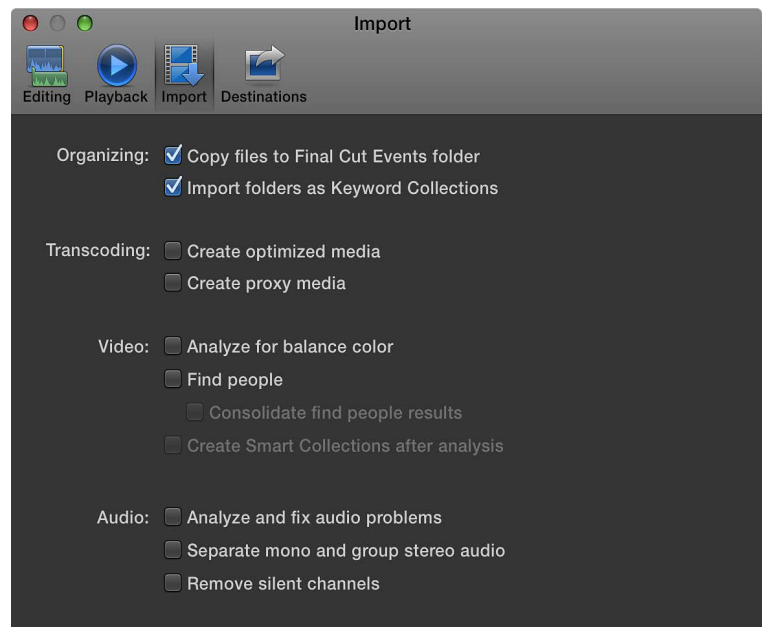
Transitions: Use this value slider to set the default duration of transitions in seconds.

2nd tab is Playback: Playback preferences affect playback and rendering performance in Final Cut Pro. The **default setting is good enough for most of projects.** (For more information, refer to FCPX user guide at the DMC website>Guides>Video Editing>Final Cut Pro section)

3rd tab is Import: You can customize your import settings each time you import files. However, if you drag media directly from the Finder into Final Cut Pro, Final Cut Pro uses the import settings you selected in the Import pane of the Final Cut Pro Preferences window.

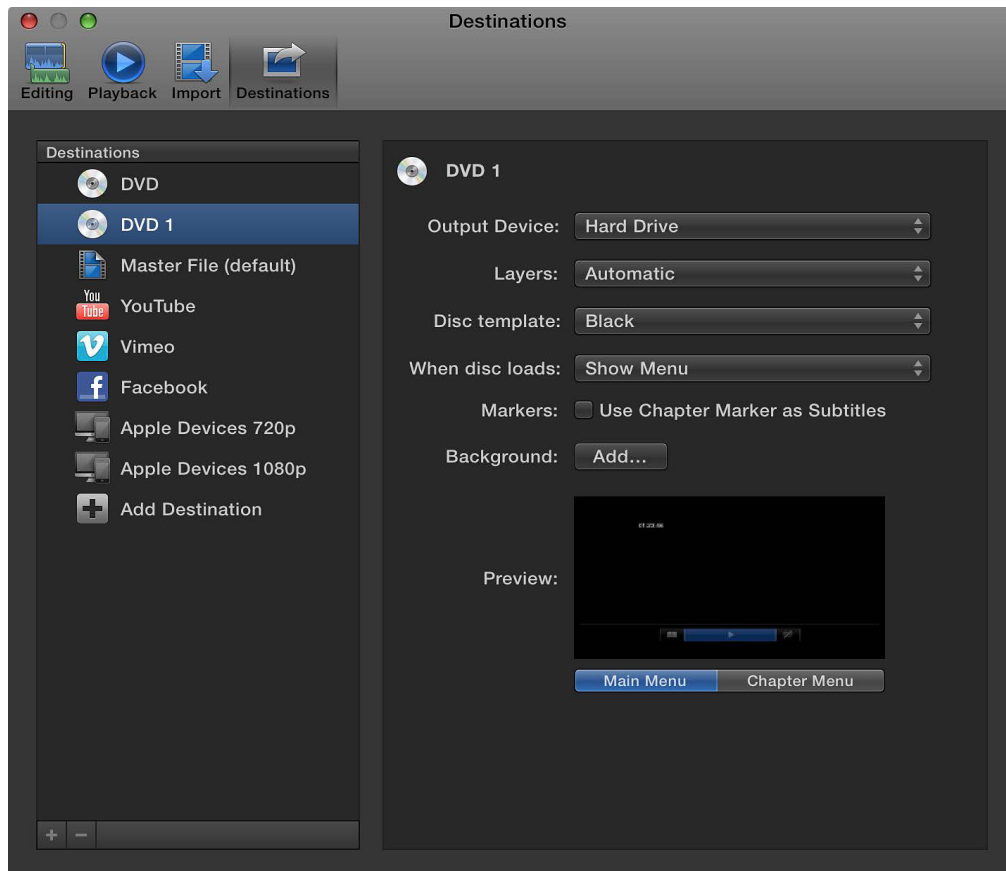
Organizing

Copy files to Final Cut Pro Events folder: Duplicates the media files and places the copy in the Final Cut Events folder on your system. If you're importing media from a different disk or volume, or if you want to keep a copy of all the media files that have been imported into Final Cut Pro in the same location, select this checkbox.



Import folders as Keyword Collections: Creates a Keyword Collection for each folder in the files you're importing. If the files you're importing are in folders with meaningful names, select this option to keep the file organization that exists in the Finder.

4th tab is Destinations: When you first open Final Cut Pro, a default set of destinations appears in the Destinations list, but you can add other destinations (+), or delete any destination (-).



To modify existing settings, simply click on the destination and customize the settings.

2. Multicam Editing

You can use Final Cut Pro to edit footage from multicamera shoots in real time. For example, if you shot a live concert or an interview with two or three different cameras, you can synchronize the footage from each camera angle into a single multicam clip and cut between the angles in real time.

Working with multicam clips in Final Cut Pro is simple and easy. If your clips were shot at the same time, you can automatically sync your shots together using Final Cut's built-in Audio Analysis feature. Then with everything synched together, you can easily switch between your various angles to assemble your edit.

Multicam Editing Workflow:

1) Shoot an event with multiple cameras and record appropriate sync information.

For multicam projects, it's a good idea to set the date and time, and the time zone on your camcorder or recording device before you shoot footage for your multicam project. This provides useful information to Final Cut Pro during the automatic multicam clip creation process.

Since you can use the sophisticated automatic audio sync feature in Final Cut Pro to help ensure multicam synchronization accuracy, **it is crucial to record audio on every camcorder**

and recording device in your multicam production. (Clear audio recordings provide the best results.)

2) Import media and assign camera names and multicam angles.

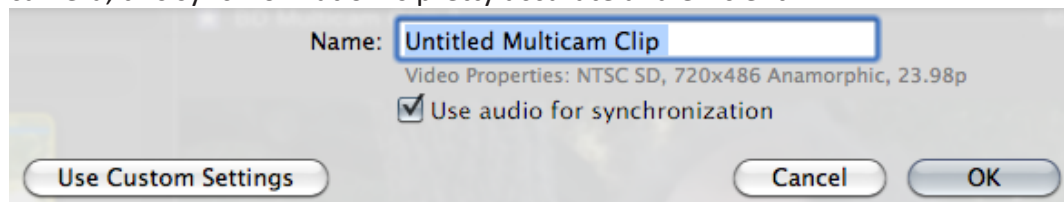
Importing media for multicam projects is the same as importing for any other project. You can use the Camera Name and Camera Angle metadata tags to automate and organize your multicam workflow.

3) Create multicam clips

- Select all the camera angles you would like to use (press down Shift key while selecting), then right click and choose New Multicam Clip... from the drop down menu.



- In next window, make sure to use simple automatic settings and **Use audio for synchronization is checked**. Name your multicam clip. Click on OK. FCPX will analyze the audio waveforms of all the camera angles, check multiple points and match the audio waveforms. As long as you have recorded audio on each camera, this synchronization is pretty accurate and efficient.



- A multicam clip is produced and placed in your event browser. You should see a multicam icon over the clip indicating this is a newly synced multicam clip.

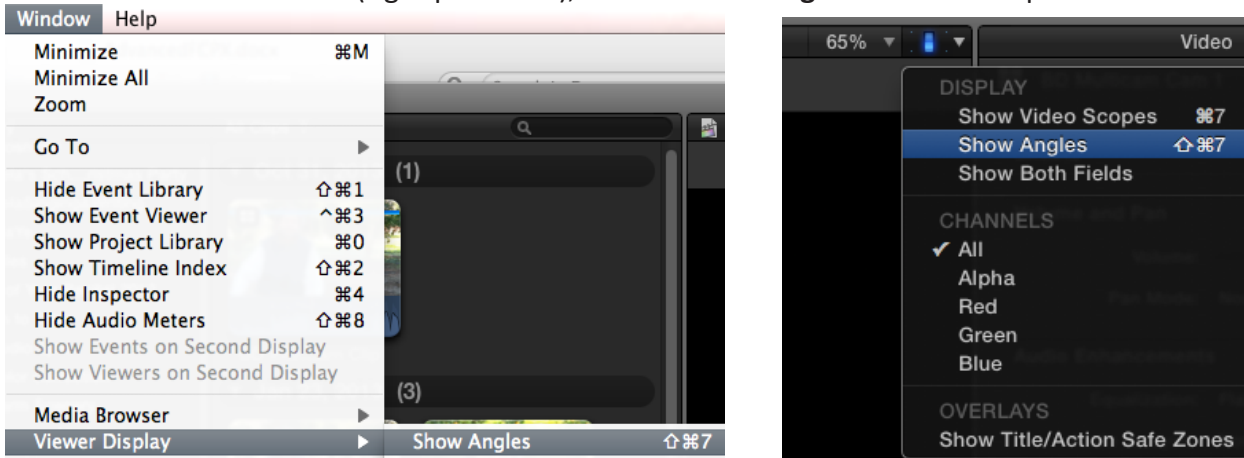


4) Assign active audio and/or video source

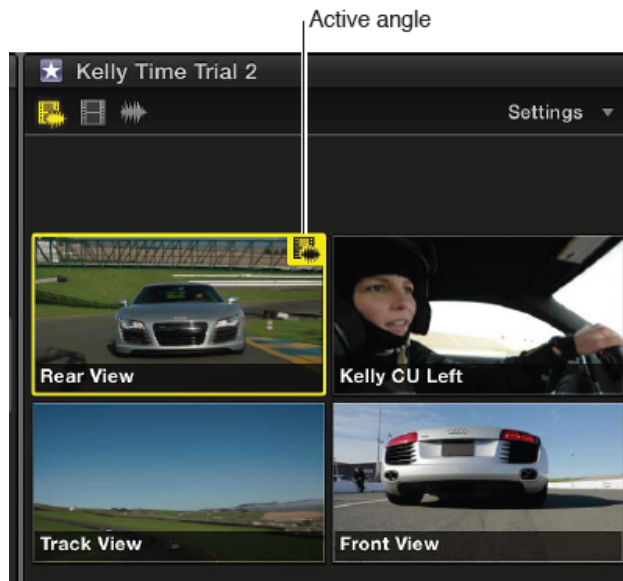
You can preview the multicam clip before you add it to the timeline. Just like you are doing the rough cut to any other clips, you can find starting point

and mark In, and end point and mark Out to select the portion, then add to the timeline. You can add the multicam clip to the existing project or create a new project.


- **To add a multicam clip to the timeline**, press **W** on the keyboard. Although the multicam clip looks just like one clip, it is really a group of clips contain all the camera angles.
- **To show different angles**, go to **Windows>Viewer Display>Show Angles** (left pic below) or you can click on the triangle on the upper right corner of the viewer window (right pic below), choose **Show Angles** from the dropdown menu




- The active camera angle is highlighted as shown below. **To switch your active camera angle** to a different one, simple click on any other clip thumbnail. Now both active audio and video are switched to another clip.



- At this point, you will need to decide whether you want to cut both audio and video together, or just video. Often, if you have a superior audio source on one of the cameras or even a separate audio recorder you will restrict your edits to video only so that you can keep the same good audio running throughout.

If you want to assign a primary audio source, and want to cut video only, click on waveform icon on the upper left corner of Angle Viewer , then click on the clip with superior audio to assign this clip as the primary audio source.

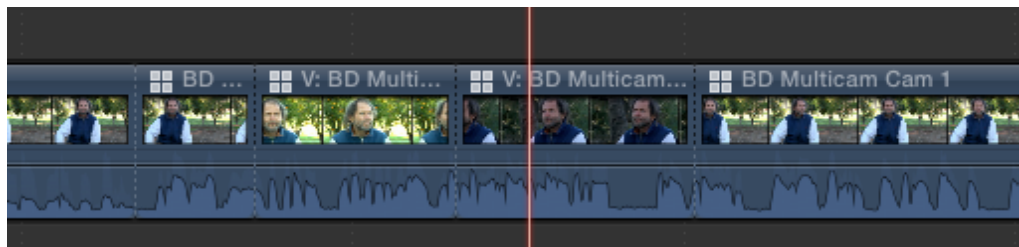
To assign a primary video source, click on blue clip icon  and click on the clip. You should see the active audio and video sources have been separated and indicated with green box and blue box respectively. And now your viewer window should display the primary camera angle.



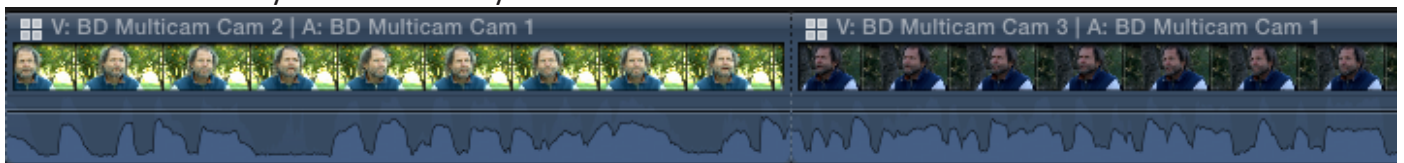
5) Perform video cut only in the timeline

- Since we will be making video only edit, leaving audio intact, so make sure the blue clip icon is selected to enable video-only cut.
- As you play the multicam clip from the timeline, you watch different camera angles in the Angle Viewer. At any point you want to switch to a different angle, simply click on the clip in the Angle Viewer. You act like it is a live show, and you are doing a live switching. Later on, you can go back to refine the edit.
- Press spacebar when finish cutting. Then you should see all the camera angles have been switched as the way you wanted and they all have been patched in the timeline.

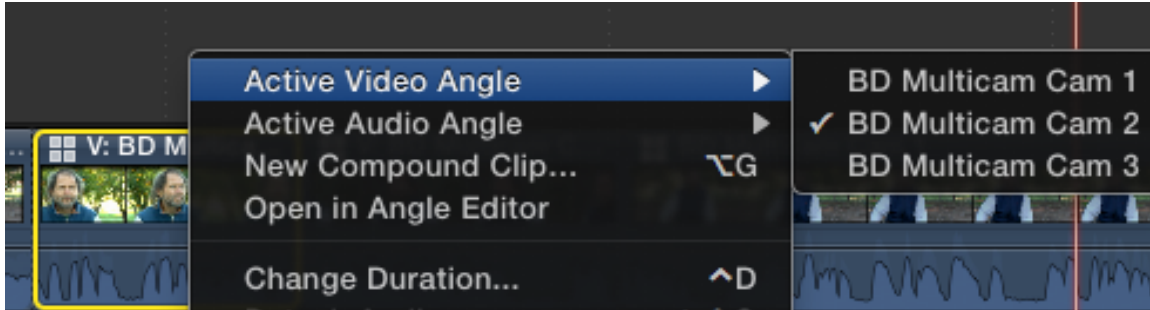
Click to enable video-only switching.



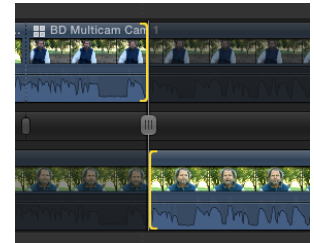
- If you zoom in and you can see the audio and video source information:



- 6) **Refine the edit:** Once you've laid the foundation of your multicam edit by doing an instinctual first pass live switching style, you'll need to change shots or adjust transitions and just tweak the entire sequence in general. There are several ways to refine your edit:
- Switch angle in the timeline:** You can right click on a clip in the timeline and change the Active Video Angle or Audio Angle as shown below.



- Switch angle in the Angles Viewer:** Park your playhead on a clip and then open up the Angles viewer and then **Opt+Click** on the one that you want to switch it to in the Angle Viewer window.
If you don't want to swap out the entire shot, and just want to make a cut, then you park your playhead at the point you want to make cut, instead of **Opt+Click**, you just **click** another camera angle in the Angle Viewer window.
- Manipulate transitions with Roll tool:** Many times when you're in that live switching mode you might cut a little bit too late and sometimes too early. To fix this problem, hover your cursor right in between two transitions, and you get the **Roll** tool. This allows you to roll back and forth between these two shots and you can manipulate the edit point really well.
- Manipulate transitions with the Precision Editor:** Double-click on the edit point to open up the Precision Editor to reveal more camera angles in the timeline, then you can move the edit point to the left and right to adjust transitions.



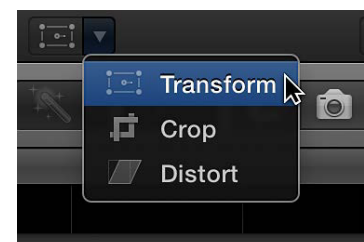
3. Working With Effects

3.1 Motion Effects: Transform and Trim

3.1.1 Transform: The Transform built-in effect allows you to resize, move, and rotate an image. This effect is commonly used on a clip placed over a primary storyline clip, which becomes the background of the resized clip. Or you want to create a split screen that displays multiple shots at the same time. It is also often used to zoom in on a clip, allowing you to reframe a shot if needed.

Adjust the Transform effect in the Viewer Window

- 1) Select a clip in the Timeline.
- 2) To access the Transform controls, do one of the following:
 - Choose Transform from the pop-up menu in the lower-

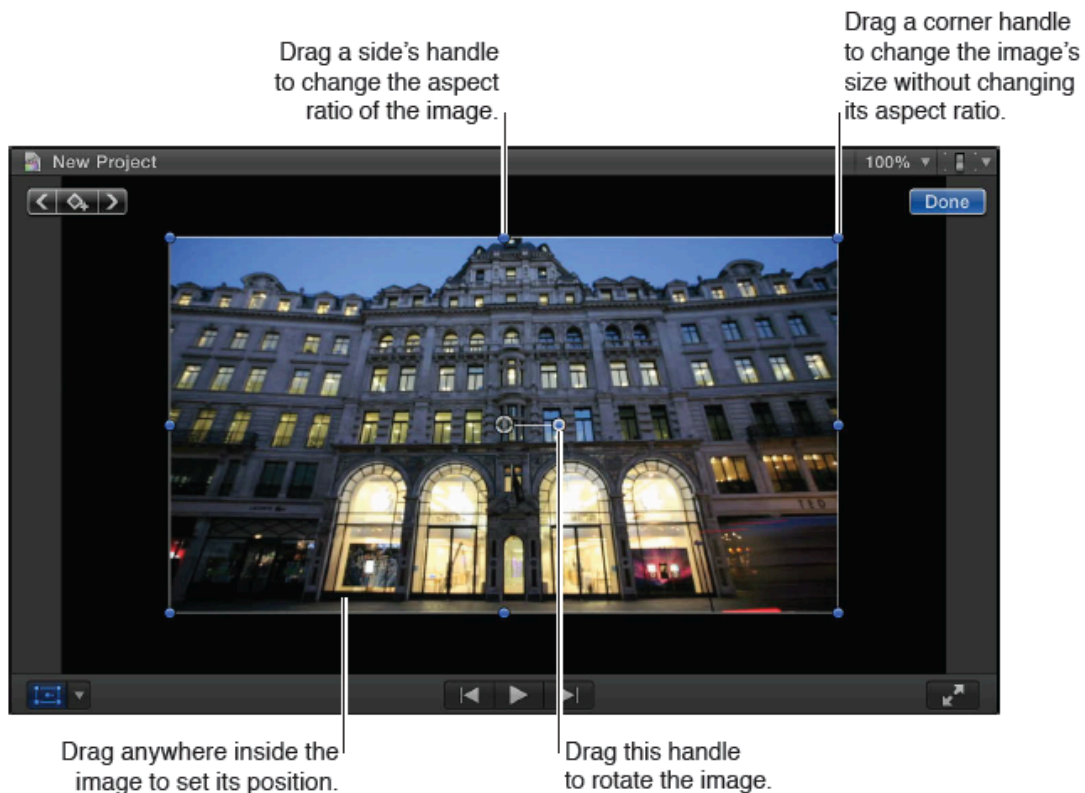


left corner of the Viewer window (or press Shift-T). OR

- Control-click in the Viewer and choose Transform from the shortcut menu.

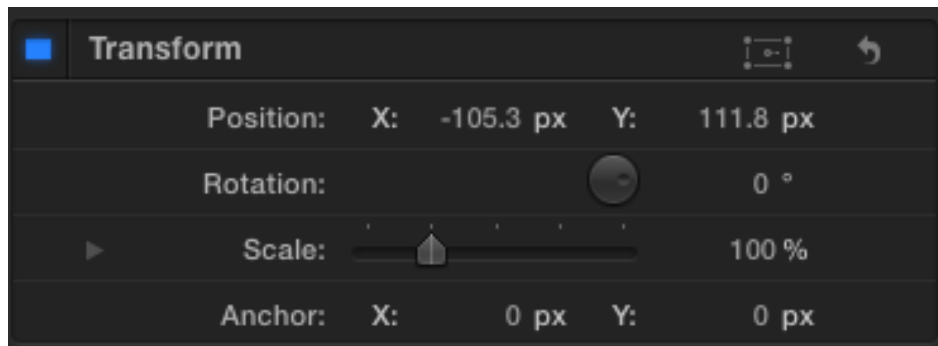
3) To adjust the effect using the onscreen controls:

- *Blue handles at each corner:* Drag these to adjust the image's size while maintaining its current aspect ratio.
- *Blue handles in the middle of each side:* Drag these to independently adjust the vertical and horizontal image size, changing the aspect ratio of the image.
- *White circle in the center:* Shows the rotation **anchor point**. Drag anywhere inside the image to adjust the image's position.
- *Blue handle extending from the center circle:* Drag this to rotate the image.



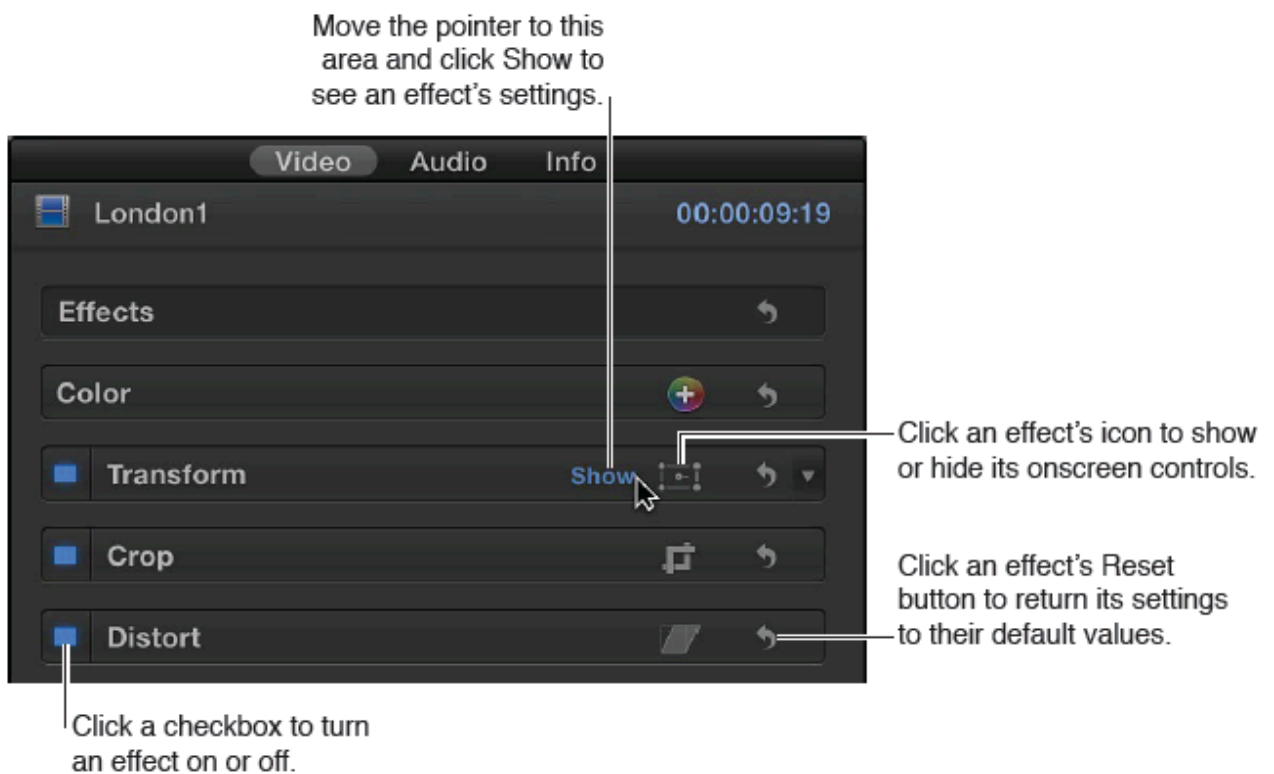
Adjust the Transform effect in the Inspector Window:

- *Position X and Y:* Use these to move the image left and right (X) and up and down (Y).
- *Rotation:* Use this to rotate the image around its anchor point.
- *Scale:* Use this to change the image's size.
- *Anchor X and Y:* Use these to move the image's center point. This defines the point that the image rotates around.



*** Using Inspector Controls:** To turn off the effect, click the blue checkbox next to the effect used (Transform or Crop) in the Video inspector. Click the checkbox again to turn the effect back on, making it easy to compare how the clip looks with and without the effect.

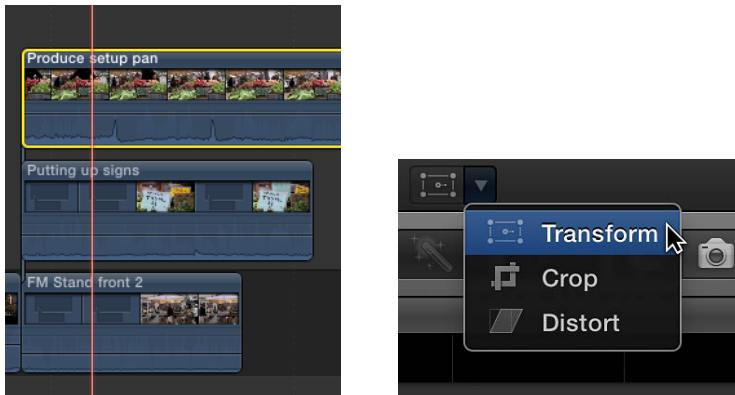
To return all values for that effect to their default state: Click the Reset button ↶.



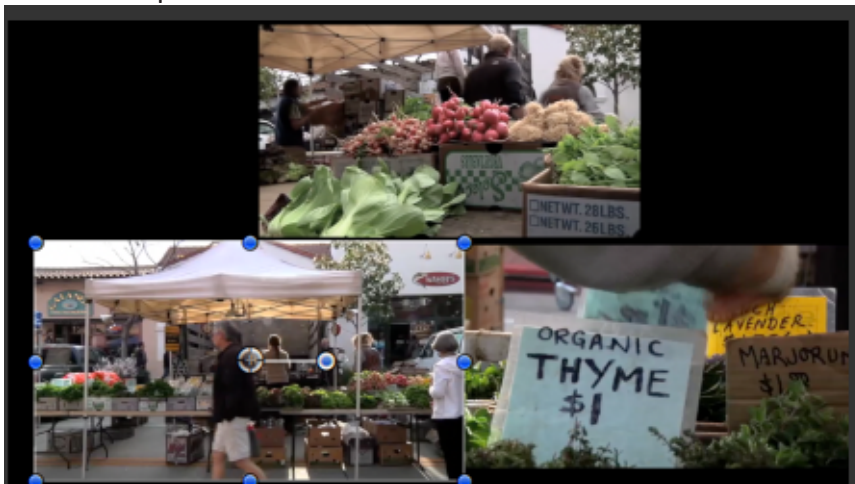
When you are finished adjusting the effect and no longer need the onscreen controls, click **Done** on the upper right corner of the viewer window.

3.1.2 Creating a Split Screen:

- 1) Stack up all the clips on top of each other in the timeline as shown below and choose Transform tool from the View Window:



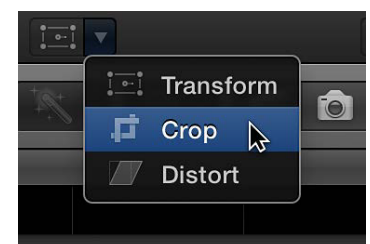
- 2) Drag the blue handles on each corner to adjust the image's size while maintaining its current aspect ratio. As you resize the clip, you should see other stacked clips being revealed.
- 3) Click on other clips, grab the blue handles to resize them and reposition them as shown below to create a split screen.



3.1.3 Trim: Trim controls allow you to independently trim each of the image edges, creating a window look.

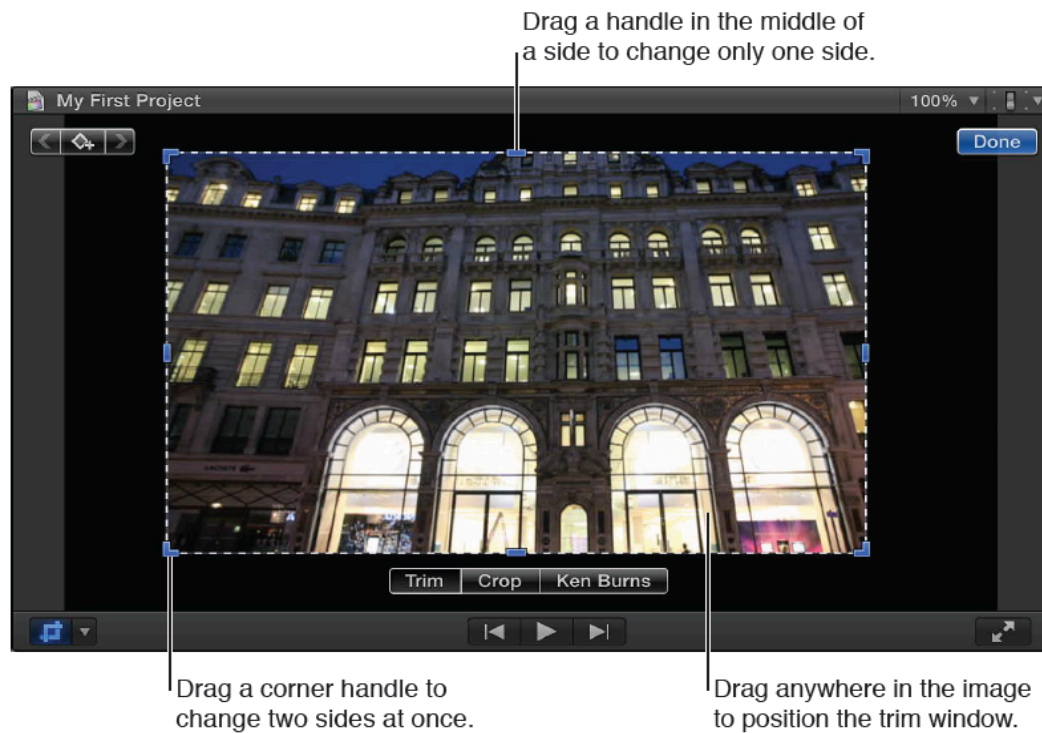
Adjust the Trim effect

- 1) Select a clip in the Timeline.
- 2) To access the Trim controls, do one of the following:
 - Choose **Crop** from the pop-up menu in the lower-left corner of the Viewer (or press Shift-C). OR
 - Control-click in the Viewer and choose Crop from the shortcut menu.
- 3) Click the **Trim** button at the bottom of the Viewer.
- 4) To adjust the effect using the onscreen controls:
 - *Blue handles at each corner:* Drag these to adjust the position of two trim window sides at

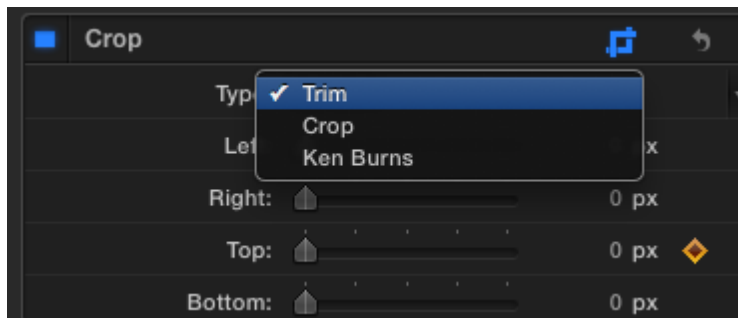


the same time.

- *Blue handles in the middle of each side:* Drag these to independently adjust the position of each side.
- *Anywhere inside the window:* Drag anywhere inside the window to adjust its position.



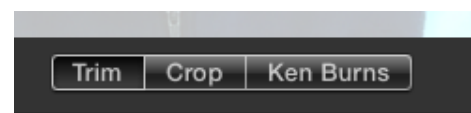
- 5) To individually adjust each edge using the Crop area of the Video inspector, use the Trim controls.



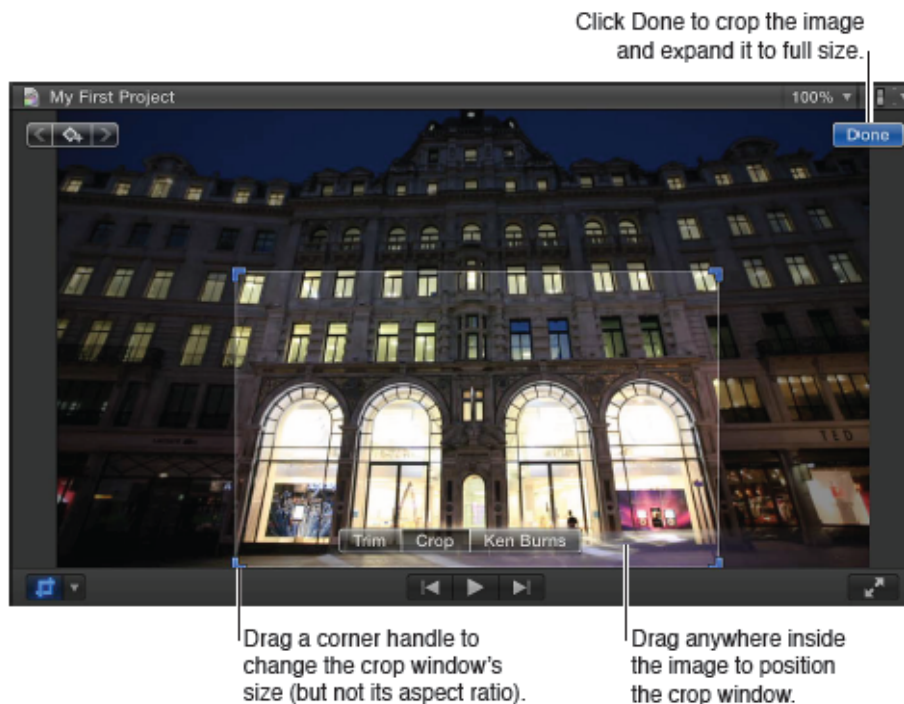
- 6) When you are finished adjusting the effect and no longer need the onscreen controls, click **Done**.

Adjust the Crop Effect: The Crop effect makes it easy to remove unwanted areas of the image. It automatically expands the cropped image so that it fills the screen.

The Crop tool can be accessed in the same way as you access the Trim tool (See above steps.). Simply click on **Crop** button on the Viewer window.

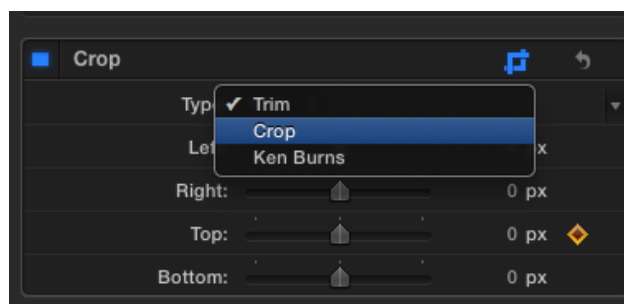


- To adjust the effect using the onscreen controls:
 - Blue handles at each corner:* Drag these to adjust the crop of that corner. The cropped image always maintains the original aspect ratio.
 - Anywhere inside the window:* Drag anywhere inside the crop window to adjust its position.



- To individually adjust each edge using the Crop area of the Video inspector, use the Crop controls.

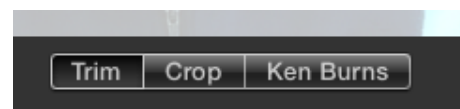
Note: While you can use these controls to change the crop window's aspect ratio, the final image still matches the original image's aspect ratio, with additional content being cropped out so that the final image fits the original aspect ratio.



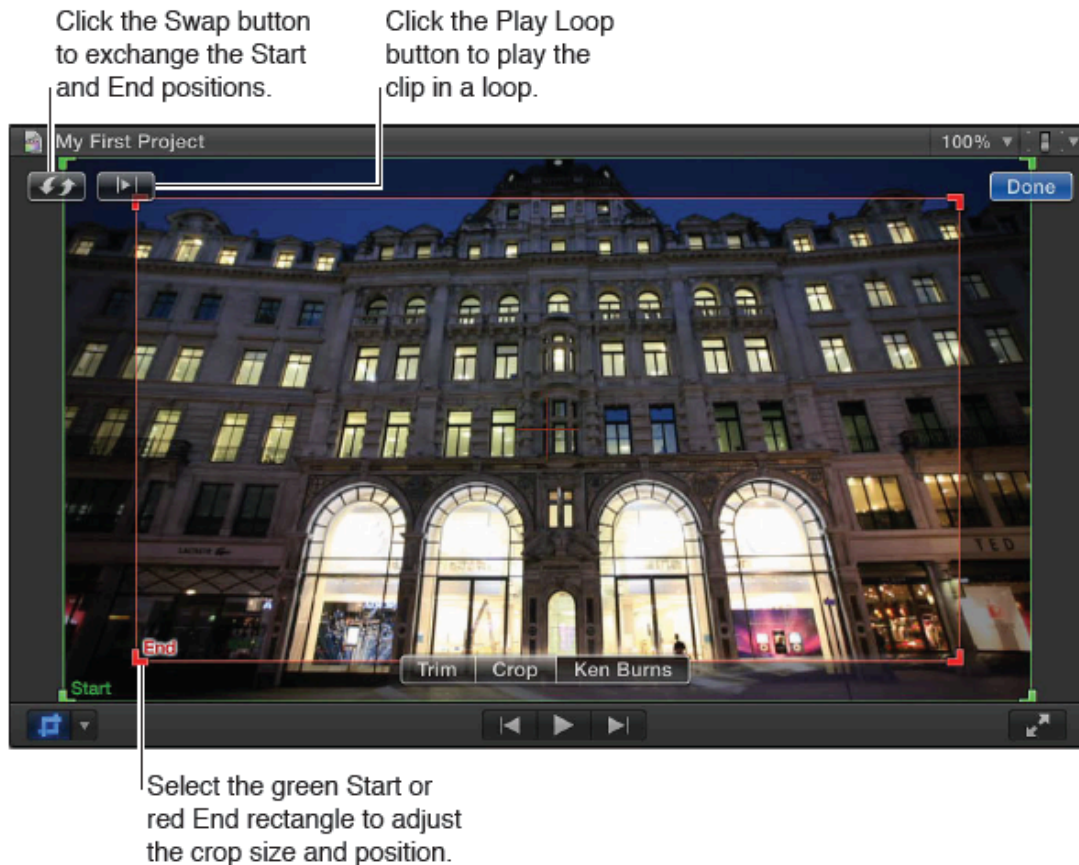
- Click **Done** to have the crop applied and see the image zoomed to fill the screen.

Adjust the Ken Burns Effect: The Ken Burns effect creates a pan and zoom effect using the start and end positions you define. The Ken Burns effect is actually a Crop effect with two crop settings, one at the clip start and another at its end.

The Ken Burn tool can be accessed in the same way as you access the Trim or Crop tool (See above steps). Simply click on **Ken Burns** button on the Viewer window.



- Two rectangles appear in the Viewer: a green one that defines the position and size for the start of the clip and a red one that defines the position and size for the end of the clip. An arrow is superimposed to show the direction the image travels when the clip is played.



- 2) To choose the part of the image that appears at the start of the effect, drag the green handles to change the crop size of the image and drag the window to set its position.
- 3) To choose the part of the image that appears at the end of the effect, drag the red handles to change the crop size of the image and drag the window to set its position.
- 4) To have the clip with the effect play in a loop, click the Play Loop button.
- 5) To exchange the start and end positions, click the Swap button.
- 6) Click **Done**.

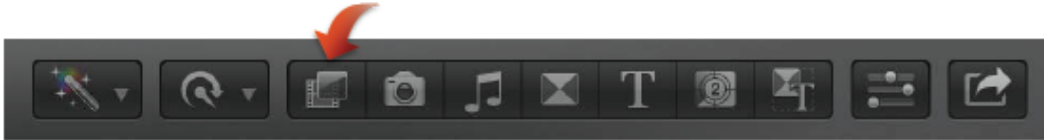
3.2 Video and Audio Effects

Final Cut Pro X includes a wide variety of video effects that you can apply to your project's video clips. Many of the effects modify the look of your video, from adding a blur or glow to severe distortions. FCP also includes a broad range of audio effects that you can apply to your project's audio clips. Many of the effects modify the sound of your audio, from subtle echoes to severe pitch distortions.

Once you have added an effect, you can adjust its parameters. Some effects have few adjustments, while others provide a comprehensive set, allowing you a lot of control over how the effects look.

You can apply multiple effects to your clips, creating a stack of effects. The order that you apply the effects, however, can affect how the final video looks.

3.2.1 Add effects to your project



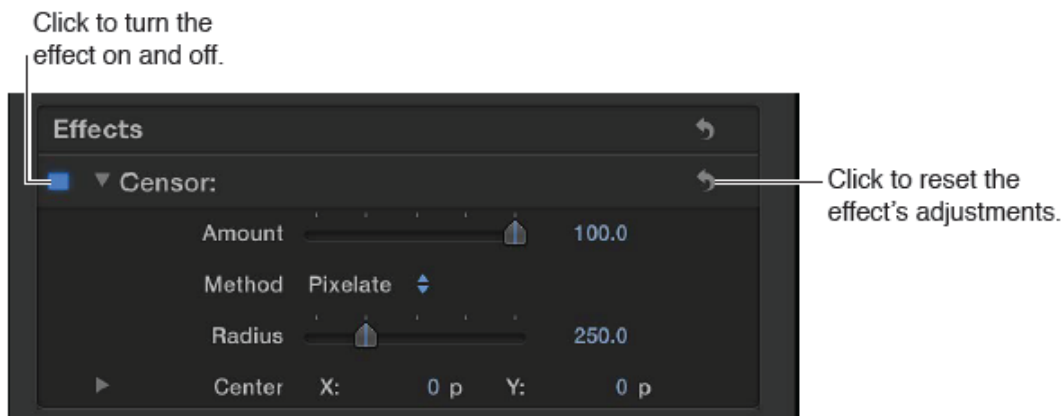
- 1) Select a clip in the Timeline and click the **Effects** button in the toolbar.
- 2) In the Effects Browser, select an effect, using any of the following to help you make the selection:
 - *To preview what the effect looks like using the video from the currently selected Timeline clip:* Move the pointer over the video effect thumbnails.
 - *To preview changing the effect's primary control:* Hold down the Option key while moving the pointer over a video effect thumbnail.
 - *To filter the list of effects that appear:* Type text in the Effects Browser search field.
- 3) Do one of the following:
 - Drag the effect to the Timeline clip to which you want to apply it.
 - Double-click the effect thumbnail to apply it to the selected clip.

3.2.2 Adjust effects

Most effects have one or more parameters that you can adjust using the Video inspector or Audio inspector, the Viewer, or the Video Animation Editor or Audio Animation Editor.

1) Adjust an effect in the Video/Audio inspector and Viewer

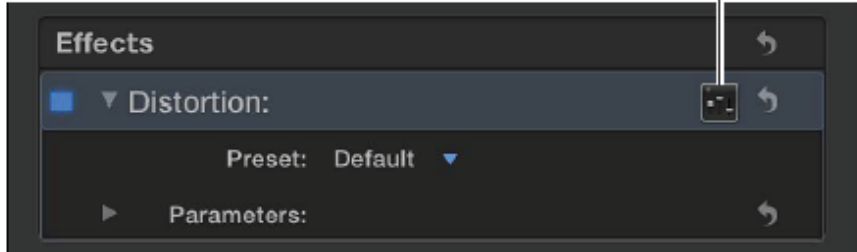
- a. In the Timeline, select the clip with the effect you want to adjust.
- b. Locate the effect in the Video inspector or Audio inspector.




In the above example, there are several settings for the Censor effect. Many effects also have adjustments that appear in the Viewer, known as onscreen controls.

Tip: For audio effects, you can click the Controls button (to the right of the effect's name) to show a custom control window.

Click to show the effect's custom control window.



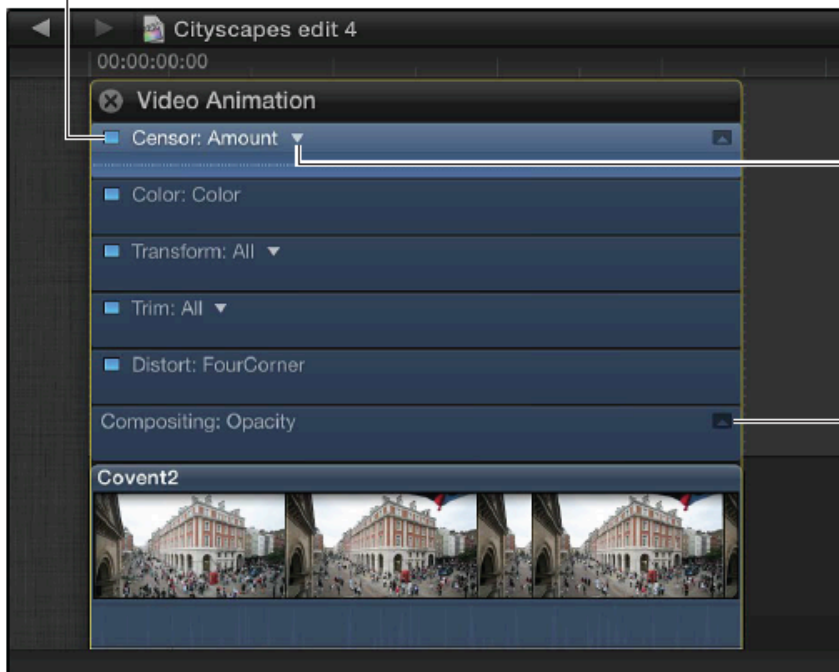
- c. Select effect parameters and adjust their settings as needed.
- d. To return the effect's values to their default settings, you can click the effect's Reset button .

2.) Adjust an effect in the Video Animation Editor

Many effect parameters can be adjusted in the Video Animation Editor. Additionally, you can set these parameters to fade in and out, allowing you to gradually apply the effect's settings.

- a. Select the clip with the video effect in the Timeline.
- b. Choose **Clip > Show Video Animation** from the top menu (or press Control-V).
The effect appears as one of the animations in the Video Animation Editor **above the clip**. You can click its checkbox to turn the effect off and on. Effects that have more than one adjustable attribute also have a pop-up menu for you to choose the attribute to show and adjust.

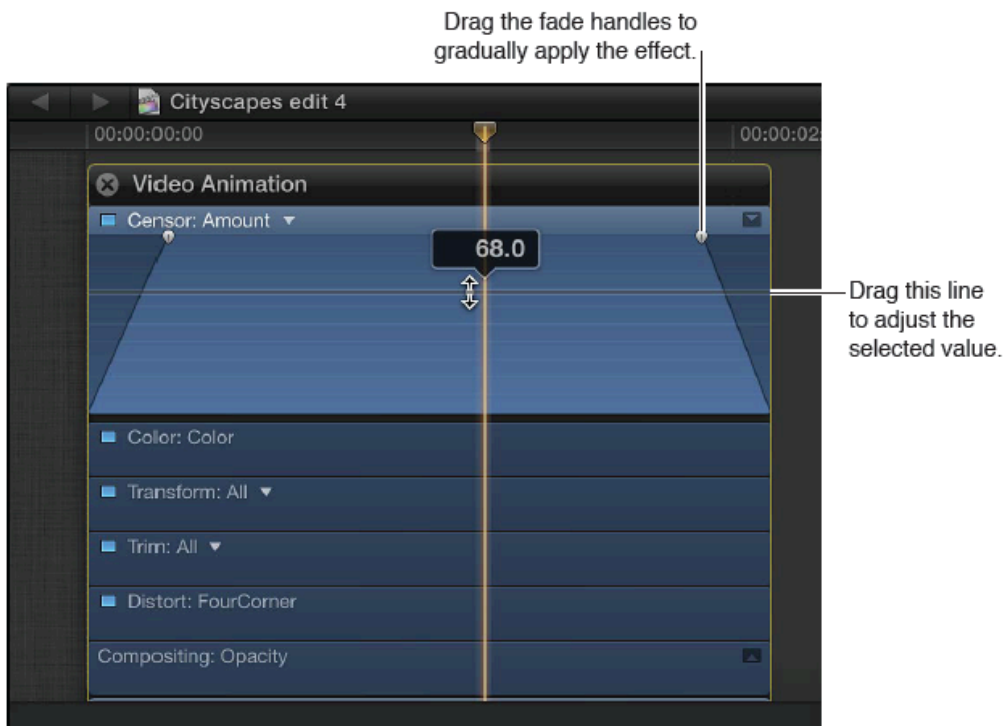
Click to turn the effect on and off.



- c. To vertically expand the effect's adjustment area, choose a specific effect adjustment from the pop-up menu (if present) and double-click it.

This applies only to effect adjustments that have a single value. An icon appears on the right side of the effect's section if the adjustment can be expanded.

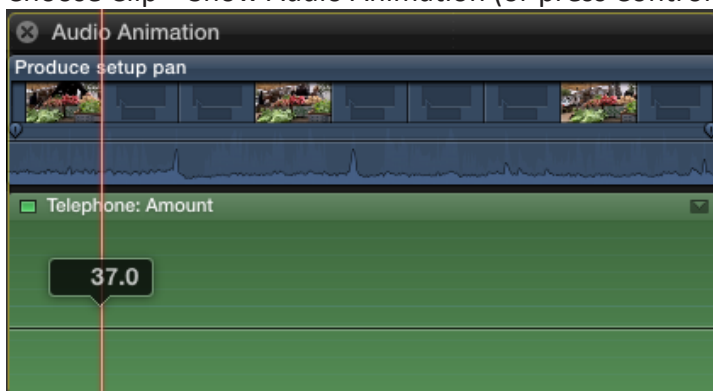
- d. To have the effect's setting fade in and out of the clip, drag the handles on either end of the effect.



- e. You can also drag the horizontal line up and down to control the effect's selected setting (amount, in the above example).

3.) Adjust an effect in the Audio Animation Editor

- a. Select the clip with the audio effect in the Timeline.
- b. Choose Clip > Show Audio Animation (or press Control-A).



The audio effect appears as one of the animations in the Audio Animation Editor. You can click its green checkbox to turn the effect off and on. You can also adjust the line over the green audio track to change the amount.

4.) Change clip effect order: You can easily change the order of the clip effects in the Video inspector, Audio inspector, Video Animation Editor, or Audio Animation Editor. To do so, simply drag the selected effects to rearrange their order.

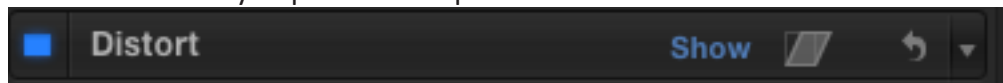
3.3 Video Animation: With Final Cut Pro, you can create simple changes to video over time or make sophisticated and precise adjustments over time to many individual parameters of video effects, transitions, motion paths, and so on.

In FCPX, you use keyframes and fade handles in the Video Animation Editor to change effects over time. You can set parameters to specific values at specific times (represented by keyframes) and Final Cut Pro automatically calculates all the values between your keyframes.

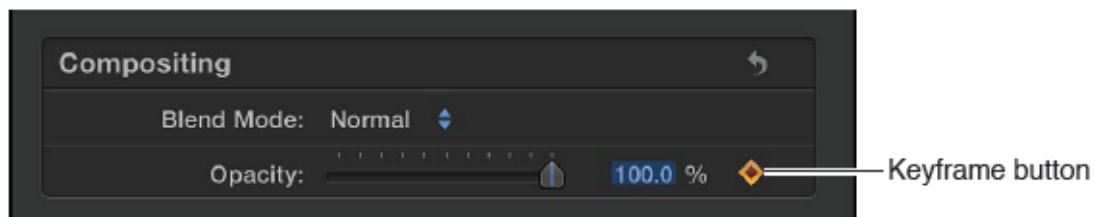
3.3.1 Add Keyframes

- 1) Select a clip in the Timeline, and choose Clip > Show Video Animation (or press Control-V) or right click a clip in the Timeline, and choose Show Video Animation from the shortcut menu. Each effect in the Video Animation Editor has a separate area for adding keyframes.
- 2) Select the effect for which you want to add keyframes in either the **Video Animation Editor** or the Effects section of the **Video inspector**. (Refer to **2.2.1 Add Effects To Your Projects**)
- 3) Do one of the following:

- *To see expanded parameters in the Video Animation Editor:* Click the triangle to choose an individual parameter from the pop-up menu, or choose All to add keyframes for all parameters.
- *To see expanded parameters in the Video inspector:* Click **Show** when you position the pointer over the effect.



- 4) Do one of the following for each effect:
 - *In the Video Animation Editor:* **Option-click** at a point on the horizontal effect control where you want to add the keyframe. Keyframes for the parameter you chose appear as white diamonds, while keyframes for other effect parameters appear gray.
 - *In the Video inspector:* Position the playhead in the Timeline at the point where you want to add a keyframe, and click the Keyframe button.



Once you add a keyframe, the Keyframe button changes to yellow, indicating that the playhead currently sits on this keyframe.

5) Add keyframes as needed:

- After you've added one keyframe, you can add another automatically by moving the playhead in the Timeline and then adjusting the effect parameter value in the Video inspector

To add keyframe to a range selection, do the following:

- Select an effect, and click the disclosure button to vertically expand it in the Video Animation Editor.



- In the Timeline, choose either **Select** or **Range Selection** from the Tools pop-up menu in the toolbar (or press A for Select, or R for Range Selection).
- Drag across the area in the Video Animation Editor where you want to adjust the effect and drag the effect's horizontal control up or down to adjust it.



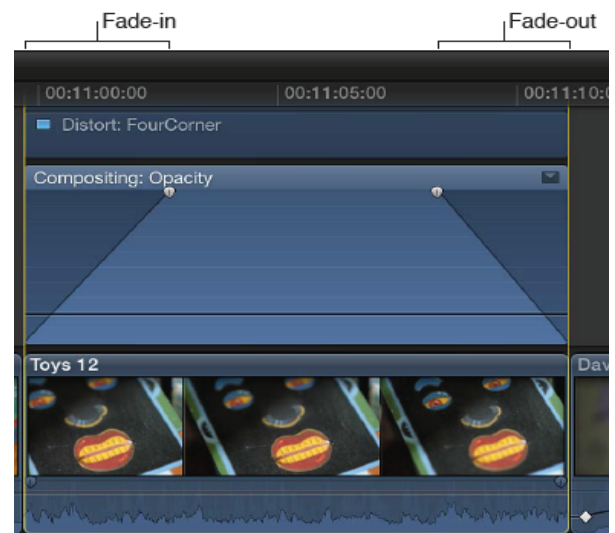
- 6) To adjust the keyframe, move keyframes left or right in the Video Animation Editor to change its position, to move the effects horizontal control up or down to change its value.

3.3.2 Change an effect using fade handles: Some effects in the Video Animation Editor include fade handles, which allow you to adjust how long it takes for an effect to fade in or out.

- 1) Click the disclosure button to expand the effect in the Video Animation Editor. (Note: If an effect doesn't have a disclosure button, it doesn't have fade handles.)



- 2) Drag the fade handle to the point in the clip where you want the fade to begin or end. Fade handles from the beginning of a clip create a fade-in, while fade handles at the end of a clip create a fade-out.



4. Retiming Clips

You can adjust a clip's speed settings to create fast-motion effects, slow-motion effects, or apply variable speed effects to a clip selection, and create instant replays.

Note that you can't apply speed changes to still images, generators, titles, and themes in Final Cut Pro.

4.1 Apply a constant speed change

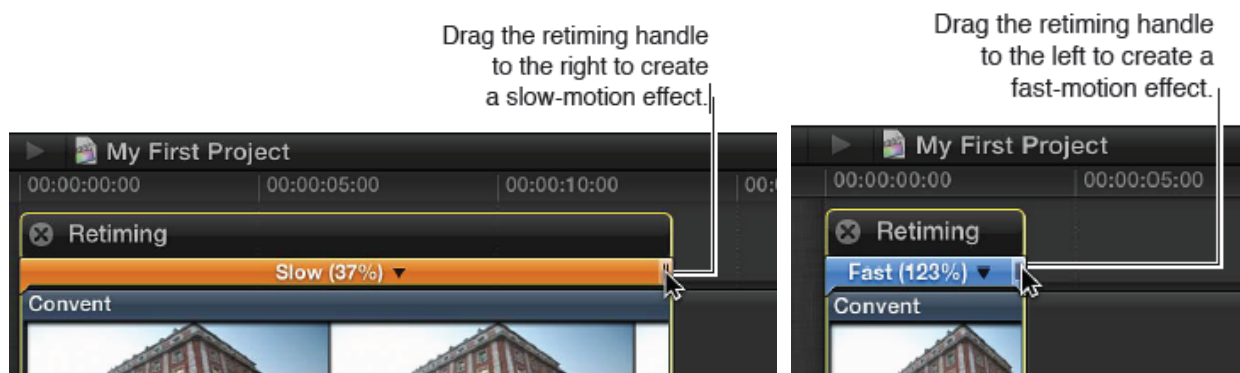
Applying a constant speed change to a range selection or a whole clip alters the entire selection's playback speed by the same percentage. Constant speed changes also alter the duration of a clip. The longer the duration is, the slower the speed is; the shorter the duration is, the faster the speed is. By default, the normal speed value is 100%.

- 1) In the Timeline, select a range, a whole clip, or a group of clips whose speed you want to change.
- 2) Do one of the following:
 - *To apply a preset speed setting:* Choose Slow or Fast from the Retime pop-up menu in the toolbar (shown below), and choose a speed from the submenu.



- *To apply a custom speed setting:* Simple drag the retiming handle located above the clip to change the speed. If you drag the retiming handle to the right, the speed of the selection decreases, the duration of the selection increases, and the bar above the Timeline selection turns **orange**.

If you drag the retiming handle to the left, the speed of the selection increases, the duration of the selection decreases, and the bar above the Timeline selection turns **blue**.

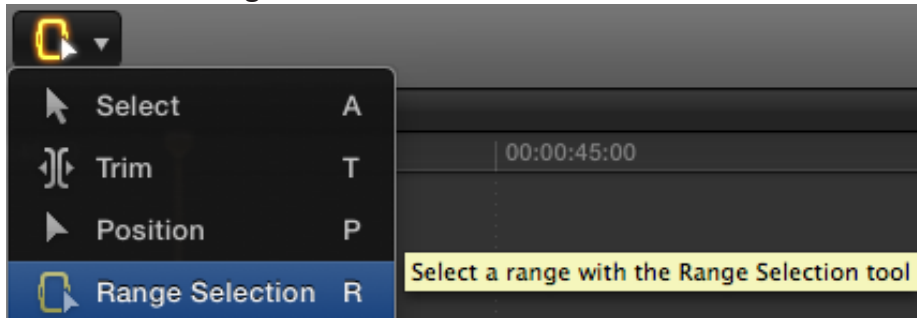


4.2 Apply a variable speed change

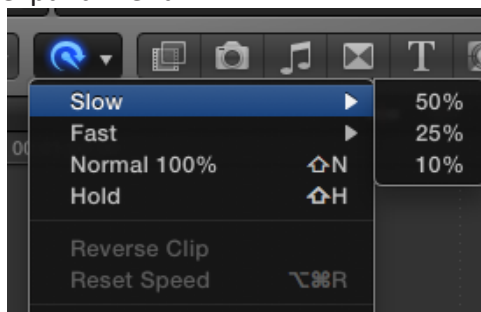
Variable speed changes create sophisticated effects in which subjects appear to smoothly shift across a variety of different speeds, with gradual or abrupt transitions between each speed segment. These types of effects can be seen in many music videos and broadcast commercials. The effects can be created directly in the Timeline.

To apply variable speed effects:

- 1) Make sure the **range selection tool** is selected.



- 2) Select a portion of the clip you would like to change the speed.
- 3) Go to **Retime** button on the toolbar and choose the value from either Slow or Fast expand menu.




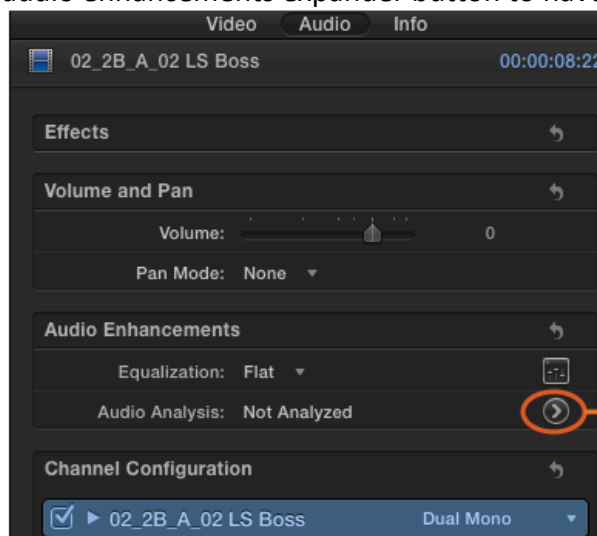
- 4) You can drag the retime handle to the left or right to change the speed.

5. Audio Adjustment

To adjust your audio level, you can either drag the audio level line up or down in the timeline or adjust the Volume slider in the audio inspector window.

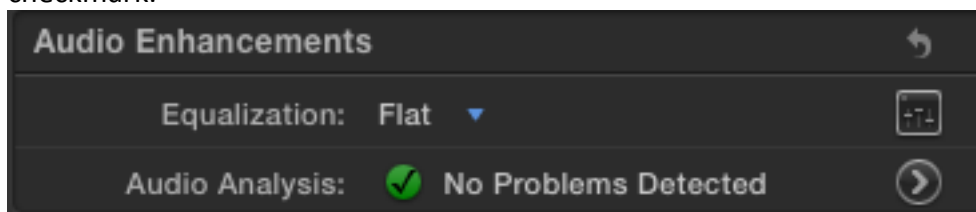
To do more audio enhancements:

- 1) Open Audio Inspector window by clicking on the inspector button on the toolbar .
- 2) Click on audio enhancements expander button to have FCPX analyze your audio first.



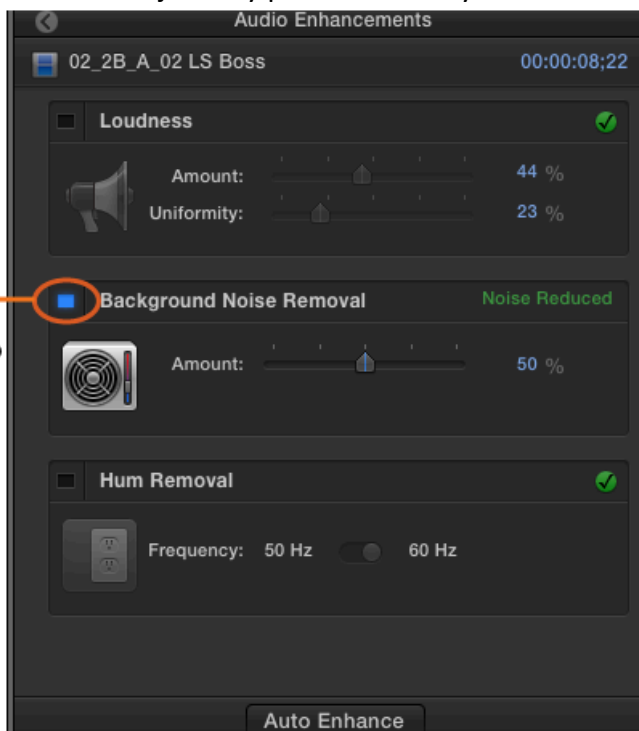
Click to have FCPX
audio-analyze your audio

- 3) FCPX auto-analyzes any audio issues. If no problem is detected, you will see a green checkmark.



- 4) You can also disregard the audio analysis, and click on the expander button to dive in the enhancement options and adjust any parameters to your satisfaction. See below screenshot.

To apply any enhancement, make sure to check the box next to the audio enhancement before adjusting the parameters.



6. Color Correction

In any post-production workflow, color correction is generally one of the last steps in finishing an edited program. There are a number of reasons to color correct your footage:

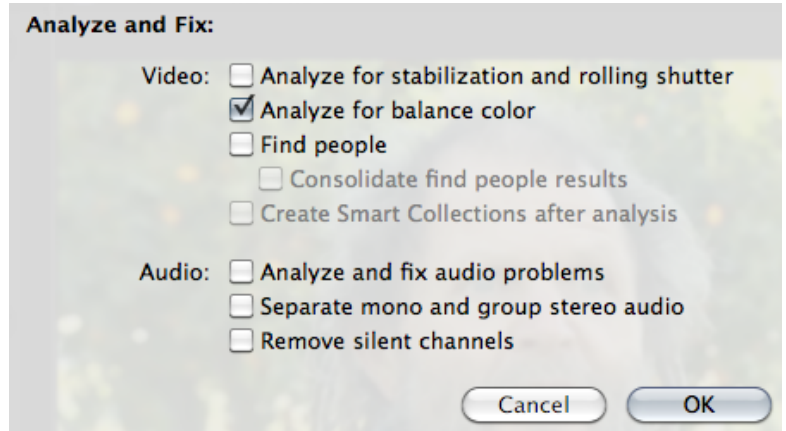
- Make sure that key elements in your program, such as flesh tones, look the way they should
- Balance all the shots in a scene to match
- Correct errors in color balance and exposure
- Achieve a look, such as making the scenes warmer or cooler
- Create contrast or special effects by manipulating the colors and exposure

Final Cut Pro color correction tools give you precise control over the look of every clip in your project by letting you adjust each clip's color balance, shadow levels, midtone levels, and highlight levels. Final Cut Pro also includes several automatic tools you can use to quickly balance and match the color in clips. We will focus on FCPX automatic color correction in this guide.

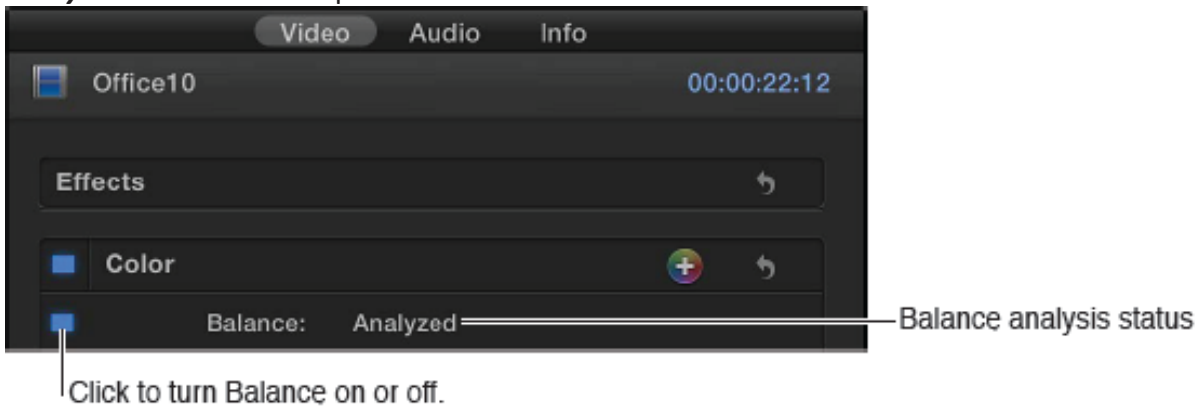
6.1 Auto analyze a clip for color balance and auto correct color

You can analyze color balance during file import. Just check “**Analyze for balance color**” in import window. The files are imported and analyzed for color balance issues.

You can also analyze color balance after you import files. You can either choose **Modify>Analyze and Fix** or right click on the selected clip and choose **Analyze and Fix** from the shortcut menu. In the window that appears, select “**Analyze for balance color**”.



After FCPX auto analyzed and corrected the color for you, you should see under **Color, Balance: Analyzed** in the Video inspector window.



If you check the blue box next to the Balance, you can compare before and after as shown below:



Before Color Correction

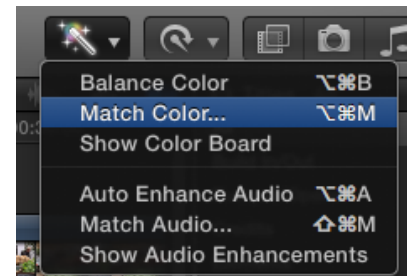
After Color Correction

6.2 Match color between clips automatically

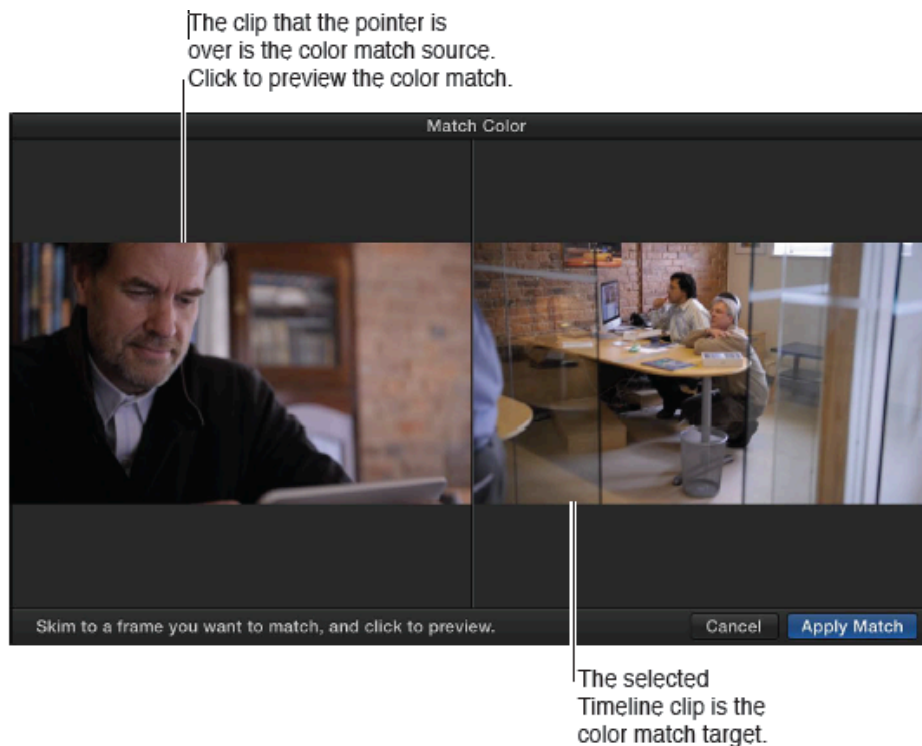
Your project likely uses video from a wide variety of sources. The Match Color feature makes it easy to ensure that all scenes that take place in the same location have the same look.

Match color between clips

- 1) Select one or more clips in the Timeline that you want to adjust.
- 2) Do one of the following:
 - Choose Modify > Match Color (or press Command-Option-M).
 - Choose Match Color from the Enhancements pop-up menu in the toolbar.



- In the Color section of the Video inspector, click the Choose button next to Match Color. The Viewer changes to display the Timeline playhead's frame on the right and the frame the pointer is over on the left. The clip that the pointer is over is the color match source. Click to preview the color match. The selected Timeline clip is the color match target.



- 3) Skim any clip in the Timeline or the Event Browser to find a frame with the color look you want to match, and click to preview that look applied to the selected clip.
- 4) To accept the current look, click **Apply Match** in the Match Color window.

The Viewer returns to its normal configuration, and the selected Timeline clips change to the new look.
- 5) To turn off color match, simply uncheck the box next to Match Color in the video inspector window.

Part II: Appendix

1. Supported Media Formats

Video formats	Audio formats	Still-image formats
Apple Animation codec	AAC	BMP
Apple Intermediate codec	AIFF	GIF
Apple ProRes (all versions)	BWF	JPEG
AVC-Intra	CAF	PNG
AVCHD (including AVCCAM, AVCHD Lite, and NXCAM)	MP3	PSD (static and layered)
DV (including DVCAM, DVCPRO, and DVCPRO50)	MP4	RAW
DVCPRO HD	WAV	TGA
H.264		TIFF
HDV		
iFrame		
Motion JPEG (OpenDML only)		
MPEG IMX (D-10)		
REDCODE RAW (R3D)		
Uncompressed 10-bit 4:2:2		
Uncompressed 8-bit 4:2:2		
XAVC		
XDCAM HD/EX/HD422		
QuickTime formats		

2. Commonly Used Keyboard Shortcuts

Command	Shortcut
Blade tool	Command-B
Change duration	Control-D
Copy	Command-C
Fit everything into view	Shift-Z
Go to beginning	Home key
Go to end	End key
Go to next frame	Right arrow key
Go to previous frame	Left arrow key
Insert	W

Paste	Command-V
Play and pause the video	spacebar
Play forward	L
Play reverse	J
Redo change	Command-Shift-Z
Snapping	N
Stop	K
Undo change	Command-Z

3. Glossary

AIFF (Audio Interchange File Format) A cross-platform audio file format developed by Apple. Like WAV files, AIFF files contain “chunks” of information such as the Sound Data Chunk, which contains the actual sample data, and the Common Chunk, which contains sample rate and bit depth information.

alpha channel An image channel in addition to the R, G, and B color channels that is used to store transparency information for compositing. Alpha channels are often 8-bit, but some applications support 16-bit alpha channels. In Final Cut Pro, black represents 100 percent transparency, and white represents 100 percent opacity. Only certain formats, such as Targa, TIFF, PNG, PSD, Apple ProRes 4444, and the QuickTime Animation codec, support alpha channels. See also *compositing*, *RGB*.

Apple ProRes The Apple ProRes codecs provide an unparalleled combination of multistream, real-time editing performance coupled with impressive image quality at reduced storage rates. In particular, the Apple ProRes codecs have been designed to work especially well as high-quality, high-performance editing codecs for Final Cut Pro, taking full advantage of multicore processing and featuring fast, reduced-resolution decoding modes. All members of the Apple ProRes codec family support any frame size (including SD, HD, 2K, and 4K) at full resolution. The data rate of Apple ProRes varies based on codec type, image content, frame size, and frame rate.

audio sample rate The number of times an audio signal is measured, or *sampled*, per second. A higher sample rate produces higher-quality audio and larger file sizes, and a lower sample rate produces lower-quality audio and smaller file sizes.

audio waveforms Audio waveforms are visual representations of the actual sound. An audio waveform’s amplitude and length change according to the underlying sound’s volume and duration. A short, loud sound such as a drum beat has a sharp, peaked waveform, whereas low-level crowd noise has a lower, more uniform waveform. These properties make it easier to find specific edit points when trimming clips or keyframing effects.

AVCHD A high-definition (HD) video format that uses Advanced Video Coding (AVC) compression (also known as *MPEG-4 part 10* or *H.264*). Many Blu-ray players can play red laser discs with AVCHD format content, making this a common way to distribute short HD video projects using a standard red laser

disc.

bit rate The number of bits per second that makes up a digital video or audio asset. The higher the bit rate, the better the quality. However, higher bit rates require larger file sizes.

B-roll A term used to describe alternate footage shot to intercut with the primary shots used in a program. B-roll is frequently used for cutaway shots.

chroma The color information contained in a video signal, consisting of *hue*, which represents the color itself, and *saturation*, which represents the intensity of the color.

clipping Distortion occurring during the playback or recording of digital audio because of a signal that exceeds the maximum sample value of 0 dBFS.

codec Short for *compressor/decompressor*, or *encode/decode*. A software component used to translate video or audio from its current form to the digital compressed form in which it is stored on a computer's hard disk. DV, Photo JPEG, and Apple ProRes are common QuickTime video codecs.

color balance Refers to the mix of red, green, and blue in a clip. In Final Cut Pro, you can adjust the color balance of the highlights (bright areas), midtones, or shadows (dark areas) of your clip using the Color Board.

cutaway shot A shot that is related to the current subject and occurs in the same time frame (for example, an interviewer's reaction to what is being said in an interview). Often, a cutaway shot is used to eliminate an unwanted visual section of another shot. The audio usually remains continuous during the cutaway, helping to make the edit less noticeable.

frame A single still image. Film and video are made up of a series of these images.

frame rate The number of images photographed per second for a video clip.

frequency The number of times a sound or signal vibrates each second, measured in cycles per second, or hertz (Hz). Audio recordings are made up of a vast collection of waveforms, using many different frequencies of sound. Each frequency in a recording is associated with an audio pitch. For example, the note generated by each key of a piano has a specific frequency.

resolution Image resolution refers to the number of pixels in an image. Resolution is expressed in terms of the width and height of the image in pixels (for example, 640 x 360 pixels). Higher-resolution images contain more detail but also create larger files that take longer to download. Your electronic devices (computer, iPhone, iPad, iPod, and so on) also have screen resolution. Ideally, you should match the image resolution of your media to the resolution of your playback device.

storylines All instances of the Timeline contain a *primary storyline*, which is the main sequence of clips that you build to create your movie. *Storylines* are sequences of clips connected to the primary storyline. You can use storylines for the same purposes as connected clips (such as creating cutaways, compositing titles and other graphics, and adding sound effects and music).

timecode A signal recorded with your video that uniquely identifies each frame. By default, timecode appears in Final Cut Pro in the format *hours: minutes: seconds: frames*. Timecode supports a variety of functions in Final Cut Pro, including Timeline playback, synchronizing video and audio clip items, navigating through projects in the Timeline, and moving and trimming clips.

4. References

1. Apple Final Cut Pro X Resources Website: <http://www.apple.com/finalcutpro/resources/>
2. Final Cut Pro X User Guide: download available from <https://library.rice.edu/services/dmc/guides/video/fcpxuserguide>
3. Lynda.com online training video: *Final Cut Pro X Essential Training*