

Larry's FCP Newsletter

*Editor: Larry Jordan
Issue 2: February, 2004*

Welcome to the second edition of my Final Cut Pro newsletter!

I am delighted by your interest and grateful for your comments and suggestions. After only one issue, this newsletter is now read around the world by hundreds of FCP editors. I am truly pleased and honored. Thank you!

The goal of this newsletter is to provide information helpful to the professional, high-end user of Final Cut Pro. This will publish monthly, around the middle of each month. Past issues will not be archived, but key sections will be turned into their own articles.

Contents

- Techniques: [Using Auto-Select](#)
- Tip: [Fun Facts about Reel Numbers](#)
- Client report: [Problems with Chroma-key](#)
- Techniques: [Deciding when to use Compressor \(part 1\)](#)
- Update: [Brian Meaney's comments on project file size](#)
- Article: [Archiving Your Project](#)

Techniques: Using Auto Select

New to Version 4 Final Cut Pro is a button Apple calls, "Auto-select." It's located on the left side of the Timeline -- one to each track.

During normal edit operations, these buttons sit quietly and no one pays any attention to them. However, they become significant when you are cutting and pasting, or when you are applying filters. This Technique explains why.



Auto-select adds an additional layer of control (some would also say, "unnecessary complexity") when applying a filter, which I will talk about in

a minute. However, in version 4.1, Apple changed how auto-select works during a copy and paste and this is what I will discuss first.



In the initial release of FCP 4 (versions 4.0 - 4.02), when you copied a clip to the clipboard (Edit -> Copy or Edit -> Cut) then pasted that clip back into the timeline, two principal rules determined the placement of the clip: 1) the playhead determines the clip's location on the timeline and 2) the patch panel determines which track the clip lands on.



With the release of FCP version 4.1, the auto-select button now controls which track, not the patch panel. Additionally, if you set an in or an out, the Paste function ignores both the in and the out, instead it pastes the clip at the location of the playhead. (I'm not sure if earlier versions ignored an in or an out, all my systems have been updated and I can't test to find out.)

Here's the new rule: When pasting a clip, the playhead determines the clip's location on the timeline and the track with the lowest auto select button selected (i.e. with a DARK center) determines on which track it appears.

Here are three examples:



In this example, all auto-select buttons are selected (dark center), so the pasted clip shows up on V1. V1 is the lowest numbered track who's auto-select button is dark.



In this example, the auto-select button for V1 is NOT selected (hollow center), so the pasted clip shows up on V2.



In this example, the auto-select buttons for V1 and V3 are NOT selected (hollow center), so the pasted clip shows up on V2, which is the lowest numbered track with a dark auto-select button.

Now, there's another use of auto-select buttons, which is in all versions of FCP 4: use Auto-select to select a range and tracks to which a filter applies when you have multiple video tracks **and** you are also using an In and an Out on the Timeline.

Here, also, are three examples:

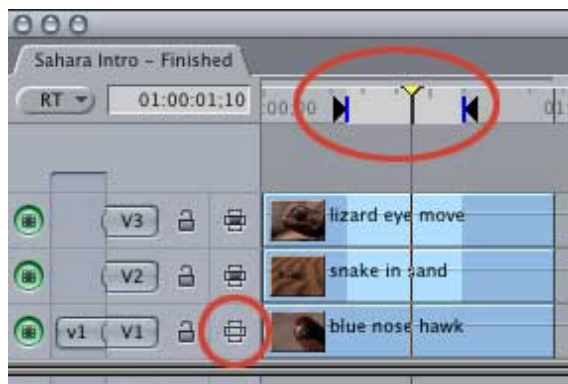


In this example above, all auto-select buttons are dark. And I have three video clips stacked above each other on V1, V2 and V3.

If I select all three clips, then apply the Desaturate filter, all three clips are now filtered for their entire duration.



Now let's turn off the auto select button for V1. If I select all three clips, then apply the Desaturate filter then, again, all three clips get filtered. And, the filter is applied to the entire duration of all three clips.



However, if, instead of selecting the clips, I set an in and an out on the Timeline, this will then apply a filter to a portion of a clip or clips. At this point, the auto-select button becomes important.

If the auto-select button is DARK, the filter will apply to the clip, or clips, on that track. If the filter is hollow, the filter will ignore the clip, or clips, on that track. (Again, you can use In's and Out's to set a range within a clip, or between multiple clips.)

This can be helpful when you want to delete portions of clips on multiple tracks without deleting all clips at that point. Or, when you want to apply a filter to multiple clips at the same point in the timeline, without applying that filter to all clips, or to the entire duration of a clip.

Auto-select can be a very useful technique when applying filters -- on the other hand, if you are principally doing copy and paste, it can drive you nuts.

What's New on larryjordan.biz?

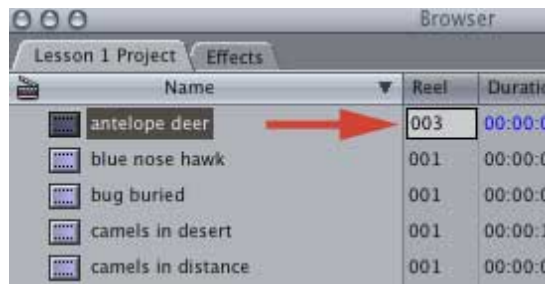
- Article: [Archiving Your Projects](#) (February)
- [Fast-response FCP Support: Direct to Your Desktop](#) (February)
- Article: [Techniques to Simplify On-Lining](#) (January)

Tip: Fun Facts about Reel Numbers

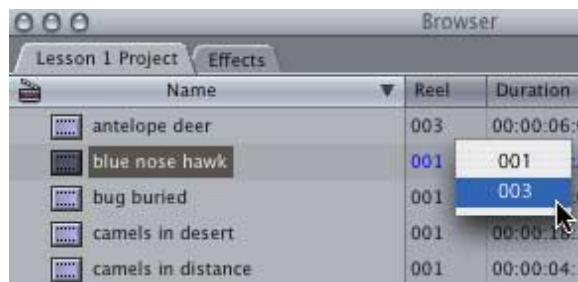
Whether you use Capture Now or Log every clip, making sure you have the correct reel numbers, or names, assigned to your clips is essential. Especially if there's the possibility you will need to recapture your media later. (A reel number can be any combination of letters and numbers. If you plan to go to an EDL, keep the number short. Different EDLs support different length numbers, none of which is longer than eight characters.)

However, sometimes in a fit of wild exuberance, the wrong reel number gets assigned. Since reel numbers are stored with the actual digital media files on your hard drive, it is important to make sure the reel numbers are correct.

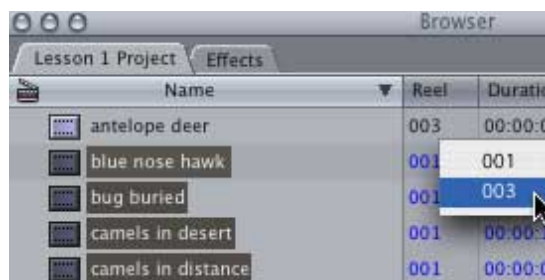
How can you change it? Several ways:



1. If you need to change an existing number to something new, double click on the reel number in the Browser and type in the new number



2. If you need to change an existing number to a different reel number which is already associated with a different clip in the Browser, control-click on the reel number and select the correct number from the list of all reel numbers currently used in your project.



3. If you need to change a number of different clips all to the same reel number as other clips in the Browser, select all clips you want to change, and control click on the reel number of any selected clip. All other selected clips will have their reel numbers changed to the same reel number.

This makes staying organized easy.

[\[Go back to top.\]](#)

Client report: Chroma-keying and DV.

I was called out to a production studio client recently that was having a problem with one of their clients -- a producer.

Here's the situation. The producer rented their stage to shoot a green screen sequence using Beta SP equipment. The producer then complained about the quality of their cameras and lighting because he was not able to get a clean key from the footage. The production company wanted to know what the problem was and whether it was their fault.

After I got there, I learned that the producer was editing the footage in Final Cut Pro. However, he had dubbed the Beta SP footage to DVCAM in order to save money, instead of renting a Beta deck and the necessary capture cards and video RAIDs to allow FCP to capture the Beta footage.

I told my client that the problem began when the producer dubbed the footage to DV. And the reason is that while DV footage looks great, one of the reasons the files are so small is that the chroma information is significantly compressed.

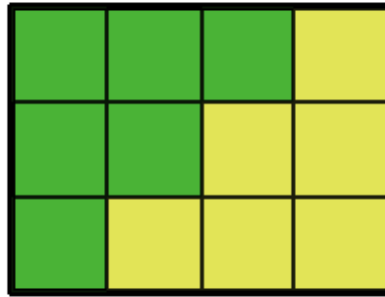
In broad strokes, here's what happens. When a video picture is created, each pixel is defined using three numbers for each pixel -- one for the luminance (called the "Y" value), and two to describe the color (the "U" and "V" numbers). These three numbers make up what's called YUV color space.

Here's a table (*using made-up numbers*) that illustrates this:

	<i>Column 1</i>	<i>Column 2</i>	<i>Column 3</i>	<i>Column 4</i>
<i>Row 1</i>	Y = 40 U = 20 V = 100	Y = 40 U = 20 V = 100	Y = 40 U = 20 V = 100	Y = 70 U = 60 V = 200
<i>Row 2</i>	Y = 40 U = 20 V = 100	Y = 40 U = 20 V = 100	Y = 70 U = 60 V = 200	Y = 70 U = 60 V = 200
<i>Row 3</i>	Y = 40 U = 20 V = 100	Y = 70 U = 60 V = 200	Y = 70 U = 60 V = 200	Y = 70 U = 60 V = 200

Here's what these colors look like visually:

4:4:4 Color Space



Original image - all pixels accurate

This illustrates that each pixel is uniquely defined using these three YUV numbers.

Let's assume this picture shows the edge between a green screen and the blonde hair of an actor. Given the value differences between the pixels, pulling a key is easy. This uncompressed format is given the short-hand name of 4:4:4; which means that every four pixels across are described by three numbers per pixel.

This is the compression format for CGI animation and some Hi-Def.

The problem is that each video picture has about 350,000 pixels (349,920 pixels for you Beta SP purists) per frame, times 3 numbers per pixel, times 30 frames a second, which creates a data stream of about 31.5 MILLION numbers per second. In other words, a lot.

So many, in fact, that a way needed to be found to reduce this amount of data, because it was way too much to broadcast.

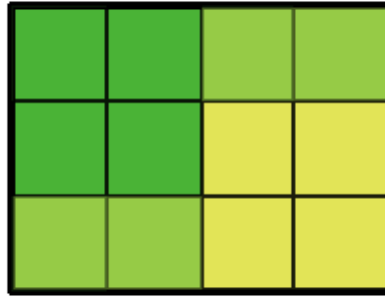
The human eye is very sensitive to changes in luminance. We quickly spot differences between light and dark. So, the "Y" value couldn't be changed without seriously damaging the clarity of the picture.

However, the human eye is much less sensitive to color information. So, rather than describing each pixel using 3 discreet numbers, when Beta video was invented, it was decided to average the values of two adjacent "U" values and two adjacent "V" values; thus creating 4:2:2 color space. This instantly cut files sizes and data rates by 33%.

Here's what these revised numbers look like. The pink areas indicate which cells now have average values:

	Column 1	Column 2	Column 3	Column 4
Row 1	Y = 40	Y = 40	Y = 40	Y = 70
	U = 20	U = 20	U = 40	U = 40
	V = 100	V = 100	V = 150	V = 150
Row 2	Y = 40	Y = 40	Y = 70	Y = 70
	U = 20	U = 20	U = 60	U = 60
	V = 100	V = 100	V = 200	V = 200
Row 3	Y = 40	Y = 70	Y = 70	Y = 70
	U = 40	U = 40	U = 60	U = 60
	V = 150	V = 150	V = 200	V = 200

4:2:2 Color Space



*Color averaged every two pixels,
only row 2 is accurate.*

Notice that here, the color values for every two pixels on the same row are averaged. The color is "close" to the original, but it definitely isn't the same. In fact, only one row accurately represents the original image. This color compression is given the name of 4:2:2; which means that every four pixels across are described by four "Y" values, two "U" values, and two "V" values.

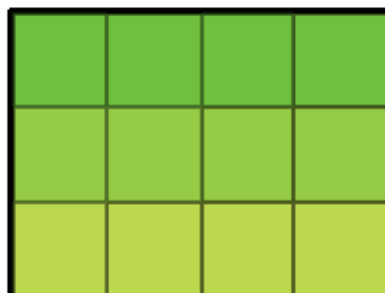
This is the compression format for Beta video.

When the compression format for DV was finalized, the decision was made to keep cutting down the color information. So, now, instead of averaging color across two pixels, it was averaged across four, creating 4:1:1 color compression and reducing file size and data rates another 50%. This, combined with other compression, allowed DV footage to be about one-seventh the size of Beta SP.

And here's the result of all this compression. The pink areas indicate which pixels are now using average color values, (*again, remember, I am using made-up numbers in this illustration*):

	Column 1	Column 2	Column 3	Column 4
Row 1	Y = 40 U = 30 V = 125	Y = 40 U = 30 V = 125	Y = 40 U = 30 V = 125	Y = 70 U = 30 V = 125
Row 2	Y = 40 U = 40 V = 150	Y = 40 U = 40 V = 150	Y = 70 U = 40 V = 150	Y = 70 U = 40 V = 150
Row 3	Y = 40 U = 50 V = 175	Y = 70 U = 50 V = 175	Y = 70 U = 50 V = 175	Y = 70 U = 50 V = 175

4:1:1 Color Space



*Color averaged every four pixels,
no row is accurate*

Now, the color values of all four pixels in a row are averaged. No row accurately represents the original color values. This color compression scheme is called 4:1:1; which means that every four pixels are defined by four "Y" values, one "U" value and one "V" value.

This is the compression format for MiniDV, DVCAM and DVCPRO-25.

The colors in our example all seem close to the original, which to our eye is fine. But not to the chroma-keyer in the computer. The problem is that so much color information has been lost, it is impossible to precisely determine where the edge between green and gold is.

When that producer dubbed his footage to DV, he seriously compromised his ability to get a clean key. In other words, he saved money, but spoiled the shot. I fixed the problem, by using FCP to key his original Beta SP footage, and the final results looked great.

Fast-Response Support

Many clients have asked me to develop a system to keep them up and running, and provide their editors with fast-response support -- especially when:

- Downtime is critical
- An editor has a question
- Traffic conditions make quick response impossible
- Or when productions are in the field.

Using new remote technology, I've developed a service where, with your permission, I can remotely observe your editing system and get you back up and running -- fast.

This service is designed for the independent producer or production company -- which means it is both fast and affordable. Here's a link for more information: www.larryjordan.biz/support.html

My other Final Cut services include:

- System Design
- Installation
- Training
- On-going consulting
- Editing
- Support and Maintenance

For more information, call (818) 879-5105 -- or send an email to: larry@larryjordan.biz.

[\[Go back to top.\]](#)

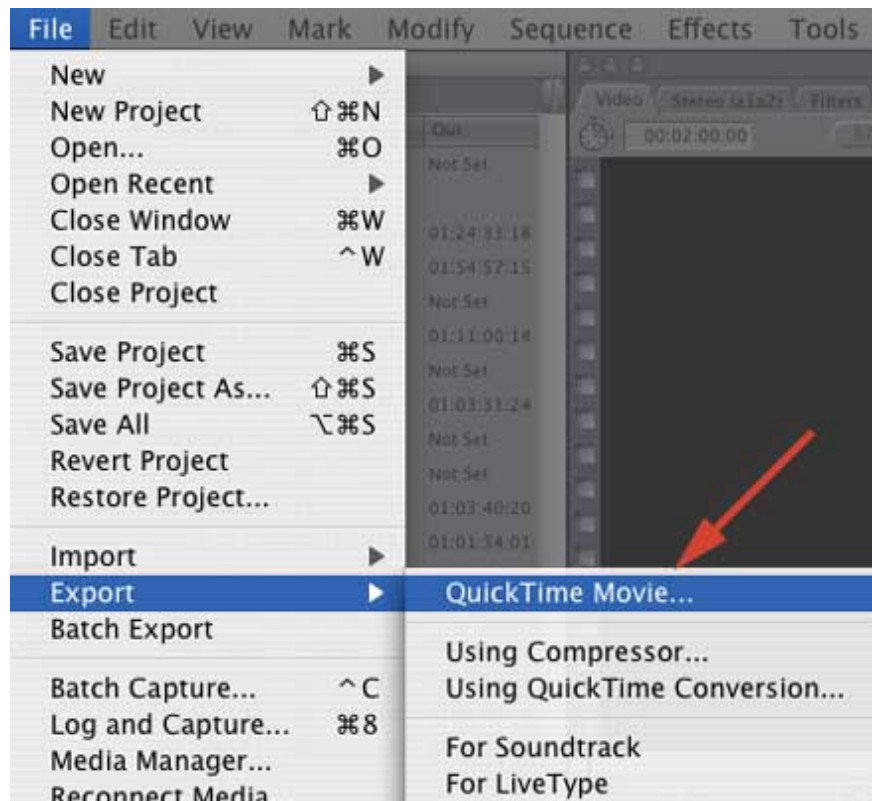
Technique: Deciding When to Use Compressor

This is the first of a two-part series on using Compressor. This month we'll

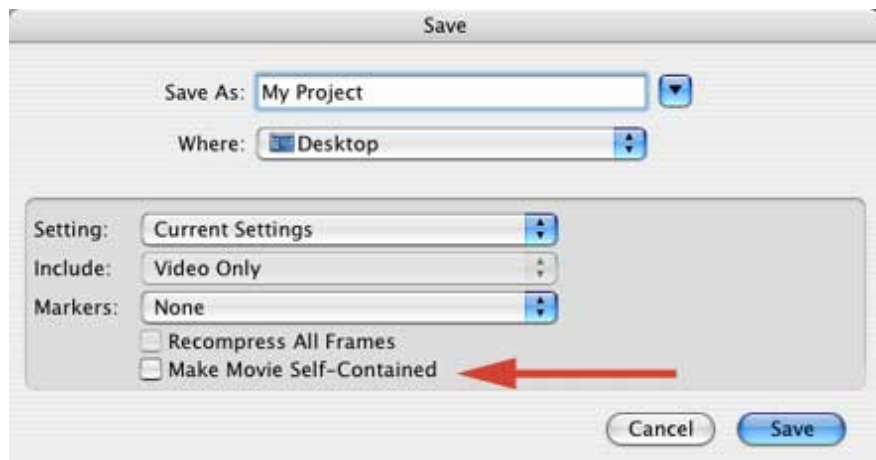
look at when using Compressor makes sense. Next month, we'll look at some of its more powerful settings and give you tips on how to use them.

Let's get the easy part out of the way first. There are four scenarios to get your Final Cut project to DVD:

1. If all you want is your video burned to a DVD, use iDVD. The video quality is fine, the interface is essentially straight-forward and you won't need to use Compressor.
2. If you will be sending your video to someone else to compress, simply export it from Final Cut, copy it to a Firewire drive and send it off.
3. If you want to use DVD Studio Pro to create your DVD, and your movie is less than 30 minutes long, let DVD Studio Pro handle the compression.



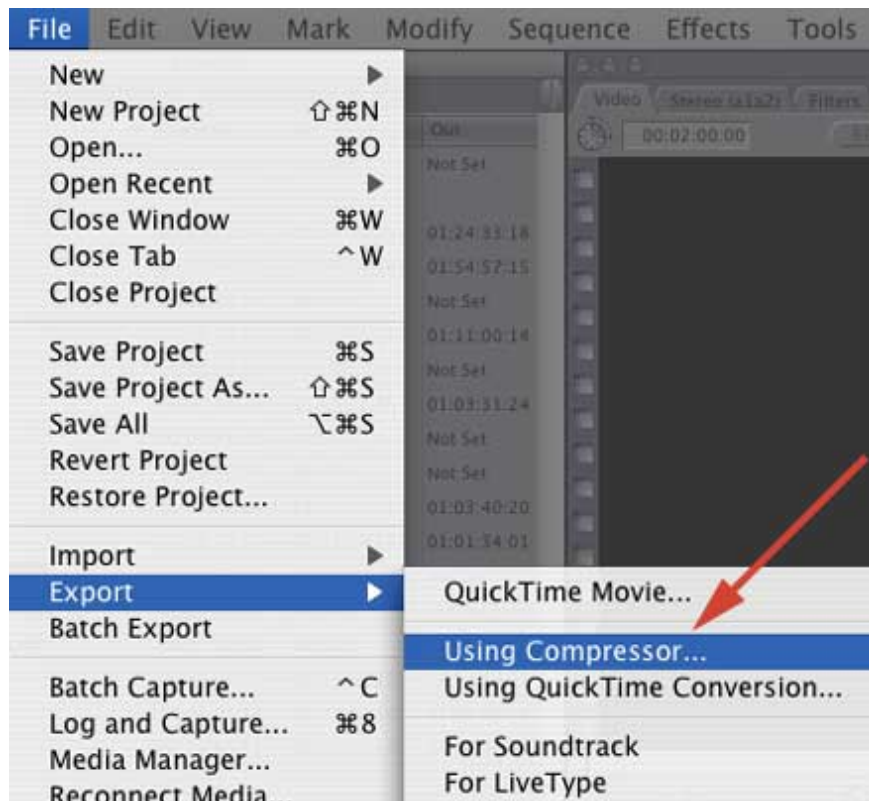
For these first three scenarios, export your Movie out of Final Cut using File -> Export -> QuickTime Movie. This provides the highest quality output. (There are **very** few reasons to export using QuickTime Conversion, QuickTime Movie is almost always better.)



If you will be compressing the movie on your computer, leave "Make Movie Self-Contained" **UN**checked.

If you will be compressing the movie on someone else's computer, **CHECK** "Make Movie Self-Contained."

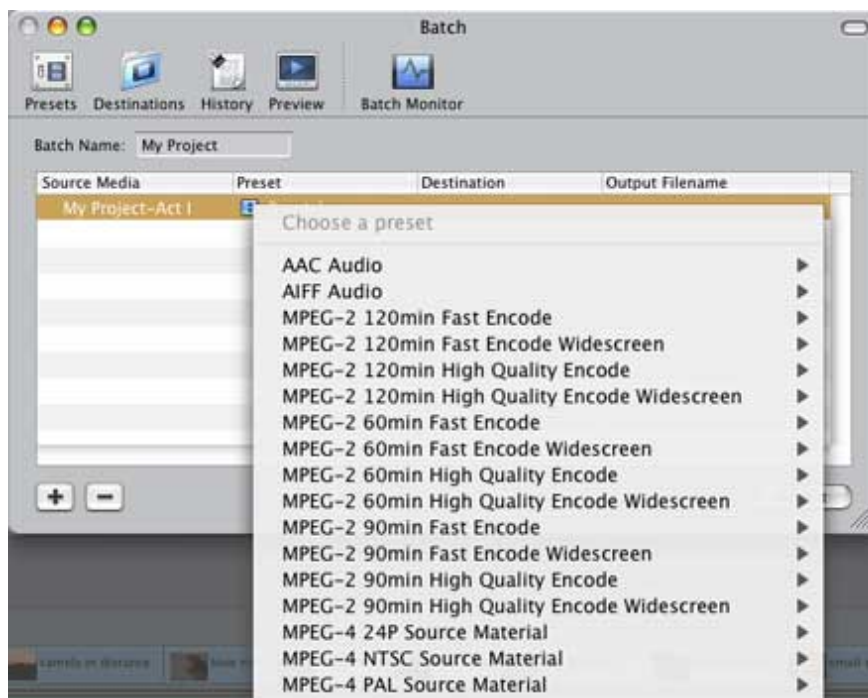
4. If you have a long project, and you want the most control over how it gets compressed, then using Compressor makes a great deal of sense. Using Compressor also makes sense if you want to create versions of your project for both the Web (using MPEG-4) and DVD (using MPEG-2).



To send your file to Compressor, go to File -> Export -> Using Compressor. FCP will automatically start Compressor and load your sequence into it.



Now, even though this program is called, "Compressor," this is only the preparatory phase to the actual compression. Here you select the quality and amount of compression for your video using presets. (Next month, we'll talk about these settings in more detail.



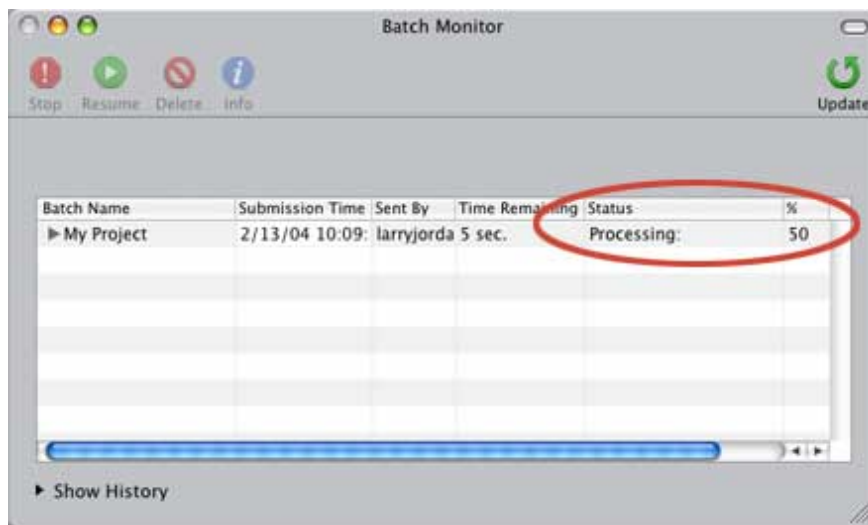
In general, while selecting "Fast" creates faster compressions, it also does not optimize quality. Since I use Compressor to create my final MPEG files, I always choose quality over speed. While I do tweak my settings, the defaults are quite good.

To decide which setting to use, simply add the length of all your sequences together and make sure the compression setting you choose is greater than, or equal to their combined length.



Compressor will give your files a default destination - I tend to use the Desktop, because no two project files ever end up in the same place. Putting them on the Desktop makes them easy to find and move.

When you click submit, the Batch Processor sends your instructions to the compressor itself, while Final Cut exports your project a frame at a time.



This status report shows you what's happening. Audio compresses very quickly, video takes a while -- anywhere from real-time to several times real-time, depending upon the speed of your system.

Compressor creates two files: an MPEG for video and an AIFF for audio. These are ultimately combined into a single file during the final stages of DVD creation.

Larry's Teaching Schedule

If you are interested in taking one of my Final Cut courses, here are the training dates for February and early March, along with the Apple-Certified Training Center that is presenting the class.

Feb. 19-20 Intro to Final Cut Pro Santa Monica, CA [DV Creators.net](http://DVCreators.net)

Feb. 25-27	Intro to Final Cut Pro	Westwood, CA	Digital Film Tree
Feb. 28	FREE FCP Overview	Santa Monica, CA	DV Creators.net
Mar. 4-5	DVD Studio Pro	Santa Monica, CA	DV Creators.net

Additional courses are posted on the home page of my website, so check there for the latest schedule.

[\[Go back to top.\]](#)

Update from last issue.

You may recall the discussion from last month about keeping your project file sizes small. Since then, I've had a conversation with Brian Meaney, lead developer for Final Cut Pro at Apple, who tells me that, "while there is no upper file limit to the project files in Final Cut," there were issues with FCP creating bloated files in versions 3 and earlier.

This problem was fixed in FCP 4, however, if you have a project that was created in an earlier version of FCP, then brought into FCP 4, you might have problems if your file sizes get too big.

To help resolve this, keep your project files small (less than 50 MB, for example) and do a "Save as..." every day or two. While this may not clear every problem, it will help minimize them.

Article: Archiving Your Project

There's a new article on the website providing tips on how to organize your projects so archiving is easy when you are done.

Click here to view the article: [Archiving Your Project](#).

[\[Go back to top.\]](#)

Wrap-up

Well, that's it for this edition of the newsletter. Let me know what you think, and if you like it, please tell your friends to subscribe.

Coming up next month:

- Selecting the right codec for your projects
- Exporting audio for post-production sweetening
- Working with settings in Compressor
- Another "Client Report"
- Reader feedback
- And more.

Thanks -- and have fun editing!

Larry

Legal Notes

The newsletter is free -- but does require a subscription. Please invite your friends to sign up at www.larryjordan.biz. You can contact me with comments or suggestions for future issues at: larry@larryjordan.biz

To unsubscribe, simply send me an email and I'll drop you from the list. This list is not sold or bartered. The only person who knows you are on this list is me.

The information in this newsletter is believed to be accurate at the time of publication. However, due to the variety of possible system and software configurations, the author assumes no liability in case things go wrong. Please use your best judgment in applying these ideas.

The opinions expressed in these newsletters are solely those of the author. This newsletter has not been reviewed or sanctioned by Apple, or any other third party.

All trademarks are the property of their respective owners.

Text copyright 2004 by Larry Jordan. All rights reserved. This newsletter may not be reproduced, in any way, in whole or in part, without written permission from the editor.

Updated: October 24, 2004

[Go to Top of Page](#)

[Go To Larry's Home Page](#)

[Send eMail to Larry](#)