Part One:
Getting Started

Coney Island Memories

Editing is a creative process, and there is a lot to do before the cutting even starts: you've got to make sure your hardware and Final Cut Pro are set up properly, and that footage is in your computer and organized efficiently. These crucial first steps will save you hours of editing time. Part I first shows how to set up your system and configure your hardware, walks you through the Final Cut Pro interface, and shows how to prepare your footage for editing as you shoot. We'll then cover organizing your footage and bringing it from your source tapes into your computer for editing. By the end of this section, you'll be ready to unleash those creative juices and begin to cut your movie.
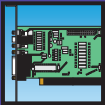
1 Setting Up Your Workstation

Setting up your workspace involves the first important creative decisions of editing. Every writer needs just the right desk, every painter needs just the right easel, and every editor needs just the right editing station to work efficiently and creatively. You have many choices to make when setting up your work area. These choices range from technical concerns such as how to hook up your speakers to making sure you're working in an area where you can think creatively without distraction. Installing Final Cut Pro is just the first step. You'll need to take a little time to hook up your equipment correctly and in such a way that you're not tripping over cords. It's important that everything you need is right in front of you and configured to meet your needs. In this chapter, we'll go over how to tailor your workstation for your special needs and how to set up your editing station for the two types of video capture: digital video (DV) and analog.

Overview

> *"It is important to have a good tool. But, even if it is the best possible, it is only a tool. No implement can ever take the place of the guiding intelligence that wields it. A very bad tool will ruin the work of the best craftsman; but a good tool in bad hands is no better."*
>
> Theodore Roosevelt
> *History as Literature*

While even the finest equipment cannot make up for a lack of skill, skilled professionals always seek out the best tools available to them. Final Cut Pro offers excellent capabilities bundled within an easy-to-use interface. However, although Final Cut Pro offers a multitude of features, it is only part of what you will need in order to create your video.

This chapter will help you set up your workstation for capturing and editing with Final Cut Pro. This chapter assumes that you have successfully installed Final Cut Pro, following the instructions provided by Apple. We will show you how to set up your machine to capture digital footage from an exterior video source such as a DV deck or analog sources like VHS and Beta-SP. We will also cover how to set up an exterior reference monitor and speakers. If you can afford adding these extra assets to your editing suite, we highly recommend it. The image you see on the computer monitor will not give you a true sense of the definition and color of the image, so a reference monitor is imperative if you're editing anything for professional use or broadcast. This chapter will help you understand how to set up your system for capture from either digital or analog source tape.

The Computer

Your computer is your tool. It is the device you will be using to create—to sculpt—your video. More than likely, you purchased this book because you already own a computer. If you are still in the market, check out the sidebar *Choosing the Right Mac*. However, you might not be sure whether your computer can handle Final Cut Pro 4, especially if you are upgrading from version 3. Not all computers sporting the Mac logo that ran older versions of Final Cut Pro will be able to run Final Cut Pro 4 so you'll need to make sure that your Macintosh has the following:

G4 or G5 processor (350MHz Minimum)   You will need a G4 processor running at 500MHz (or Dual 450MHz) for RT Extreme or Soundtrack. Obviously, the faster your processor, the faster you will be able to work. However, don't be afraid to use older machines if that's what you have. What counts are your skills.

OS X Jaguar (v.10.2.5) or higher   This is the standard Mac OS shipping with all new machines and is required for Final Cut Pro 4—the software will not run on versions under 10.2.5. If you are using OS 9 or older versions of OS X (10.0–10.1), you will need to upgrade to Mac OS 10.2 (Jaguar). In addition, if you have not upgraded from 10.2 to 10.2.5, you will need to do so, but this is a free upgrade. If you have an Internet connection, simply run the Software Update in your System Preferences. If you do not have a fast Internet connection, you can order the CD directly from Apple for $19.95 (www.store.apple.com).

384MB of RAM   This is the bare minimum you need for OS X and Final Cut Pro, but you will need at least 512MB to use RT Extreme and Soundtrack. It is especially true with digital filmmaking that the more memory you have, the faster you can edit. In

addition, more memory will help prevent the problem of dropped frames. We recommend at least 768MB. Memory is relatively cheap these days so stock up.

1GB free hard-disk space   This is the bare minimum needed to install Final Cut Pro, but you will obviously need more space while working. To install Soundtrack you will need an additional 5GB and another 4GB (9GB total) to install Live Type.

One or more FireWire ports   These ports are used to capture and export video. (Although useful for downloading digital photographs, Universal Serial Bus (USB) ports are too slow for video.) Having one FireWire port is enough, as you can chain your hard drives and video deck, but having two or more is helpful if you are hooked up to other hardware that uses FireWire at the same time. One advantage that desktop Macs have over portables is that they include three FireWire ports (one FireWire 800 and two FireWire 400).

FAQ
What Is FireWire?

FireWire is the trademarked name Apple Computer uses to refer to the input/output (I/O) industry standard known as *IEEE 1394*. Apple originally developed this standard to allow high-speed connections between peripherals (such as hard drives and DV cameras) and computers. There are two versions of FireWire IEEE (generally called FireWire 400) with data transfer rates of up to 400Mbps and the recently updated IEEE1394b (generally called FireWire 800) allowing transfer rates of up to 800Mbps. This speed is FireWire's most important advantage for video applications.

FireWire allows hot swapping. That is, you can plug in and unplug peripherals without having to turn your computer off, and the device will be immediately available to your computer with no further effort on your part. The Power Mac G5 desktop machine includes one FireWire 800 and two FireWire 400 ports.

Using FireWire you can connect as many as 63 independent devices to a single computer, where each device hooks into the previous device, and these devices can be seen by any other computer on your network. So, you can hook a hard drive to one computer, and use it over an office Ethernet with no difficulty.

Sony also uses the IEEE 1394a standard in most of its DV cameras; however, they call their product *i.LINK* instead of FireWire. Don't worry, though; whether you see FireWire, i.LINK, or IEEE 1394a, these names all refer to the same thing and will use similar (if not always identical) cables and plugs to allow various peripherals to talk to each other.

To find out more, visit the 1394 Trade Association (`www.1394ta.org`) or the Apple FireWire web site (`www.apple.com/firewire`).).

FAQ
What Is USB?

Like FireWire, Universal Serial Bus (USB for those of us in a hurry) is an industry standard technology used to hook peripherals to computers. It is also hot-swappable, allowing you to hook and unhook peripherals without having to turn your computer off. There are currently two USB standards: USB 1 (allowing transfer rates of 1.5 to 12Mbps) and USB 2 (allowing transfer rates of up to 480Mbps). Although it is much slower than even FireWire 400 USB 1 has been more widely adopted and is used to hook up peripherals such as printers, keyboards, and mice. USB 2, while much faster than USB 1, still cannot

hold a candle to FireWire 800. However, it is fast enough for video transfer if there is no other option.

An analog-to-digital capture card can gain device control by hooking up a USB-to-serial adapter cable (such as the Keyspan Twin Serial Adapter) to your computer and your analog video deck. However, we strongly recommend the GeeThree Stealth Port over this option, as the Gee Three has proven much more reliable and is actually a cheaper buy. USB ports can be identified by the USB icon located near the port. To find out more, go to `www.apple.com/usb`.

DVD drive   Due to the increased size of Final Cut Pro 4, it now comes on DVDs rather than CDs for installation. This book also requires a DVD player to use the included project file and footage. In addition, if you want to create your own DVDs, you will need a DVD-R or DVD-RW drive.

QuickTime 6.1 or higher installed   You will need to install or upgrade to QuickTime Pro, but the software is included with Final Cut Pro 4 so you can upgrade from the provided disks. Again, you can use the OS X built in Software Update to ensure that you have the latest version or you can order QuickTime updates from the Apple Store (`www.store.apple.com`).

You can do several things to improve your Mac's performance, such as adding additional RAM. We suggest 384MB, but the more RAM, the happier your machine (and you) will be. Your cut, especially with more complicated edits with a lot of effects or composite imagery, will go much more smoothly if you don't have to wait around while the computer prepares or renders your footage.

TIP
Choosing the Right Mac

Apple Computer offers several Mac models that either come out-of-the-box ready for video editing or can be tricked out to achieve the bare minimum. Generally speaking, all new Macs will be able to handle Final Cut Pro to varying degrees of proficiency. However, older models may not be able to handle the program:

iMac   Although thought of as a consumer-level machine, iMacs, even the older multicolored ones, are often used as basic video editing stations. Keep in mind that the newer flat-panel iMacs are at least as fast as the fastest Macs of just a few years ago. The major drawbacks of the iMac for video editing are lack of expandability, slower speed, and small screen size (on older iMacs).

eMac   Primarily intended for the education audience (which is where it gets that cute little e from), the eMac has the basics needed for Final Cut Pro, although you might need to add more RAM. The major drawbacks of the eMac for video editing are lack of speed and expandability.

iBook   Older (clamshell) iBooks will not work with Final Cut Pro because of their slow speed, small hard drives, and lack of FireWire support. However, newer iBooks have the bare minimum credentials for video editing. The major drawbacks of the iBook for video editing are small screen size (on smaller iBooks), lack of speed, and lack of expandability.

PowerBook   If you need to edit on the road, the PowerBook is your best bet. It provides most of the power of the desktop Power Mac and incredible portability. Final Cut Pro will work on later model "Bronze" PowerBooks (black casing) or with any of the newer "Titanium" PowerBooks. The major drawback for video editing with PowerBooks is lack of expandability.

Power Mac   The powerhouse for video editing is the desktop Power Mac. Newer models include dual processors, which will speed any editing job. In addition, Power Macs are far more expandable than any other Mac model, enabling you to add or change graphic cards, use internal disks, or add other third-party expansion cards such as an analog-to-digital capture card. The major drawback of the Power Mac for video editing is lack of portability.

External and Internal Hard Drives

In addition to the computer, you will need a lot of hard drive space. A single minute of uncompressed (high quality) DV-format video requires 216MB. While the storage size of internal hard drives is going up—most Macs ship with hard drives between 40GB to 160GB—we recommend you get an extra hard drive to store footage and dedicate the built-in drive to running Final Cut Pro.

Remember if you are capturing analog using a capture card, you must capture to a SCSI drive over a SCSI PCI card, and not the ATA drive that comes with the standard G4s, unless you are using a media converter box. If you are using a RAID system, check with your documentation for the best connection type to use.

Digital video consumes massive amounts of disk space. Just 15 minutes of uncompressed video footage can eat 3GB of disk space. You will also need extra hard-disk space to store your raw media as you capture it from your digital videotapes. Although computers are coming with increasingly large hard disks, we strongly recommend that you use an external or separate internal hard disk to devote exclusively to media storage. Capturing media to your primary internal hard disk (the one that came with the machine) can cause problems, such as program crashes and corrupted video files if that disk is also being used to run programs (including Final Cut Pro).

Let's look deeper into why you want to separate the media files onto their own hard drive. Video editing requires precise timing, and a delay of even a few milliseconds can throw your video out of synch. If you are using the same hard drive both to run Final Cut Pro *and* store and access the video footage, the hard drive may be required to be, essentially, in two places at the same time. Playback may suffer, frames may get dropped, and the audio may stutter as the hard drive switches back and forth. Adding an internal or an external hard drive—using the FireWire connection—and placing all of your DV footage on this additional drive will alleviate this problem and improve the overall performance of Final Cut Pro.

An external hard drive is also a much better idea if you will be working on several different projects concurrently or if you are sharing a workstation with other editors. You can hook and unhook the hard drive to switch between projects and not have to worry about filling the fixed hard drive space.

You have two basic choices for adding hard disks:

Internal disk   (Power Macs only.) This type of disk is installed in any empty media bay. The advantage is that internal disks take up less space than external disks and do not require an extra power socket. Internal disks tend to be cheaper, but you lose out on the portability factor of the external. Although it might seem daunting to pry open your precious computer to install a new internal hard disk, it is actually remarkably easy. Desktop Macs are designed to be easily opened, and additions can be simply snapped into place.

External FireWire disk   (Requires FireWire.) This disk is installed by plugging it into any open FireWire port. The advantage of external disks is that they are hot-swappable, which means you can plug in and unplug the disks while the computer is running and you can link multiple disks together to create a chain of disks, cameras, or other devices all accessible at the same time. Remember that even though they are hot-swappable, you'll need to eject the disk by dragging it to the Trash before unplugging it.

FireWire hard disks are relatively cheap. You can now buy disks with storage in the range of 120GB for only a few hundred dollars. When you are deciding how much space you need, remember that 1GB can hold roughly 5 minutes of captured video.

Because digital video relies on timing, you need to consider several features of any hard disk you are using. These features are listed at the top of the next page.

- **Rotational Speed** 5400rpm minimum but 7200rpm or higher recommended. Hard-disk speed is measured in rpm (rounds per minute), just like a vinyl record. FireWire video runs at 4200 rpm, so you'll want to make sure the disk you buy is faster than that.
- **Buffer** 2MB minimum, but 6MB or higher recommended
- **Access Time** 8.9 milliseconds (ms)
- **Data Transfer Rate** 50MB

Although designed as a highly portable MP3 player, Apple's iPod includes a FireWire hookup that enables you to transfer any file type (even video), enabling it to double as a pocket-size hard disk. The iPod can store up to 20GB, which is plenty of space for a short film, even uncompressed.

Monitors

While Final Cut Pro can display your sequence in the Canvas window on the computer monitor, we highly recommend you have a reference NTSC or PAL monitor on which to view your edit because NTSC and PAL handle color differently than the way a computer monitor handles color. The Canvas window will certainly give you a usable image, but an external reference monitor will help you make important decisions about contrast, color, and brightness that the computer screen cannot. If you're going to be doing heavy image control effects or color correction, a reference monitor is crucial.

You can hook up Final Cut Pro to any external reference monitor, including most regular, consumer-grade TVs, as long as the TV input plugs are compatible with your system. You can also buy adapters if your monitor's inputs are not compatible. For professional use, you should get a reference monitor with S-Video or Component inputs so

that the image quality is at the highest grade. This is absolutely necessary if you are cutting anything for broadcast.

It is also helpful, but not necessary, to have a second computer monitor. Final Cut Pro uses four main windows to navigate the interface, and these windows can be cramped on one screen even at a high resolution. If you have a second computer monitor, you can open up your space and divide your palettes between the two screens, keeping your viewer in one and your controls and browser in the other. If you are using the Matrox converter card, note that its port for a second monitor is not compatible with the Apple flat-panel monitor. If you desire a second flat-panel, you must also purchase an additional Radeon PCI card.

The DV Deck or Camera

Most likely you will be using a digital video camera to shoot footage for use in Final Cut Pro. If the footage you are capturing was shot on a DV camera, you can use the DV camera as a DV deck system (basically a mini-VCR that plays and records DV tapes). While doing so is sometimes a financial necessity, we recommend that you purchase a separate professional DV deck, such as the Sony Mini-DV VCR Walkman or the Panasonic DV Compact Recorder/Player, if you are working on a lot of projects that require a hefty amount of capturing. The strain of capturing, especially batch capturing, is not good for a DV camera's internal transport mechanisms, and DV cameras can run slower than DV decks when cueing up clips for capture. Also, if you're using the camera as a capturing deck as well as for shooting, it can cause greater wear on the camera's head, which will inevitably lead to poorer video quality when recording.

LESSONS

Hooking Up to a DV Deck or Camera

The most common setup for a Final Cut Pro station is with a *digital video deck*. As stated earlier, a DV deck is a like a mini-VCR that plays and records digital videotapes and can output that signal to your computer via a Fire-Wire cable. It can also receive video through FireWire so that you can record your sequences onto DV tape. In this section, we'll go over the best ways to hook up your DV deck or camera to your computer. Make sure you've got all the necessary equipment in front of you. The bare

bones are your computer, a FireWire cable, and the DV deck. You may also have a reference monitor and external speakers. Hooking up your system with a FireWire connection to a DV deck ensures device control, which means you can control the VCR functions of the deck from within Final Cut Pro and also mark In and Out points on the raw footage to log your clips (see Chapter 4).

1. Plug in one end of the FireWire cable into the FireWire port on the deck. Plug in the other end into the FireWire port on your computer. If you are using a DV camera, make sure it is in VTR mode, not Camera mode. Use the smaller (4-pin) end of the cable to plug into your DV deck or camera. To plug into the computer, use a 6-pin connector if you are using FireWire 400 or a 9-pin connector if you are using FireWire 800.
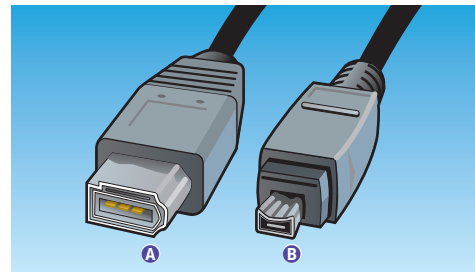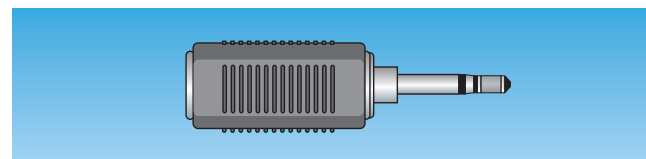

Ⓐ FireWire to computer
Ⓑ FireWire to device

2. If you have an exterior reference monitor, first identify what kind of inputs your monitor can accept. These inputs could be Composite, S-Video, or another kind of video signal cable. Most DV decks and cameras have Composite and S-Video outputs. High-end professional DV decks, like the Sony DV Studio Player/Recorder, use Component Video outputs. Once connected with the appropriate cable, your monitor will now display whatever you play in your deck, and also what plays in the Timeline and Canvas within Final Cut Pro as long as the FireWire cable remains connected to the computer.
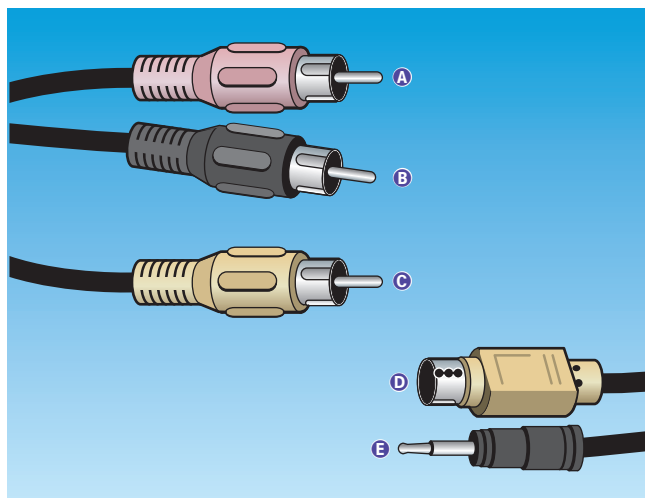
Ⓐ RCA Right Audio

Ⓑ RCA Left Audio

Ⓒ Composite Video

Ⓓ S-Video

Ⓔ Mini Plug

3. If you are hooking up external speakers, you have a number of options. If you are using a deck, find the Audio Out jacks, determine what type of cable they require, and route a cable between the deck and your speakers. If you are using a deck that does not have RCA audio output, plug a mini cable into the Headphones output of the deck and attach the other end to your speakers. You can, of course, just use actual headphones here if you prefer.

If you plug in your speakers through the camera or deck, your sound will be synched with the exterior monitor and not with the image on the computer monitor. There is a time delay of a few frames, so you should only hook up your speakers through the deck if you have an external reference monitor. Otherwise, use the internal computer sound via the headphone jack on your computer.

4. Now boot up Final Cut Pro. Make sure your DV camera or deck is on and the FireWire cable is plugged in or the program will not register the deck. If it's not, you can plug it in after you've booted the computer. If there is a problem, the program will alert you that there is no device hooked to the FireWire (see *Running Final Cut Pro for the First Time* in Chapter 2). Otherwise, you'll see the Final Cut Pro 4 splash screen, which means you are ready to start exploring the Final Cut Pro interface, which is the main focus of Chapter 2.

Hooking Up to a Media Converter Box
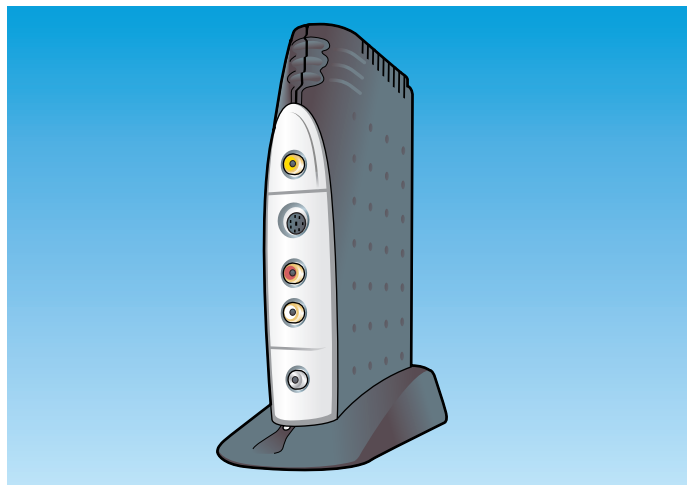
If you are capturing from an analog source (such as VHS, 1/4-inch tape, or Beta-SP) instead of mini-DV, you will need either a media converter or a special internal capture card. A media converter—such as the Matrox RTMac or the Hollywood DV-Bridge —is a device that converts an analog signal to digital and vice versa. It uses a FireWire cable to connect to a computer and S-Video and Composite analog video cables to connect to a video deck. This section will outline how to hook up your system so that you can successfully capture from

analog source material with a converter box. A converter box is a cheap way to translate your footage, but you should use a capture card if you want the more professional transfer via Component. Using a media converter can affect the color quality of the image and also degrade the audio. The biggest disadvantage is that the media converter box will not capture your footage with source timecode through FireWire, and therefore does not allow device control, logging, or batch-capturing.

1. Hook the FireWire cable into the FireWire port on your converter box. Attach the other end to the FireWire port on your computer. Remember that there are different kinds of FireWire plugs: 4-pin for the DV deck or camera and 6-pin or 9-pin for the computer.
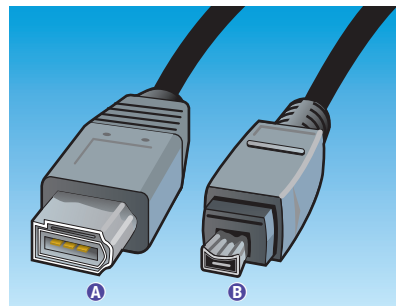
Ⓐ FireWire to computer
Ⓑ FireWire to device

2. Determine what audio and video outputs are available on your analog deck. Most media converter boxes can accept S-Video, Composite, and RCA stereo cables. Hook a cable from the video output on your analog deck to the video input on the converter box. Do the same with the audio; hook the outputs on the deck to the input on the converter box.
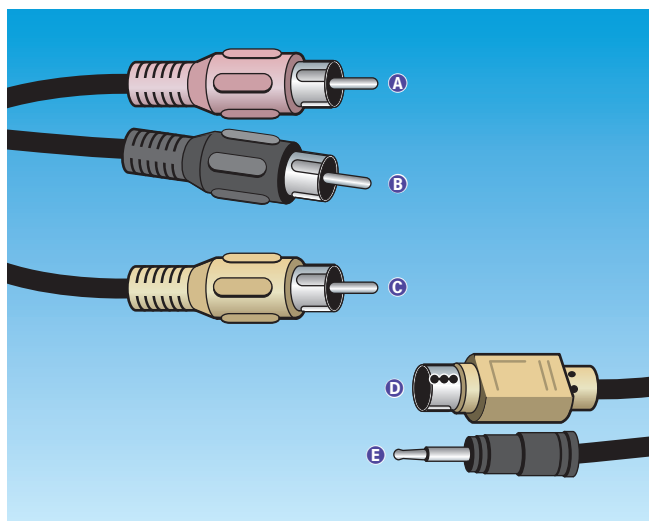
Ⓐ RCA Right Audio

Ⓑ RCA Left Audio

Ⓒ Composite Video

Ⓓ S-Video

Ⓔ Mini Plug

3. When you boot up Final Cut Pro, make sure the converter box is on so that the program will recognize the FireWire connection and can communicate with the converter box. Also make sure you configure the converter to import analog, as the signal you are inputting is analog and the signal you are bringing into your computer is digital. You'll want the Input source within Final Cut Pro to be set to DV.

This setup will allow you to capture from your analog source deck and convert the video and audio signals into digital files that will work with the DV codec (see the section on Installing an Analog-to-Digital Capture Card for a discussion of codecs) in Final Cut Pro. If you want to go the other way and export digital files onto the analog deck (for example, to make VHS dubs of your work), configure the converter to input digital. If necessary, change the cables between the analog deck and converter box so that the audio and video signals come from the output of the converter and go into the input plugs of the analog deck.

TIP
Editing Film, Digital Video, and Analog Video

analog *adj* (1948): of, relating to, or being a mechanism in which data is represented by continuously variable physical quantities.

digital *adj* (1656): of or relating to data in the form of numeric digits.

With all the talk about the digital revolution and the changing tides of video and film production to a digital world, let's look at what exactly is different about making and editing movies digitally. There are three main types of production media: film, analog video, and digital video.

Film is a strip of celluloid that records image through a chemical process based on exposure to light. Originally, editing was done entirely on film. Working prints of raw film footage were spliced together on an editing machine, which shuttled the footage back and forth on spools. When the editor was finished cutting and splicing, the original camera negative was cut to conform to the spliced working print, and a clean, unspliced print was made from this. Sound was added on a stripe along the side of the film, and voila, the film was ready for projection.

Both analog and digital video store their information on magnetic tape, by electrically charging the magnetic particles on the tape. The difference lies in the way the two methods represent information. With analog video-tape, images and sound are represented by continuous variations in the electrical properties of the magnetic particles. Digital video records the image by charging the magnetic particles into on/off voltages that can be read as ones and zeros. Digital video can therefore directly interface with your computer, and it does not lose quality as it is copied. Both advantages are significant.

With analog video technology, editing was done tape-to-tape. One tape held the raw, unedited footage, and the second tape held the assembled cuts in order; it was the final edited piece. Unfortunately, analog video degrades with every copy, as the signal from the magnetic particles on the tape becomes weaker with each dub. Analog editing therefore meant that the final version never had quite the image or sound quality of the original footage. This form of editing was called *linear editing* because shots were taped onto a master video one after the other, in a long "line" of video that could not be moved or shifted, only erased. If you wanted to make changes in shots you had already laid down, you had to go back and redo everything.

Because digital information can be stored and manipulated in computer memory, digital editing gives you the freedom to rearrange shots and shorten or lengthen them at will. This is called *nonlinear* editing because you are not trapped into a linear—one shot laid after the other—method of editing. What separates digital editing from editing on film is that the digital editing style is *nondestructive*, which means when you are cutting on your computer, you are not actually doing anything to the stored master media file. You are working with a representation of that file as a media clip, so no matter how many times you cut it or alter it, the clip stays intact as a file. All of your edited clips derive from that original media file, but they do not change it at all. With editing on film, every time you made a splice, you were actually cutting the film, so if you wanted to put a shot back together, you would have to re-splice it. Nonlinear digital editing saves you from having to keep track of all your snippets of stray film, because the media file stays intact no matter what you do editorially.

All of these formats can be converted to any of the other formats with various results. Digital video can be blown up to film, and footage shot on film can be transferred to DV and analog stocks and edited digitally. With each transfer, however, the footage will be affected by the characteristics of its current medium.

Installing an Analog-to-Digital Capture Card
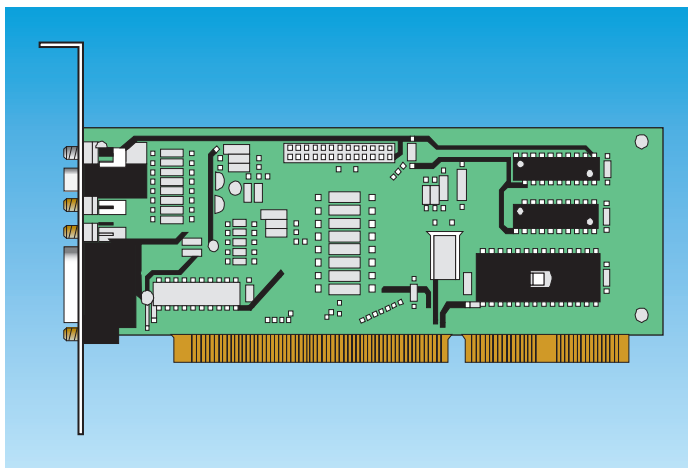
For a more professional way of working with analog source material in Final Cut Pro than using a media converter box, consider an analog-to-digital capture card. These cards maximize color quality by utilizing Component inputs and outputs. Like a converter box, a capture card converts the analog video into ones and zeros like the process in the converter boxes, but instead of using the DV codec, each capture card has its own proprietary codec. (*Codec* is an abbreviation for *compression/decompression* and refers to a type of extension software that allows QuickTime to communicate with Final Cut Pro so that it can capture, play back, and print to video. Codecs used by a capture card capture video without the degradation that DV converters perform on source material not originally shot on mini-DV.) Final Cut Pro supports these capture cards and their codecs: Digital Voodoo D1 Desktop, Aurora Igniter, AJA's Kona SD, and Pinnacle CinéWave.

This method alone, however, does not allow you to capture with *device control*. Device control is a technology that allows Final Cut Pro to control the deck and read the timecode on the source tape so you can shuttle through the footage and mark in and out points from the control panel in the program. With digital video, device control is already set up through the FireWire cable and timecodes are inserted automatically, but with analog, you will need a serial adapter. This section shows how to set up a video capture card and serial adapter.

Using a Serial Port with an Analog-to-DV Capture Card

If you are logging and capturing video with a high-end analog video deck (such as Beta SP, S-VHS, ¾ inch, or digital Beta), you will need a serial port added to your Macintosh to import timecodes from the video deck. Two serial port devices perform this function: the GeeThree Stealth Port (see www.geethree.com) and the Griffin Technology G-port (see www.griffintechnology.com/index.html/). Serial technologies are the only way to gain device control when capturing from an analog source.

In order to use the serial port, however, you must remove the internal 56K modem and install the serial port in its place. Instructions are provided in the accompanying products' manual—follow them closely as you perform the surgery. Neither of these two products comes with its own logging cable, so you must purchase this in addition to the port. This cable connects from the Time Code slot on the back of the analog video deck to the newly installed serial port on your Macintosh. While this device keeps a PCI slot open, it does prevent 56K dialup, leaving the only way for your computer to connect to the Internet through the Ethernet port (which is what DSL, cable, and T1 use).

Don't forget to change your Device Control tab in the Log/Capture window to the Serial Port when using this option!

1. Follow the manufacturer's instructions to install the capture card. This step generally requires opening your Mac and sliding the card into a particular PCI slot. Be careful when doing this, however, since the slightest static electricity may damage your computer. We recommend using a grounding strip when tinkering around with the inside of your computer. At the very least, touch a piece of grounded metal before you begin to discharge any static buildup.

2. Hook the audio and video cables into the output plugs on the back of your analog deck. These plugs should be clearly labeled. Most analog decks will have composite and RCA jacks. High-end professional decks like Beta-SP include Component jacks. You will need to make sure that the cable type accepted by the analog deck's output is compatible with the capture card's input plugs. See the *Video Cables* sidebar for information on the difference between the cables you can use.

3. Attach the other ends of the audio and video cables plugged into your analog deck into the inputs on the capture card you inserted in Step 1.

4. To allow device control over an analog capture card, you must install a serial port in place of the internal modem, attach a logging cable to your computer's freshly installed serial port, and connect the other end to the analog deck's timecode port. This will activate device control of the analog deck. See *Using a Serial Port with an Analog-to-DV Capture Card* for details.

5. If you are using an external reference monitor and speakers, you will need to connect them to the audio and video cables into the outputs of the analog deck as well as the capture card. There are usually two audio/video outputs on these analog decks. For the video signal, you should route signal 1 into the capture card on the computer, and route signal 2 into the external reference monitor to compare the color between what's being captured through signal 1 and what the source material looks like through

signal 2. (Note: You can manipulate the color control levels in the Clips Settings tab of the Log and Capture window, which are grayed out when capturing DV.)

6. You will also need to connect the audio cables that come attached to the capture card into your deck's outputs. You must also change the Sound settings on your computer so that it knows to channel the sound through the capture card you have installed. Go into the Apple menu, scroll to Control Panels **>** Sound and, in the Input and Output tabs, select the appropriate source

(whichever analog capture card you have installed) in place of the default output. This will allow you to print to video and also to hear the sound from the computer itself as the video source is played on the deck.

7. When you boot up Final Cut Pro, make sure the analog deck is on, and if you are using an analog camcorder as a deck, make sure it is in VTR mode. If you are using device control, you will need to have the device control toggle on the analog deck set to Remote.

FAQ

What Are the Different Video Cables Used with Analog?

There are three main types of video cables that you might use with Final Cut Pro when capturing from analog sources: Component, S-Video, and Composite.

Composite Composite cables provide the poorest quality of the three analog options, as they run all video information through a single RCA wire. Virtually all decks have composite RCA outputs, and this technology is useful for making tests.

S-Video Also known as Y/C, S-Video is a video input/output port that splits the video signal into four pins through one cord. It provides a signal that is better than Composite, but not as good as Component. Most higher-end decks have S-Video capabilities.

Component Component is the highest-end port. It splits the video signal into the three YUV signals or RGB signals, requiring three separate composite wires. These wires connect to the analog decks through BNC adapter ports. This is the standard for high-end professional projects, and gives the best quality transfer, with the least degradation to the color information of the original analog video. Many higher-end decks, such as a Beta-SP deck, will have Component jacks. Note that not all analog capture cards come with Component as part of the standard package. If Component is what you need, you may have to purchase an additional supplement to augment Component input and output for your capture card.

REAL WORLD

George Washington, Feature Film

George Washington was a media darling on the 2000 film festival circuit. After premiering at the Berlin Film Festival, the much-acclaimed feature went on to play numerous festivals including LA Independent, Newport, Edinburgh International, Toronto International, and the New York Film Festival. The film took several festival awards and was ultimately nominated for four Independent Spirit Awards, including Best Picture for 2001. Acquired for theatrical distribution in the United States by Cowboy Booking International, *George Washington* received much critical praise and made several top 10 lists for the year 2000, including *The New York Times* and Roger Ebert.

Directed by David Gordon Green, *George Washington* presents the complicated lives of a multiracial group of working-class kids living in a small Southern town. When accidental tragedy strikes, an innocent cover-up launches the kids on individual quests for redemption.

With such an original and unique perspective, it's not surprising to discover that the technology moving the image was also new: *George Washington* was the first feature film cut entirely on Final Cut Pro. Steven Gonzales, a co-editor of the picture, explained why he made the switch to the newly released editing software. "We started with Adobe Premiere, but it was just not working. Final Cut Pro came out, so we tried it, and we had success." Using 35mm film transferred to Beta-SP for the edits—which were captured over the Sony DV Media Converter and logged with the Griffin Technology G-port serial device—Gonzales describes the process of editing for film: "Film has code numbers created during manufacturing, which are located on every foot of 35mm." When the final edits were complete, he used FCP to export EDLs, and then imported them into Film Logic—a program that allows for accurate film-to-tape editing. He also used Film Logic to create cut lists for the negative cutter. "Film Logic keeps a database of the film edge codes, and relates them to the video timecode." This combination of Final Cut Pro and Film Logic allowed him to create 24 frame per second clips for frame-accurate editing of film.

An ambitious undertaking, both artistically and technically, *George Washington* was shot on 35mm, with a Moviecam, featuring anamorphic (super wide-angle) lenses from Joe Dutton. The film also used an Arri 35mm camera as the second-unit camera. All sets were shot on location in North Carolina.

Combined with the stunning cinematography of Tim Orr, the slow pacing of the film reflected the mood of the rural South. Gonzales further elaborates that "the languid pace was planned, and was shot in this way. Zene Baker (the other editor) and I worked closely with the director to cut the material in the most effective way." A teacher and student of the film techniques of V. I. Pudovkin, Gonzales discusses his philosophy of the process. "Editing is really a distillation process. For *George Washington*, the pacing really grew out of the raw material of the footage. We didn't approach the editing with a preconceived rhythm. We accepted the reality of our footage, and let it suggest its own rhythm."

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Nearly everyone on the *George Washington* production crew was affiliated with the North Carolina School of the Arts School of Filmmaking, where Gonzales is currently a faculty member. "We had all worked on dozens of

REAL WORLD

George Washington, Feature Film

films together, so our relations were established and we could relax into the process of filmmaking. The film was shot during the summer, so some of the crew who were still in film school could participate." *George Washington*, however, was not part of a thesis, but an independently financed film and— as is often the case with independent productions—choices of cast, crew, and technology were constrained by one thing. Gonzales, in using Final Cut Pro as his editing software of choice, tells it like it is: "Price was the main reason for our choice."

Gonzales has also edited the feature-length documentary *The Rough South of Larry Brown*, as well as the independent feature *Torn* for New York's Cynalex Productions.

George Washington is currently available on video, and a special feature DVD edition was released by the Criterion Collection. To learn more about this release or the film, visit the web site at `www.criterionco.com`.

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