

## STUDENT GUIDE

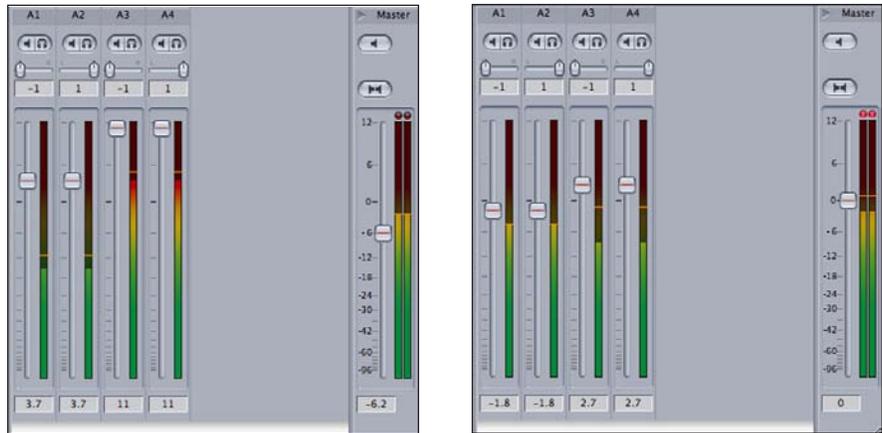
# Post-Production and Audio

The post-production part of the moviemaking process includes editing your recorded audio as well as adding music or other audio for the movie soundtrack. This guide first explains two tasks of post-production audio: normalizing the audio levels and correcting the audio frequency. It then provides suggestions for adding music to your productions. It also briefly discusses room tone and linking audio to your images.

## Normalizing the Audio Levels

Once a movie is shot and edited, the project goes to the post-production audio team, which is responsible for leveling the movie's audio. Leveling is needed because some people are louder than others and also because every recording location has its own special sounds and levels. Normalizing is the process of fine-tuning the audio levels.

Just listening to the recorded sound is not enough to adjust levels. You can balance levels by using the audio meters in Final Cut Pro, Soundtrack Pro, or Logic Pro. These meters show levels climbing from dark green to yellow to orange and finally to red. They communicate the calculated audio level in decibels (dB). A good rule of thumb is to make sure all interviews are within the dB range of  $-12$  to  $-6$ . For music or ambient tracks, make sure levels are lowered to below  $-12$ .



These screen shots show audio before and after normalization. Tracks A3 and A4 are past 0 dB and need to be pulled down to stay within the normalized range of  $-12$  and  $-6$ . Note that if you normalize to 0, sometimes it should not shock your movie. Be aware that balance is key. One isolated burst of sound will stand out and may be the memorable part of your movie.

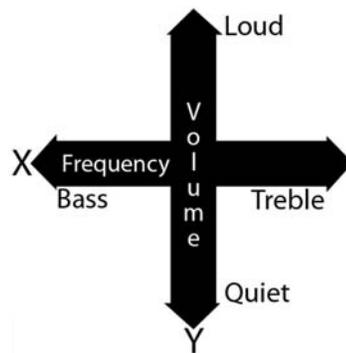
When you're working on audio in post-production, first close your eyes and listen to the levels. Then make notes of the timecode to help in locating sections that need correcting. Next, listen to the sound again while watching the levels. Both Final Cut Pro and Soundtrack Pro have levels for each track. Drag the controls to change the levels and balance the sound. Make sure your sound is now within the normalized dB levels.

## Practice

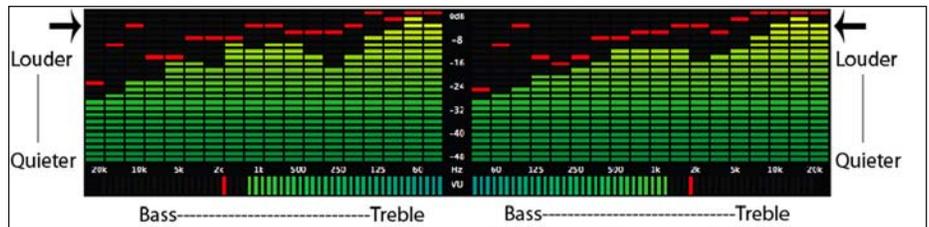
As an exercise, practice recording quick interviews at different levels and then use Final Cut Pro, Soundtrack Pro, or Logic Pro to normalize the audio.

## Adding Effects

The normalizing part of the process deals with the volume levels—the up and down of sound (the Y coordinate, mathematically speaking). However, sound is more than volume. There is also the side-to-side of music (the X coordinate, mathematically speaking). The sideways spectrum—called the *frequency*—will probably also need corrections or enhancements.



The following diagram shows the up and down of the volume as well as the left to right of sound. Notice that the dB scale goes from a low of  $-48$  to a high of  $0$  dB. The arrows point to the “audio sweet spot” or the normalized range (or zone). The diagram shows two frequency spectrums because information is read from both a left and right channel, like most sound you will work with. Final Cut Pro and other audio editing applications display two tracks: a left and a right track. With frequencies, the left part of the meter is the bass (the low notes). The right side is the treble (the high notes). The middle or the area in between is the mid section (the mids). This snapshot of a recorded voice has more treble than bass. It is well balanced because no areas stand out from the rest; however, it is a higher frequency rather than a lower frequency sound.



## Practice

As an exercise, watch your music or the sound of your recorded voice in comparison to that of others in the class. See how the different voices generate different frequency readings. See who speaks with more bass and who speaks at higher frequency rates.

Now that you have a better understanding of the frequency, the left and right of sound, you can begin to enhance or repair recorded audio. If you see and hear a track that has too much treble or unbalanced higher frequencies, you can use effects built into either Final Cut Pro or Soundtrack Pro to balance out the frequencies of the sound. This is called *equalizing* and the effect you use is an equalizer or an EQ effect.

With a simple three-band equalizer, the first setting controls the low, the next controls the mid, and the third controls the high range of the sound signal. If there's too much treble, you drag down the high level control and test the sound. If it's too "bassy," you drag down the bass or low control. You will find several different equalizers in different applications such as Logic, Live, and Reason. These are more refined and can control more detail in the sound.

### **Practice**

Use audio clips provided by your teacher or that you record to practice equalizing audio.

## **Adding Music to Your Movies**

Because this is a mammoth subject, this section provides only a brief overview of resources for adding music to your productions, including some of the legal considerations related to its use. Using other people's music may be ideal, fun, cool, and easy, but it's tough to do legally. You can either produce your own music, find music that is royalty free (available for use publicly—sometimes with minimal restrictions), or write your favorite music band's corporate label lawyer and begin the process to get a license.

### **Using Copy-Protected Music**

*Copyright* means all rights reserved. Not some or most rights, but all. This makes it clear: you do not have the rights to use music without proper legal consent. (If you won't be sharing your movie with the community or the world, you can use copyright-protected music, but what's the fun in that?) To be able to use copy-protected music, your school can purchase a music license and usage rights like the ones television networks use for copyright protected music.

### **Using Music Created with a Creative Commons License**

Another option for using recorded music from others is called a *Creative Commons license*. This new shared rights license strategy was created by a group of concerned authors, musicians, educators, and producers for people who want to share their work. You can find music created with a Creative Commons license at sites like [www.ccmixer.org](http://www.ccmixer.org). A Creative Commons License works both ways—once you have your own productions, you can consider looking at licensing your own finished work. In today's world, understanding the different ways to use, share, and distribute creative work is more important than ever.



## Creating a Soundtrack with Apple Software

If your school, like most, can't purchase expensive music licenses, or if you can't find appropriate royalty-free music, you can take advantage of Apple's tools for adding music to movie projects. From Final Cut Pro, you can send your movie to be scored (set to music) in Soundtrack Pro. Although Soundtrack Pro is a loop-based music sequencer, it may be sufficient for your movie's needs. (Loops are already-created music pieces that you can loop to expand the duration of a piece.) Sometimes sounds or a simple looped sound bed are enough to help guide the movie along as well as hide some irregularities in the sound or help with transitions from scene to scene. The capacity of Soundtrack Pro to produce a solid solution is ideal for producers who have limited time. You can use GarageBand loops with Soundtrack Pro as well.

Composing your own music with GarageBand is another option. Although you cannot send your movie directly from Final Cut Pro to GarageBand like you can with Soundtrack Pro, you can export your movie and then import it into GarageBand as a scored movie project. GarageBand places your movie and its audio track on the top track, allowing you to create the necessary composition for your movie. Like Soundtrack Pro, GarageBand has a loop library that the non-musician can use to create a soundtrack. And musicians can plug in a guitar, a keyboard, or a microphone and record their own creations, adding loops in GarageBand to create additional tracks.

**Tip:** You can use a MIDI USB keyboard to create music for your movies. It doesn't have to be a full 88-key, weighted keyboard; a simple 3-octave 36-key keyboard can do the trick. Learn some keys and a few chords, stay on rhythm, and away you go. Or, you should find it easy to find someone else at school who can play a few keys.

When producing music, think about mood, feel, and emotion. Next, move to rhythms. Do you want movie trailer, action movie fast? Or, do you want 16th century slow-moving epic movie? Or do you just want vanilla? Write down your ideas. Associate instruments to the pace. What is a fast-paced instrument? A tuba? A cowbell? Or is a string section fast? Experiment. If you find this difficult, communicate your ideas to a more musical person.

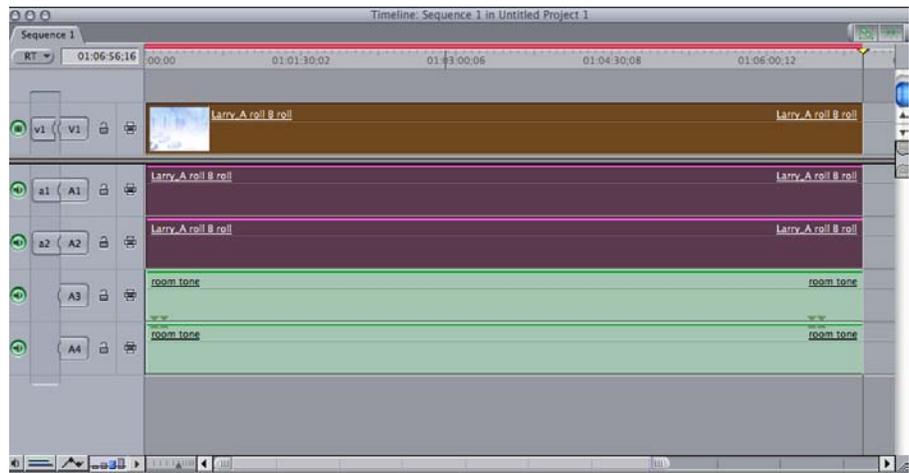
The great thing about GarageBand is that you can use its loops, buy more online with the Jam Pack collections (or download them from GarageBand fan sites like [www.icompositions.com](http://www.icompositions.com) or [www.macjams.com](http://www.macjams.com)), and combine these loops with your own musical contribution. Or you can bring in a colleague, a peer, or a member of the community who can play for you and help translate your vision to the project. Many websites are dedicated to traditional musicians and digital music producers. You can join a blog or two to see what others are doing in the world of music composition and movie scoring.

**Tip:** You don't have to create complicated music for your projects. Look at *Jaws*. With two notes, John Williams spooked us away from water everywhere. *Close Encounters of the Third Kind* used five strange notes. You can probably whistle those notes too. Simple can be good.

In addition to music, you'll want to consider the room tone in your productions.

## Room Tone

After each scene, you should capture at least a minute of room tone. This is the sound of the room. Every room, space, and location has its own signature ambient sound. When a person being recorded stops talking or you cut in other footage to support the talking head (also known as B-roll) in a documentary, you do not want the sound to go to a blank silence between talks. The recorded room tone track is placed on its own layer below interviews and B-roll. This way, the transitions between A-roll and B-roll will be smoother.



When recording room tone, make sure the crew is quiet, and mark on the slate the room tone for the specific room and the name of the person being interviewed. This information will be essential to the editor later. Remember, the more you communicate from the start, the better it will be for the next group that takes over the project.

## Linking Film to Audio Recorded Off Camera

In Hollywood, most audio is not recorded onto the camera as the principle source of audio—sometimes camera audio is only used for backups. Instead, most Hollywood audio is recorded off camera usually via a digital audio tape (DAT) system. The image on the film is then linked to audio during editing using the slate's clap sound (or its wavelength spike).

### Practice

To see how this works, you can use either an iPod with a voice recorder (preferably a 16-bit audio recorder for better quality such the TuneTalk by Belkin) or a solid-state portable recorder like an M-Audio MicroTrack. Use a slate (a clapboard) to help sync the audio and video. The director says, “roll sound,” which means start recording with the external device. A second or so after, a crew member brings in the slate, making sure the information on it is clear for the camera to read. If you want, have her or him say the scene, the shot, and take number, pause, then slap the slate loud enough to sync later in editing. You may use the camera audio to help as a guide. In Final Cut Pro, sync the two tracks to the clap sound. After that, remove or silence the camera audio. Ideally, you want the slate to cover the entire frame of the shot, which makes it easier for the editor.

## Locations for Recording Narration

A great place to record narration for a documentary is a place with no echoes or reverberation. This means a small, quiet space. In a school, sometimes this is hard, so the interior of a car or a closet would be great. If you're recording in a room, one tip is to ask the narrator to stand and "act out" what is written. If the narrator is nervous, just record a few sentences at a time. It will be easier to locate the better takes later in editing.