

## STUDENT GUIDE

# Microphones

Different types of movie projects call for different types of microphones. This guide describes the types of microphones you will encounter and when you might want to use them.

### Lavaliere Microphones

The *lavaliere microphone*, which is small and unobtrusive, is the most common type of microphone used in documentaries. The microphone clips onto a lapel or collar, which means that the person being interviewed doesn't have to think about the mic. This allows for a more open and trusting relationship between the subject and the interviewer.



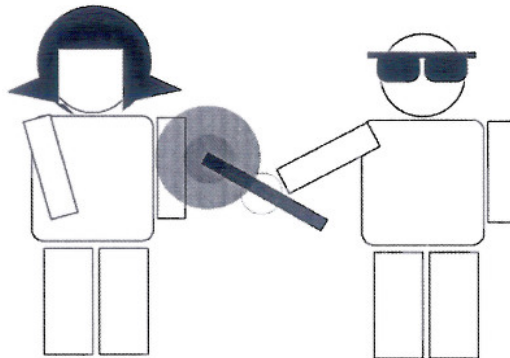
A lavalier is not a good choice for a narrative-based project in which microphones are usually supposed to stay out of sight. If a microphone is seen, it can ruin the situation and the movie. Also, if you used lavalieres, you would have to mic everyone acting in each scene or shot. Shotgun/boom microphones are a better choice for a narrative-based project. (See "Cardioid and Hypercardioid Microphones," later in this guide.)

The following diagram shows how a lavalier microphone system connects from the person being recorded to the camera.



## Omni-Directional Handheld Microphones

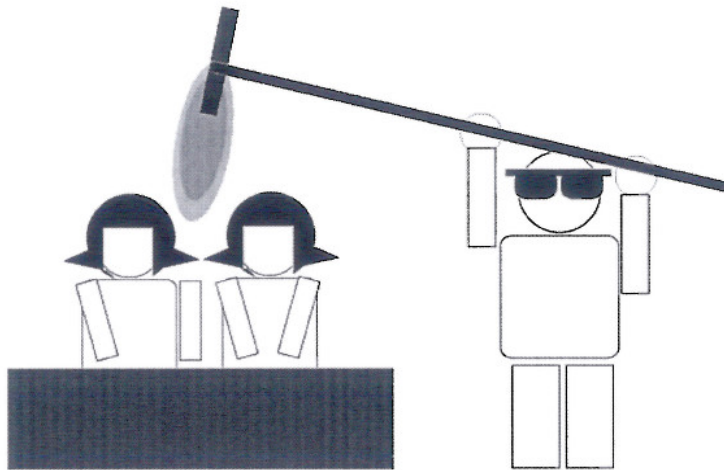
*Omni-directional handheld microphones* are just that. They record in all directions equally. These are used when ambient sound is required for the recording. These microphones are not ideal for moviemaking because they do not isolate the recording to the person or subject at which the microphone is pointed. However, they are sometimes used for news reporting type of interviewing.



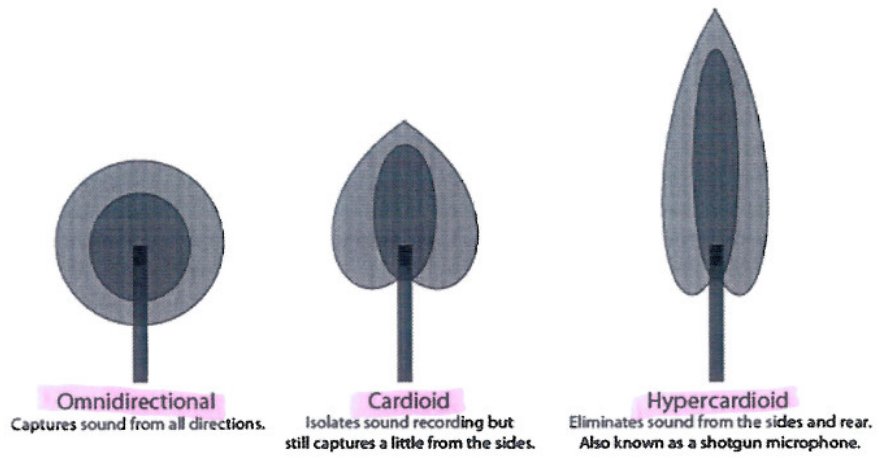
## Cardioid and Hypercardioid Microphones

*Cardioid microphones* can pick up what they are aimed at and reject much of the sound to the side and rear. *Hypercardioid microphones* can pick up what they are aimed at and reject most of the sound to the side and rear. These are the most common microphones found on any set and at any studio. They are ideal for your studio setup. You will find them useful when you want to record narration, musicians, and Foley effects. On narrative projects, using cardioid and hypercardioid microphones means that the microphone can move around with the action or actors. Your classroom studio may have a boom pole with a shock mount to connect the pole to the camera. The shock mount suspends the microphone to avoid the recording of microphone movement.

When you shoot outdoors, you may want to use a windscreen for the microphone, if one is available. You may have seen a windscreen before—it looks like a furry animal has wrapped itself around your microphone. The windscreen creates a barrier between the wind and the microphone. It eliminates the annoying blowing sound that is heard in many family-made travel videos.



The *on-camera microphone* can also be used for your movies but is usually not the best choice. Because the microphone is on the camera, it picks up the sound of the mechanisms of the camera itself. Also, because of its proximity to the cameraperson, it tends to pick up sounds she or he makes. On higher-end cameras, these microphones are good if the room has good acoustics—low ceilings and little to no echo. Otherwise, you might want to limit its use to picking up the ambient sounds of what you're shooting.





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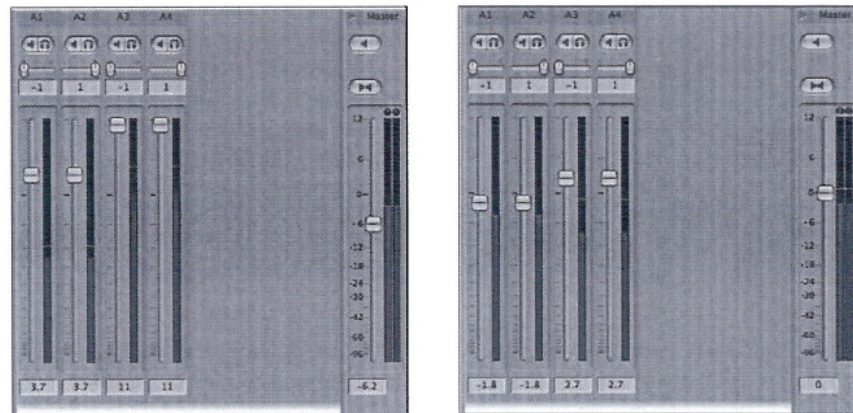
# Post-Production and Audio

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  $-12$ .

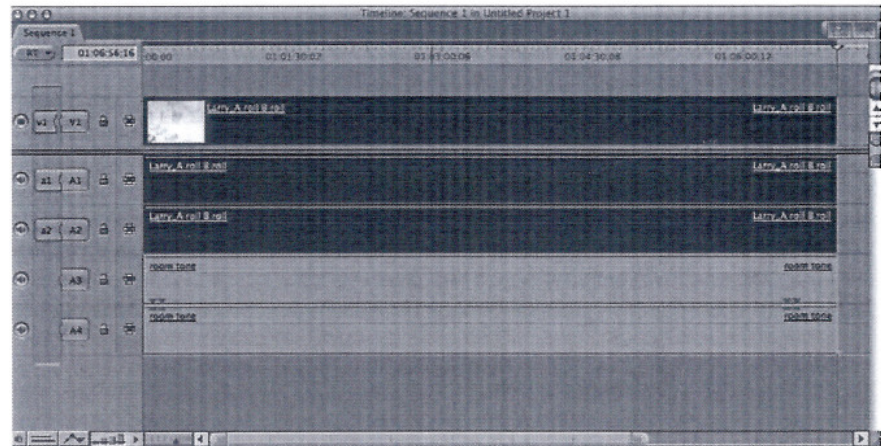


These screen shots show audio before and after normalization. Tracks A3 and A4 are past 0 dB and need to be pulled down to stay within the normalized range of  $-12$  and  $-6$ . Note that if you normalize to 0, sometimes it should not shock your movie. Be aware that balance is key. One isolated burst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

## 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.