Chapter Eight

Approaches to Sound Recording

Sound in a finished movie is extremely important for conveying information and establishing mood. Therefore, anyone recording sound should keep in mind how it will be used in the service of the story during the editing process. It is the sound designer’s job to determine the nuances of sound (see Chapter 1), but everyone involved with the recording process should keep the overall purpose of the sound uppermost in their minds.

Today’s movie fans go to theaters with surround sound and expect dramatic, high-quality sound. In addition, more and more people are including high-quality audio systems as part of their home television-viewing environment. Moviemakers must take great care when recording sound, because movie theater and home speakers pick up even minor sound discrepancies. In previous eras, when speakers were smaller and less sensitive, listeners could barely perceive such problems as a change in background noise, but now they can hear just about any audio aberration.

Elements of Microphone Pickup

Central to all sound recording is the microphone. How it picks up the sound determines the quality and utility of the sound. Some elements of microphone placement are common to all recording, whether it is dialogue, narration, music, sound effects, or background noises. These elements include the need for presence, perspective, balance, and continuity.

Presence

Sound presence refers to the reality of the sound. It must appear to be coming from the picture. This means that it must have the quality people expect when they are in a location similar to that shown on the screen. For example, sound in a gymnasium will be very different from sound in a living room with thick carpets and heavy drapes.

One of the main elements of sound presence is how live or dead the room sounds. A gymnasium is quite live (bouncy), and a living room with carpets and drapes is dead
One reason is the size; all else being equal, large rooms are more live than small rooms. But an even more important difference involves the surfaces in the room. Hard surfaces such as wood and concrete create live sound, and soft surfaces such as carpets and drapes deaden sound. Hard surfaces tend to bounce the sound from side to side, whereas soft surfaces absorb it. In other words, live sound has a great deal of **echo** and **reverberation**, and dead sound does not.

Echo and reverberation have slightly different technical definitions, but they create the same kind of effect. With echo the sound bounces once, and with reverberation it bounces a number of times. Sound that does not bounce is usually referred to as **direct sound**, which is generally dead (see Figure 8.1). Neither live locations nor dead locations are wrong. The amount of deadness or liveness required depends on the type of presence you are trying to create. But sound with a high degree of echo or reverberation often sounds muddled. In particular, the high frequencies tend to blend into each other and become indistinguishable.

For that reason, sound technicians often try to deaden a room so that the sound can be understood. Dead sound can be enlivened with echo and reverb during the editing process, but it is very difficult to remove echo and reverb during postproduction. The easiest ways to deaden sound are to hang blankets slightly in front of the walls, place carpet on the floor, put drapes over windows, and place cloths over hard tables. Moving the mic closer to the subject also makes for deader sound, whereas moving the mic farther away has the opposite effect. Removing carpets, drapes, and other cloth can enliven the sound.¹

Of course, most of this must be done in relation to the picture. Closed drapes that show in the picture probably are not a problem because the drapes will also make the presence of the sound match that of the picture. But blankets hung in front of walls would look strange. Sometimes sound technicians need to make compromises in the perception of the deadness or liveness of the scene so that the sound can be adequately understood. In general, though, the audience will perceive a setting with many hard surfaces as producing live presence and a setting with soft surfaces as dead.
**Perspective**

Sound perspective is related to distance. Generally, the voice of a person in the distance should sound different from the voice of that person when shown in a close-up. In this way, the viewers will feel closer to or farther from the person, reinforcing what they see on the screen. Similarly, the sound of a bell ringing in the distance should be different from the sound of a bell ringing in the foreground.

The easiest way to achieve proper perspective is to move a boom mic farther from the person or object for a long shot than for a tight shot. This usually needs to be done anyway, to produce a proper picture, because a mic close to the actors will show up in a long shot. However, keep in mind that the volume decreases as the mic moves away; in fact, it decreases by the square of the distance from the subject—the same inverse square law that affects lighting (see Chapter 5).

Achieving proper perspective is more difficult, if not impossible, with a lavaliere (lav) or table mic. The lav mic is attached to the person and moves as he or she does. A person wearing a wireless lav mic is never going to sound farther away. A table mic must look like it is in front of the person, so it too is essentially unmovable.

Mics hidden in the scenery can provide perspective if the picture relates to where the mic is placed. In these cases, the person moves away from the mic rather than the mic moving away from the person. However, if the camera follows a person with a close-up as that person is moving away from the hidden mic, the perspective will be wrong. The camera should show a medium or long shot as the person is walking away from the mic.

Sometimes, because of the needs of the picture, it is impossible to record the sound in proper perspective. In these instances, the sound is recorded as best it can be so it can serve as a scratch track when it is rerecorded in a studio environment (see ADR section later in the chapter).

**Balance**

Balance refers to the relative volume of sounds. Important sounds should be
louder than unimportant sounds. The human ear can listen to sounds selectively, but the microphone cannot. You can be talking to a friend in a noisy area, yet you hear your friend over the other noises because you concentrate on doing so. If you record your friend with a microphone, you will not be able to pick out his or her voice nearly as well as you can in person. Try placing a microphone in the middle of a table when several people are having several conversations. When you play back the tape, it will be a garble. Yet, if you are at the table, you can hear one particular conversation.

———<TXP> The need for balance is one reason microphones have been designed with directionality. A cardioid mic can act a little more like the selective ear than can an omnidirectional mic. One way to achieve proper balance is to record every important element flat; that is, try to make the volume of every scene, every person, and every sound effect more or less the same. Then adjust relative volumes in postproduction. However, if you know that the story calls for one person to have a booming voice, or for a waterfall to partially drown out a conversation, you might want to record sound that is not totally flat.

<H2>Continuity

———<TX>Continuity of sound refers to sameness from shot to shot. Sound continuity is as necessary as visual continuity. The script supervisor (see Chapter 1),[X-ref] who keeps track of continuity of visual elements, should also keep track of continuity of aural elements. If a water spigot is dripping during the man’s close-ups, it should also be dripping during the woman’s close-ups if you are going to intercut the two shots.

———<TXP> Elements that affect presence and perspective should also maintain continuity. If drapes were hanging over windows for long shots, they should also be there for close-ups, even though they won’t be seen in the picture. Removing them will make the room sound more live and create a discrepancy in tone between the long shots and the close-ups.

The script supervisor also should note how far a mic was from a person if shooting is going to stop for the day and the same scene is going to be continued the next day. Knowing this distance is also advantageous when different angles of the same scene are being shot. If the mic is
3 feet from the man during his close-ups and 5 feet from the woman during her close-ups, the shots may not intercut well. To the extent possible, each actor’s dialogue should be recorded on a separate track so that, if something needs to be changed, it can be treated separately during postproduction.

Using the same microphone for the same person throughout a production also helps to maintain continuity because the sound will be similar. However, sometimes you have to use different mics. For example, you might need a wireless lav for a long shot of a person standing on an overpass and then a boom mic for a close-up of that person. If you are using different mics, the sound person should listen to recordings of the various mics available and select ones that sound fairly similar in terms of frequency response, dynamic range, and timbre characteristics. Keeping track of sound continuity can distinguish a professional production from an amateur one. It is fairly easy to do, but is often neglected.

**Eliminating Unwanted Noises**

One of the problems of recording sound is that it is very difficult to eliminate sounds you do not want to hear. With video, you can zoom in to get rid of an obtrusive sign or set up lights in such a way that an unwanted set piece will not be discernible in the dark background. However, it is hard to eliminate a particular sound. One undesirable sound is the equipment itself. Film cameras have motors that can create noise, and with electronic noise can emanate from electronic equipment such as monitors, video cameras, and hard drives. For this reason, microphones should be positioned as close to actors and as far away from equipment as possible. This is easy when equipment and actors are naturally far apart, but when they are close, you will have to compromise. One possibility is to move the camera farther from the talent and use a longer lens.

Another disturbing noise is wind. You may not hear the wind with your ears, but it often blows against the microphone sound element, making a low-frequency huffing sound. Placing a windscreen on the mic will help to eliminate wind noise (see Figure 8.2). The
recording system may also pick up the **hum** of fluorescent lights. The best solution for this may be to turn off all fluorescent lights.

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**Insert Figure 8.2 here.**

Recording equipment with mechanisms for **equalization** (see Chapter 7) can sometimes be used to eliminate unwanted sounds at certain frequencies. This is often better done in postproduction, when you have more time and control. Most equalizers have one position that cuts out high frequencies and another that eliminates low frequencies. If you are trying to tape birds chirping and the low hum of a motor clutters the audio, you can use the equalizer to cut out the low frequencies. Conversely, the bird chirpings can be cut out when recording the rumble of a train. The problem arises when the sounds you want to record are at about the same frequencies as the sounds you do not want to record. In these cases, and in others, equalization is not the answer.

A better solution may be to increase the directionality of the mics so that only the desired sounds are picked up. However, highly directional mics, such as the **ultracardioid**, can pose problems because they lose the signal if the subject moves slightly. In general, the more directional the mic is, the harder it is to control the small area it picks up.

The best time to solve sound problems caused by the surroundings is during the early planning stage (see Chapter 2). If someone checks out the area before recording begins, you can make plans to remove the offending sounds or to choose a different location. During production, you can assign someone to keep pedestrians and, if possible, automobiles away from the production area. This minimizes the likelihood of unwanted sounds on the set.

Both the **sound recordist** and the continuity person should listen carefully for distracting sounds during shooting. If an unwanted sound will hurt the overall effect of the movie, fix the audio problem, and reshoot the shot that had the distracting sound.

The principles of presence, perspective, balance, continuity, and unwanted noise apply to almost all recording. Certain specific approaches apply to particular types of recording such as dialogue, ADR, voice-overs, sound effects, Foley, ambient sounds, and music.
**Miking Dialogue**

Dialogue is the most important sound element to record properly during production. You can create most other sounds during postproduction if necessary, but re-recording synchronous dialogue after the fact is a difficult, time-consuming task.

**Selecting the Mic**

The first step in miking is to select the proper microphone according to the directionality, construction, and positioning characteristics. As mentioned in Chapter 7, the *cardioid* mic is the most commonly used mic for moviemaking, but an *omnidirectional* mic will pick up broader sound such as that of a crowd scene, and a *supercardioid* mic will pick up narrow sound. Using a supercardioid mic is tricky because it picks up sounds close to the rear of the mic as well as sounds distant from the front of the mic. It should not be positioned where loud noises, such as honking horns, are right behind it. Also this type of mic telescopes the sound to the front in much the same way a telephoto lens compresses distance (see Chapter 3). As a result, background noises may rise to an undesirable level.

You can use either a *condenser mic* or a *dynamic mic*. The condenser gives slightly better fidelity, and the dynamic mic scores slightly higher on ruggedness. The type of mic you use may depend on the individual person’s voice (or “sweet spot”). The *fishpole* is the device most used for mic positioning in moviemaking, mainly because it can handle changes in perspective well. However, stand mics might fit naturally into the scene, and hidden or lavaliere mics solve the problem of the boom showing. *Wireless mics* are appropriate if a person is going to move a great deal, and *shotgun mics* are useful when sound must be picked up from afar. On-camera mics usually do not pick up dialogue very well, but sometimes they are all that is available.

For optimum pickup of voice frequencies, select a mic with a *speech bump*. To emphasize a particular male voice, choose a mic that creates a *proximity effect*. Check out the difference in timbre created by various brands of mics.

Sometimes you may want to use two different microphones to record the same sound.
For example, record a boom on channel 1 and a lav on channel 2. Then decide later which sound you want to use. Although miking this way allows for postproduction flexibility, it may slow production because of the extra time required to set and operate the two mics.

**Setting Up the Mics**

Ideally, a mic on a fishpole should be positioned above a person’s head, pointed toward the mouth (see Figure 8.3). It should be rotated as the person moves so that it always points at the mouth. The best distance for a cardioid is 1 to 4 feet in front of the mouth and 1 to 3 feet above it; an omni should be slightly closer. However, the boom or fishpole should not show in the picture, nor should its shadow. Microphones should be heard but not seen.

Accomplishing this often requires compromises. Some directors like to use several cameras at once, shooting both long shots and close-ups at the same time. This can make for a difficult situation. The camera operator may have to cheat a little on the height of the long shot, or the cinematographer may have to change the lighting slightly to get rid of the boom shadow, or the sound person may have to move the mic slightly away from its optimal position (see Figure 8.4). If the mic position must be changed, the sound crew should experiment by placing the mic in various sites and then selecting the one that sounds best. Sometimes this position may be rather unorthodox, such as close to the floor pointing up. Some boom operators place a strip of white tape on the tip of the mic windscreen so the camera operator can readily see the mic if it dips into the shot.

Position hidden mics with care. They should not be in, on, or near something that will be moved during shooting. A lav should be attached 8 to 10 inches from the mouth, but not where it is likely to pick up the sound of rustling clothes. You also need to be careful in positioning shotgun mics, and monitor them constantly so that they pick up the dialogue. If the actors moves, the mics also must move. If using two mics at once, be careful not to place them close together in such a way that they will cause a phase problem.
<H2>Special Dialogue Situations</H2>

Miking two or more people requires adherence to many of the principles already discussed and a few others. When using only one microphone, you’ll have to move it often so that it picks up the person talking (see Figure 8.5). The boom is a favorite of moviemakers because it is easy to move. Difficulties arise with one mic, however, if the various people speak at different volumes. If one person has a booming voice and another is soft-spoken, an equitable balance is hard to achieve. You could ask the two people to try to speak at more similar levels, or move the person with the stronger voice farther from the mic than the person with the weaker voice. Another solution might be to record two takes of the scene, one recording the first person and the other recording the second person. With two takes, you’ll need to pay attention to continuity so that the shots will edit together well.

***Insert Figure 8.5 here.***

Another approach is to use a different mic for each person so that each person’s voice level can be set separately. This works best if the mics are attached to a portable mixer that can be used to set the separate volumes. Recording one voice at a higher level than the other will compensate for any differences in volume, but if the differences are great, one mic will pick up more background noises than the other, creating some unwanted differences when the sounds are edited together. Some types of miking depend more on multiple mics than other types. When using wireless lav mics, there must be one for each person. One lav cannot pick up several people equally unless they are very close together.

Miking for <strong>stereo</strong> or for <strong>surround sound</strong> requires special care. Often, dialogue is recorded mono and then edited in such a way that it becomes stereo or surround, or it is recorded as stereo and <strong>upmixed</strong> to surround. If it is recorded as stereo, it is best to use <strong>M-S miking</strong> because it picks up the center sound, which is likely to be people talking, better than <strong>X-Y miking</strong> (see Chapter 7).

**Miking Automatic Dialogue Replacement**

Under some circumstances, proper dialogue pickup is impossible. If a scene must
be shot in a noisy factory or on a busy airstrip, the sound will not be intelligible to the audience. In these cases, the actors record their dialogue in a soundproof studio, usually after the movie has been shot. What is recorded during production is a scratch track—dialogue that you know you are not going to use, but that serves as a guide to the actors when they record the actual sound later. The selecting and positioning of mics does not require a great deal of care. The sound must simply be clear enough to be used as a reference during rerecording.

This re-recording process is called **automatic dialogue replacement (ADR)**, sometimes referred to as **looping**. The actors are brought back to a soundproof room, where they watch short segments of themselves on a screen and listen through earphones to the audio that needs to be replaced (see Figure 8.6). They rehearse the lines until they feel they can deliver them in sync with their lips as seen on the screen. When they are ready, they record the lines into a microphone—usually a cardioid mic on a boom or a stand. Then they go on to the next few lines and rehearse and record. Computer programs can create the short segments (loops), and the audio can be recorded and deleted as often as needed. Some actors are better at ADR than others, but, in general, it is best to bring the actors back as soon as possible so that they still have the feel of the scenes in their minds. For this reason, sometimes an ADR space is set up on location so that actors can record the ADR shortly after they have acted out the scene.

A related type of recording is that which is done to dub a movie into a foreign language or to provide the voice for animated characters. Although dialogue is not being replaced because of a production problem, the recording **does need** a facility where short loops of the picture can be shown to actors, who mouth the appropriate words.

ADR is expensive, so the more dialogue that can be recorded correctly during production, the better. Dialogue recorded on a sound stage should rarely need ADR because it is possible to control the elements. Occasionally, actors have to move so fast that they sound unnecessarily out of breath; then the sound needs to be re-recorded. Sound recorded outside is more problematic because of extraneous noises, and **also** it should be carefully monitored. If an
airplane is heard in a Civil War movie, the dialogue will need to be re-recorded, but it is easier and cheaper to do this on the set than to bring actors back for ADR. Most of Titanic was looped because of construction noises. While cast and crew were shooting on one side of the ship, construction crews were building the other side. The buzz saws and beeps of trucks backing up made recording clean production audio difficult at best.4

The sound created during ADR sounds different from the other dialogue because it is recorded in a soundproof studio. Before it can actually be used in the final movie, it is mixed with ambient sounds (such as that of the factory or the airport) at a low level.

**Miking Voice-Overs**

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**Voice-overs** (VO) are recorded in a fashion similar to ADR, but they are easier to record because they do not involve synched [Au: as in Chapter 3] sound. For this reason, they are usually recorded in totality rather than in small loops, but they are best completed in a soundproof room—sometimes the same room used for ADR. They serve such purposes as explaining complicated processes, indicating what a person is thinking, representing someone’s conscience, or commenting on what is occurring in the picture (often called narration).

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The performer watches the picture and reads the narration or other form of VO at a pace that matches what is on the screen. When what is being conveyed through words is the dominant element, the voice-over can be recorded before editing, and the picture is then edited to the narration. In this case, the recording can be done just about anywhere because there is no need to play back a picture.5

As with ADR, a cardioid mic on a stand or boom serves best. If you are using a table stand on an ordinary table, you might want to put a cloth over the table so the mic and stand will not vibrate. People can also hold mics to record voice-overs, provided they do not need their hands for holding a script. In fact, the positioning of the script is one of the primary concerns in regard to voice-overs.

Actors must handle the script carefully so that it does not interfere with sound pickup. For example, they must never hold a script in such a way that it covers all or part of the
microphone. Pages should not be stapled together because, when they are turned, they may make a shuffling noise that is picked up by the mic. Rather, the actors should have loose script pages that they can carefully lift off and place to the side. The person reading should not have to turn his or her head away from the mic to see the script. The distance between the mic and the person’s mouth should be constant unless, of course, the voice-over is to sound as though it is fading off into the distance. Each page of the script should end with a complete sentence so that the actors do not have to turn pages in mid-thought. Also, putting the script pages in plastic sheaths cuts down on rustle.

**Miking Sound Effects**

Moviemakers add many **sound effects** during postproduction, but they also record some during production, especially the **hard effects**—those that need to be in sync with the picture. The sound of a cowbell needs to coincide with the shaking of the bell; a door slam needs to sound as the door actually slams. These are noises best recorded during production; in fact, it is almost impossible not to record them while the dialogue is being recorded.

Hard effects that are an integral part of the dialogue should be recorded as realistically as possible because they cannot easily be removed from the track. In other words, if the cowbell is shown in close-up, it should sound close. If the mic is far from the cowbell, taping talent at the rear of the scene, the bell’s perspective will be incorrect. Sometimes this means recording the effect with a separate mic.

In other instances, sound effects are not actually recorded—someone verbally indicates that the effect is needed. For example, if a phone is to ring, one of the crew members might say “ring, ring” at the point in the script where the phone rings. This tells the people who add sound effects during editing that they need a ringing phone at that point.

Sound effects that need not be synchronous can be recorded separately from the picture. For example, for *The Aviator*, the sound crew went to four different airfields to record a variety of World War II airplane engines in various situations—take-off, landing, idling, etc—and so on. They discovered accidentally during postproduction that adding the sound of an
ordinary home fan made the sounds more realistic and better quality for surround sound.⁶

Some surrealistic sound effects are created through experimentation. For one of the effects in *Star Wars: The Phantom Menace*, the sound person recorded an electric razor in a bowl. The sound for the snitch used in the Quidditch matches for the various *Harry Potter* movies was made from wind chimes, a handkerchief waving speeded up, and a few other noises.⁷

Either omnidirectional or cardioid mics are good for recording sound effects because they pick up in a broad pattern. If the sound effect is being recorded in stereo, X-Y miking is best because it picks up distinct rights and lefts, which is where sound effects tend to be most predominant. Just about any positioning device will do for asynchronous sounds because there’s no problem with the mic appearing in the picture.

Many of the sound effects used with a movie are not recorded for that particular movie. They come from CDs or other sound effects libraries and are gathered by sound effects editors while other sounds are being created during shooting.

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### Miking Foley

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Foley work involves a special type of sound effects recording. An unusual sound effect, such as a hyena laughing, that cannot be found on a CD can be created in a Foley room, but Foley is more often thought of in terms of background sounds such as footsteps, clothes rustling, and branches waving in the wind.

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The Foley process is named after Jack Foley, the man who designed the room in which Foley activities take place. This room contains a large screen, several cardioid and omnidirectional mics, a number of sound effects devices, and many walking surfaces—gravel, sand, cement, carpet, and hardwood floor (see Figure 8.7). There may be a wide variety of shoes—high heels, tennis shoes, sandals, or even specially made shoes for the robots and druids of *The Phantom Menace*. A Foley room often contains a variety of cloth that can be rustled to simulate people walking past furniture, water for pouring from one container to another, dishes and utensils to be jiggled, and a variety of other articles.

***Insert Figure 8.7 here.***
People called **Foley walkers** watch the movie being projected on a large movie screen or TV monitor and perform the acts needed to provide synchronous sound for the actors’ movements, recording them all through properly positioned microphones. For example, if the movie shows an overweight man walking on dirt in tennis shoes, the Foley walker will put on tennis shoes, place the mic by his feet, and walk heavily in the dirt pit in step with the man on the screen. In addition, Foley walkers clap their hands, scream in terror, slap faces, or fall for fight scenes. Most Foley walkers are very graceful; in fact, many of them are dancers or ex-dancers. Foley walkers sometimes work in pairs—a man imitating men’s movements and a woman imitating women’s movements—but sometimes they work alone and do the actions for each character in the scene in turn. A technician usually sits in an adjoining room and records all the sounds on an audio recorder that is synced with the picture.

Occasionally, Foley is recorded at a location rather than on a Foley stage. For example, *K19: The Widowmaker*, starring Harrison Ford and Liam Neeson, took place on a submarine. To increase authenticity, the Foley was recorded on a World War II submarine at San Francisco’s Fisherman’s Wharf.  

Because all the sound needs to be synchronous, it cannot be recorded until the final version of the picture has been prepared. For this reason, Foley recording usually occurs part way through the editing process, and the material is then edited into the final movie. Traditionally, student productions have incorporated very little Foley work because of the complexity of the setup, but the little touches provided by Foley are often what differentiate, at a subconscious level, a professional motion picture from a nonprofessional one.

**<H1>Miking Ambient Sounds**

**<TX>Ambient sounds** are asynchronous noises mixed in during postproduction to give a scene authenticity. Sometimes they are called **wild sounds** because they can be recorded separately from the picture. One type of ambient sound is **room tone**. This is simply a recording of the general ambiance of the place where the dialogue is being recorded. When taping room tone, everyone should be quiet, but all the overall sounds of the room should be just as they have
been during the production. In other words, if an air conditioner was running when the dialogue was taped, it should be running when the room tone is taped. All the equipment and set pieces used during production should be in place so that reverberation does not change. During postproduction, room tone smooths cuts from one shot to another. In the hectic pace of production, people often forget to record room tone. However, it is a very simple process that should be done for all productions, professional or student. A sudden absence of room tone on the audio track calls attention to itself.

Another type of ambient sound is atmosphere sound. This adds a certain feeling to a scene. For example, the sound of a bubbling brook enhances the bucolic feeling of a serene country scene. The hustling, bustling mood of a street scene, which is actually shot in a studio, needs traffic noises. Factory sounds might be taped during a busy time because the factory was not operating when the scene was shot. As with room tone, these atmosphere sounds are mixed into the sound track during postproduction.

A third type of ambient sound is walla walla. This is the recording of people’s voices so that the actual words they are saying cannot be understood. In fact, the term gets its name because sometimes the people talking say “walla walla” over and over at different speeds and with different emphasis. Walla walla might be needed if only a few characters are in a bar scene shot in the studio but the illusion is that the bar is filled with people. Or many people appear in the bar scene, but they only pretend to talk while the principals are saying their lines. A crew would go to an actual bar and tape the general noises, which would then be mixed into the sound track, or actors could be hired to “walla walla.” All kinds of scenes—people walking through a museum, people at a party—need walla walla.

The distinctions among these various types of ambient sound are often muddy. Factory noise could be room tone, atmosphere sound, or even walla walla if factory workers are talking to each other. Sometimes ambient sounds and sound effects are one and the same. A dog barking could be considered a sound effect or an atmosphere sound. The definition is not important; what is important is recording the sounds so that they are available for later use.
Mic placement is not overly crucial for ambient sounds because you are trying to pick up general noises. This is one situation in which an on-camera mic may suffice. The most convenient way to record ambient sounds, however, is with whichever mic you use for dialogue. Usually only a few minutes of ambient sound are needed, so it can be recorded at any time, as long as cast and crew are quiet.

**<H1>Miking Music**

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Postproduction is the usual time for composing mood music for a movie. For many movies, the composer uses a computer program to create the music and there is no actual recording that involves microphones. However, music inherent to the plot, such as a rock group’s performance, needs to be recorded during production as does music for TV shows that feature live music, such as *American Idol*. Occasionally the music composed during postproduction needs to be recorded in a studio. When this is the case, musicians gather in a recording studio that has a large screen onto which the movie can be projected. A conductor (often the composer) leads the orchestra while watching the movie on the screen. This ensures that all the passages will be the right length. **Score mixers** in a control room record all the music. *American Idol* and similar shows employ several sound technicians, one for each element—**the** band, **the** singer, **the** audience, **the** host, and **the** judges. They must work in close coordination so that the sounds blend properly (see Figure 8.8).

***Insert Figure 8.8 here.***

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If the music needed during production (such as that of a rock group) can be taken from a prerecorded CD, it must at least be lip-synced. This requires some sort of playback setup so that the group or individual can hear the music. Playback can be something simple, such as a portable CD player on the set, or it can be something more elaborate, such as a public address system. Somehow, picture and sound must be in sync. For this reason, moviemakers usually re-record the CD on the audio track of the videotape or on a separate audio recorder while the actors are lip-syncing. Time code can aid in making sure sync will be maintained throughout the entire process.
There are several methods for recording music during either production or postproduction. You can record the whole musical group on one track or record individual instruments and mix them later. When recording the whole musical sound at once, you must take great care in placing the mics so that the recorded sound achieves the best balance possible. A mic placed above the string section of the orchestra, for example, will produce a recording in which the strings dominate the brass and percussion.

Individually miking a large group such as an orchestra is usually not practical. This technique is used more for small groups or individuals. You can mix the recordings from various mics as the recording session is taking place, or you can record each mic on a separate track and mix them later. If sounds are mixed live, each mic feeds into a different input of one or more audio mixers. Score mixers raise and lower the volume of each mic so the instruments are recorded at an appropriate level. Then they feed the mixed music to a single track (or several tracks if the sound is to be stereo or surround) of a video or audio recorder. The disadvantage of this method is that the mixing must be done in real time. If one of the score mixers makes a mistake, it cannot be corrected. However, for something simple, such as a singer accompanied by a guitar, this type of recording works quite well. The singer could be recorded with a mic placed about 6 inches from his or her mouth, and the guitar could be recorded with a mic placed by its sound hole (see Figure 8.9). You can decide on the appropriate mix of guitar to voice, and then record the whole song at those volume levels through a mixer and into an audio recorder.

If the music is going to be mixed later, each mic must feed to a different track on a recorder. The sounds may go through an audio mixer to be recorded, but there is no need to adjust their levels because each sound is going on a separate track and can be isolated later. The score mixers can send each track back through the mixer, adjust the volume of each track, and send it to one or more tracks of another audio recorder. This can be done in a fairly leisurely manner. They can listen to the music, practice different levels, and add reverberation or in other ways improve the sound. They can correct mistakes because the original recording can be played...
over as many times as needed.

Another method of recording music is to record different instruments at different times, each on a separate track of the tape or computer program. This is the usual method when one musician wants to play several instruments. He or she might first play the guitar melody of the song; then, while listening to what has just been recorded, sing the words to the accompaniment of the guitar. The guitar would be playing back from one track, and the singing would be recording on another track. After that, the musician might listen to guitar and singing and add drums on another track. All three tracks are played back through an audio mixer and recorded on a single track of another recorder. In the process, the sound operator can change the volumes of the guitar, voice, and drums so that they blend with each other properly. The method of recording used usually depends on the complexity of the music and the size of the budget.  

**Recording Techniques**

You should always carefully monitor the sound you are recording to ensure the best quality possible. If at all possible, monitoring should involve looking at a meter and listening through headphones. Headphones are not always reliable because they often have volume controls. With the headset volume cranked up all the way, you may think you are recording properly when, in fact, you are riding in the mud. Conversely, if the headphone volume is low, the recording may actually be overmodulated. The meter often shows what is going into the recorder, but not what is coming out. The headset gives you the result and assures that you have, indeed, recorded.

Most recorders have an automatic gain control (AGC). This circuitry prevents the signal from being recorded at too low or too high a level. If the sound is low, the AGC automatically boosts it; if it is high, it lowers it. However, AGC is not always appropriate. For one thing, most AGCs do not handle silence well. If there is a pause between lines of dialogue, the AGC will boost the gain, increasing the ambient noise. This can be quite disturbing if silence was really what was wanted. AGCs also try to compensate for changes in perspective. A distant sound should sound lower than a close sound, but AGC will try to boost the distant sound. You
may want to put the sound gain on manual rather than automatic, so you are the one making the decisions about the relative volume levels. This approach is similar to that of overriding automatic focus and automatic iris on the camera (see Chapter 3).[X-ref]

Sometimes, you’ll be recording sound directly into the recorder on one or more tracks of the audiotape, videotape, or hard drive. Other times, you will send it through a portable mixer, where various sounds are mixed and sent on to the recorder (see Figure 8.10). Neither method is right or wrong; the determining factor is the production situation. A mixer is not essential when recording one person’s voice with one mic. However, to record a musical group or to record several people who have different microphones, you may find a portable mixer necessary (see Figure 8.11). Taking along a mixer adds to the bulk of what you carry to the field and sometimes adds to the setup time.

***Insert Figure 8.10 here.***

***Insert Figure 8.11 here.***

If you are recording double system by using a DAT or hard disk recorder but are shooting the picture on videotape, there is certainly no harm in recording audio on the camcorder as well as and on the separate recording equipment. You will be increasing your flexibility and covering your bases in case something goes wrong with one of the recordings.

Always check cables and connectors before you leave for a shoot, and bring along extras for the inevitable failures. It has been estimated that 95 percent of audio problems result from faulty patches. Whenever you are recording sound of any sort, listen to at least part of it in the field to make sure it is acceptable. Recording it again is fairly easy during production. Fixing it later ranges from becomes time-consuming to impossible.10

<EOC>

Notes


Chapter 8 Captions

<FN>Figure 8.1 <FC>Direct sound goes to the source without bouncing off any surfaces, echo bounces off one surface, and reverberation bounces off two or more surfaces. PICKUP ART. Old 8.1

<FN>Figure 8.2 <FC>The windscreen on this boom mic will help lessen any rustling noises from this outdoor location. NEW PHOTO. Provided on CD-R as 08.02 windscreen

<FN>Figure 8.3 <FC>Proper placement of a mic on a fishpole. PICKUP ART. Old 8.3

<FN>Figure 8.4 <FC>If a long shot and close-up are being recorded at the same time, keeping the boom out of the long shot may require holding it farther away. NEW PHOTO. Provided on CD-R as 08.04 boom

<FN>Figure 8.5 <FC>In this shot five people are talking, so the movement of the boom becomes important. PICKUP ART. Old 8.5

<FN>Figure 8.6 <FC>An ADR session. The woman at the podium on the right is re-recording dialogue for the scene being projected on the screen. (Photo courtesy of Ryder Sound Services) PICKUP PHOTO. Old 8.6

<FN>Figure 8.7 <FC>A Foley room setup. The two Foley walkers are using the various pits and equipment to perform, in sync, the sounds that should emanate from the picture on the screen. (Photo courtesy of Ryder Sound Services) PICKUP PHOTO. Old 8.7

<FN>Figure 8.8 <FC>Sound recording for American Idol is complicated because there are so many sound sources and the program is live or live-on-tape. (Photo supplied by Globe Photos, Inc.) NEW PHOTO. Provided on CD-R as 08.08 Idol

<FN>Figure 8.9 <FC>This is the setup that could be used for a singer/guitar player. One mic is by the mouth, and one is by the guitar sounding board. (Photo courtesy of Brian Gross) PICKUP PHOTO. Old 8.8

<FN>Figure 8.10 <FC>This mixing cart is used for a variety of film and TV work and includes a DAT (on the upper left shelf), a Nagra (upper right), and a portable mixing board (center). Sound can also be sent from this cart to a camcorder. PICKUP PHOTO. Old 8.9
Figure 8.11 In this situation, the sound of three microphones is being sent through the portable mixer. PICKUP PHOTO. Old 8.10