

Sound Considerations



We are looking at one piece of film that many people in the world have seen... Baghdad being bombed at night... I'm making a documentary film so I'm really focusing on this footage... and I hear car alarms going off. Well, if you are a sound editor, this is a delicious moment of understanding the sound of the real world.

Producer Gary Weinberg

Too many video and film novices concentrate on the visual and slight the audio. This thinking is dangerous. Audio from the field is half the story. In sequence-driven films, its subtleties can be used for energy, pacing, or

carrying story narrative. For Issues documentaries, well-chosen resonant audio clips edited together form the rhetorical story framework.

Every effort must be made to get clean sound on each location shoot. The crew needs high-quality microphones and thoughtful techniques.

This chapter will discuss field audio when using the sound recordist or when a cinematographer is working alone.

Glossary

Ambient audio Background natural audio in any location shoot.

Cardioid mic Mic with a heart-shaped or close-in pickup pattern. It is good for interviews in noisy areas.

Fishpole or boompole The handheld portable boom that telescopes to six or eight feet for recording on location.

Lavalier Also called a lav, the small, omnidirectional or cardioid mic that clips to the lapel in an interview.

Phantom power Power for mics that is carried through the mic cable from recorders, cameras, or onboard battery packs.

Shotguns Unidirectional mics with a narrow cone-shaped pickup pattern that can be aimed at sound sources.

Signal to noise A ratio that expresses how much noise or hiss is on the tape. Higher numbers mean cleaner audio.

VU meter A volume unit meter. Its readouts describe the strength of the audio signal and warn about over-modulation and distortion.

Wireless mics Microphones that transmit the audio by local radio signal from the subject's transmitter to a receiver on or near the camera.

The Value of Good Audio

Sound, even routine background sound, can be a critical element that carries important nuances of a documentary story. The quavering emotion in human voice, the violent sounds of the battlefield, or the simple undercurrent of day-to-day events adds many shades of meaning to the visuals. Poorly recorded mushy field audio can force editors to modify or eliminate crucial interviews or sequences when the material gets to postproduction.

If there is money available, a documentary project should have a sound designer who shepherds the audio throughout production and post. The designer will designate how the sound will be recorded on the field camera, will specify how the field recordings will be transferred to the editing programs' numerous audio channels, and will guide the audio sweetening and final mixes. The designer can also construct the audio for the deliverables to theatrical, television or cable channels, or festivals.

The Sound Recordist

For field shoots, a professional sound recordist is a must to ensure the clarity, recording levels, mic selection, and placement are perfect. The experienced audio person also knows the dance that must be done with the cameraperson, following the cinematographer's lens while staying out of the shot and still getting the maximum angles for boom recording. The recordist should provide high-quality microphones and should carry a belt-pack mixer that allows careful monitoring of the incoming signal. Recordists will also establish a means of transmitting the sound to the camera for recording.

Recordists should be enterprising. Often, recordists will venture out gathering environmental sounds that can be added in the edit room to enhance the experience.

A final audio hire would be the composer. We will discuss more on this choice in Chapter 11 on music.

A Sound Recordist's Choices Can Be Crucial

For industrials or feature narrative films, there is usually time to pre-survey a location. But for documentaries, the crew often arrives at the site for the first time on the day of the shoot. Anyone working field audio must be ready for every possible conflict in gathering clear, usable audio.

Environmental noise is the first concern. The deep frequencies of traffic, equipment motors, playground chatter, loud conversations, amplified music, intermittent aircraft flights, work crews, and wind are in the same range as human voice and are destructive to any recording. Directional microphones and custom windscreens can minimize these problems; however, ambient

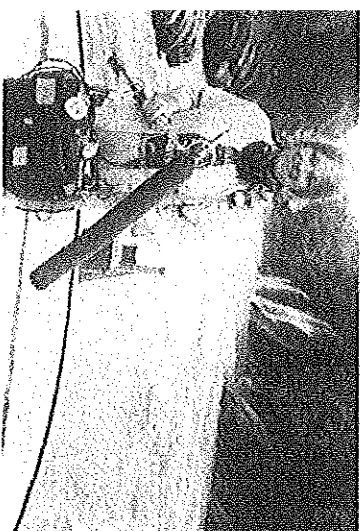


Figure 7.1 Recordist Maureen Gosling on assignment in Amazon region for *Burden of Dreams*.

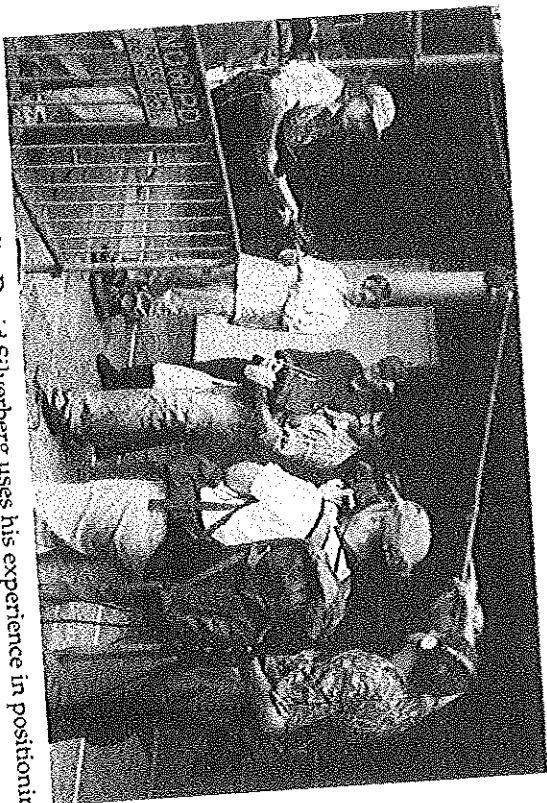


Figure 7.2 Sound recordist David Silverberg uses his experience in positioning the boom mic for this music session.

noise mixed into your valuable story audio cannot be removed in postproduction. If the unwanted audio distractions continue, the recordist must suggest waiting or moving the location to a quieter place.

During the shoot, the recordist is vital in placing wireless mics on critical characters or in aiming the shotgun microphones on booms at the angle that minimizes environmental interference.

When special situations arise, such as recording music, the recordist's knowledge of mixes and individual instruments can make or break the audio quality.

Editor Maureen Gosling explains "He has the mic kind of high because the accordion is loud... and he has the mic away from the accordion because he wants to hear the guitar better and the sticks better. In a circle around the mic. That's how he likes to record musicians... acoustically around the microphone."

Gosling explains that the cinematographer and the recordist must be in sync.

You get familiar with what the frame looks like. This is a musician we know (the cinematographer) wants to get close-ups on his face... upper body shot. Once in a while... she points the camera down at his feet and the sound guy can point the mic down by the feet, always keeping an eye out where the camera is going... and trying to get it up before she moves up. And he had a radio mic on the musician. David likes to do both... to have the option. If there was traffic, probably his mic on his body is going to be better. But sometimes I like the boom mic better rather than a lav.

Types of Location Sound

The Goal: Utmost Clarity in Natural Sound Sequences

Natural sound segments are long meaningful sequences of raw field visual with clean, understandable field audio. This could be crucial action, an emotional conversation or argument, or even one long-running shot in which the protagonist character explains a critical point. They are as good as gold. With the sync visuals, these provide enough recognizable information to substitute for narration and carry the story forward for several minutes without breaking for interviews or narration. Separated from visuals, they can often be pieced together to provide an audio bed for other footage.

Shorter natural sound shots are also useful as an establisher for the beginning of a sequence, as a transitional element to shift topic subtexts, or to introduce new segments within the longer story. Long stretches of natural sound segments can be placed throughout narrated documentaries to let them breathe, giving the audience a chance to reflect about what they just experienced.

Rich natural sound is the direct result of smart field production. To make these segments most effective, crews must cooperate to capture not only the visuals but also the clear and easily understood audio without distortion competing ambient sound, or confusing speech.

Additional Audio: Environmental Sounds

Anyone recording sounds on location, whether it's a recordist or a multitasking cinematographer, must also look for nonvisual wild sound. This requires concentration to isolate the particular sounds that are indicative of a location job, or environment.

Recordist Maureen Gosling says this often goes beyond gathering sync sound with the video. "Well, I made sure that the sound recordist gets some extra sound. In this case, she was recording on tape, instead of video the everybody does now... and so there were certain times when she would go up before everybody else and she would go out and record the sounds of bird in the morning. Or you know, record some water trickling by. I mean there are certain sounds that are individual to the town of Juchitan (in Central Mexico) where we made our film and I wanted to make sure that got in there."

Because these wild sound segments may not be synced with recognizable video, the sound person should put an audio slate at the head of each recording, saying something like "Wild sound of creek by main square, July 3rd at 5 pm."

Additional Sound: Music from the Field

The use of music to add pacing and moods to documentary is as old as the medium. Documentary crews are always trying to find new and unusual songs.

is very important when recording music in the field for the recordist and cinematographer to work together. They must confer so the cameraperson can run during the entire song without stopping or pausing. Don't forget to have the musicians sign releases for their performance.ducers should also ask about the publishers of the song. This is covered extensively in Chapter 11.

Additional Sound: Safety Sound—Room Tone

Recordists should capture one minute of natural sound (often called room tone, room tone, or safety sound) from any location where sequences are shot, including interviews outdoors or indoors. This will provide ambience if there is a recording failure or might cover situations where camera talk has to be removed or the ambient background sound is damaged. To do this, the recordist must alert the crew to stop talking before putting the camera in record. Sometimes this is done while setting up camera technician operations such as color balancing.

The Cinematographer Alone

Doing Two Jobs

It is not uncommon for a no- or low-budget documentary to send a single cinematographer into the field without a sound recordist. This is a burdensome condition for an inexperienced cameraperson, who is concentrating on the need to capture usable sequence shots and provide good material for the editor. It complicates the job if one person also has to (1) place and test microphones, (2) monitor the audio levels on meters, (3) adjust the levels manually, (4) listen through good quality headphones to evaluate the clarity of audio signals. When the action heats up, the complexity of the situation could cause audio recording levels to be overlooked or ignored. In these cases, certain mics like a camera-mounted shotgun and a good wireless set will make things easier.

Audio Basics to Review

Monitoring Levels

Camerapersons can see the incoming audio on readouts in the viewfinder flip-out screen, where newer LED bar graphs take the place of the older analog VU meters. In the following illustration, both channels are recording good audio signals with plenty of headroom before they hit the right-hand

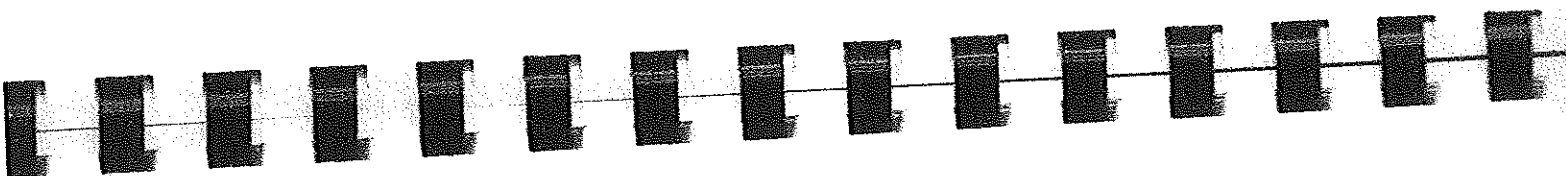


Figure 7.3 LED readouts pushing to 12 give indications of usable audio signals on both channels while still allowing headroom for sudden louder sounds.

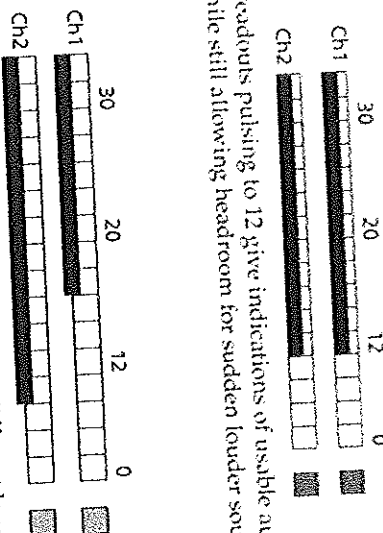


Figure 7.4 Cinematographer sets incoming audio to different levels to prevent distortion on both channels.

distortion light, which is usually red. In digital audio, the signal must never distort in production, because it cannot be removed in post.

Of course, the cameraperson should also listen to the sound through headphones to ascertain the quality.

If the cinematographer is busy and cannot carefully monitor the readouts, he or she should set the incoming channels at two separate levels to insure one will be usable.

In budget camcorders, options for setting levels are severely limited. Many have automatic gain circuits, and prevent setting the levels manually. Industrial or professional level equipment usually provides thumbwheels or dials to control sound levels.

Where the Sound Is Recorded in the Camera

Newer cameras can record from one to four channels of audio. They also record mono or stereo signals from unbalanced or balanced cables.

A consumer camera with a stereo mini-plug input has an unbalanced audio line. These are prone to added line noise and interference caused by fragile connectors or unshielded cables. They cannot use the professional mics and cables without an adaptor. Often, a "Y" adaptor allows the cameraperson to plug in two mics into this mini-plug input, using the right and left side of the stereo channels as separate tracks. Additionally, aftermarket sound mixers (such as Beachtek) add a small unit under the camera to allow manual control over sound going into the mini-plug stereo channels.

There is every reason to select a camera with balanced inputs that take a three-wire cable (with a ground signal) and uses an XLR or three-pronged connector. Professional audio equipment and mics have these, although newer digital connectors are emerging.

Only One Channel

Some consumer or industrial grade camcorders record on a built-in mic using a mini-plug, audio that is obviously pickup and not much more. A few microphones are designed, however, their capabilities and sound quality are usually below the quality of professional mics with XLR connectors.

Two Channels or More

Most professional cameras record at least two channels of audio, allowing room for planning by the camera person.

With two separate inputs built into the camera, ambient sound with an on-camera mic can be routed to one channel and the other input saved for a shotgun, wireless, or lav. Cinematographers can use both inputs for onboard mics, one picking up ambient sound with a camera-mounted shotgun and the other a wireless or a lav. For an interview, both the subject and interviewer might get individual lavs and be recorded separately or the recordist can use a lav and a shotgun to record the interviewee, giving the editor a choice of sound quality in postproduction.

Always exercise extreme caution in routing the sources within the camera channels. It is possible mistakenly to route the CH1 input into both channels, blocking the CH2 input.

Types of Microphones

To record top-quality sound, it's important to understand the microphones. As in video, there is a corollary—the more expensive mics from respected manufacturers such as Beyer, Sennheiser, Tram, Sony, Audio Technica, Shure, Countryman, Schoeps, or Lectrosonic generally do a better job. But price is not the only consideration. Each microphone has certain range characteristics for the bass and treble sounds. Experiment with different mics by replaying the recordings through a quality system.

Mics may be either dynamic or condenser. The dynamic mics are essentially receivers and don't boost the incoming audio. They are great for picking up nearby sound and are usually indestructible. Condenser mics, which use a battery in the base or connect to phantom power through the cable, boost the audio signal to a set level. That's good and bad news, because the condenser could also raise the general ambient room noise, hiss and all.

The pickup pattern is also a consideration.

Omnidirectional mics will record annoying crew chatter known as camera talk. A better mic for an interview is a cardioid mic, named for its heart-shaped pickup pattern that is designed to draw sound from the immediate position in front. Lavs can be either omnidirectional or cardioid.

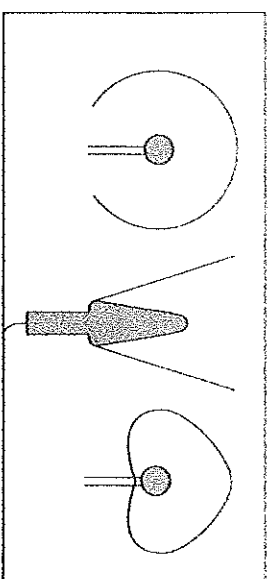


Figure 7.5 Omnidirectional (left), unidirectional (center), and cardioid (right) pickup patterns.

Directional control results from plugging in a mic. This could be anything from a handheld omnidirectional dynamic “stick” mic, to a boom mounted, handheld or camera-mounted shotgun, a wireless, or a lav. Each mic has special characteristics in terms of how it responds (see next section) and how it should be handled.

The On-Camera Built-in Mic

The on-camera built-in mic is usually omnidirectional and will pick up audio from any direction. While the better ones are sufficient for ambient sound, they are almost worthless for interviewing people. Use these mics as a last resort.

Shotgun Mics

The unidirectional mic, known as a shotgun, has a narrow cone-shaped pickup pattern that extends out in the direction it's pointed. They come in short and more-sensitive long versions.

The sound recordist usually carries the shotgun unidirectional mic in a shock mount on a pistol grip or portable extension called a fishpole or boom-pole. Shotguns can be mounted atop larger cameras or on the shoe attachments of smaller cameras. But if shotguns are handheld without a shock mount, friction on the mic's barrel creates unwanted sounds.

A word of caution. Unidirectional mics do not, despite what you've seen in the movies, have a supernatural ability for recording conversations hundreds of feet away. And they dramatically amplify sounds behind the speaker's location, such as in Figure 7.7, where the sound from the soda machine directly behind the woman interviewee will interfere.

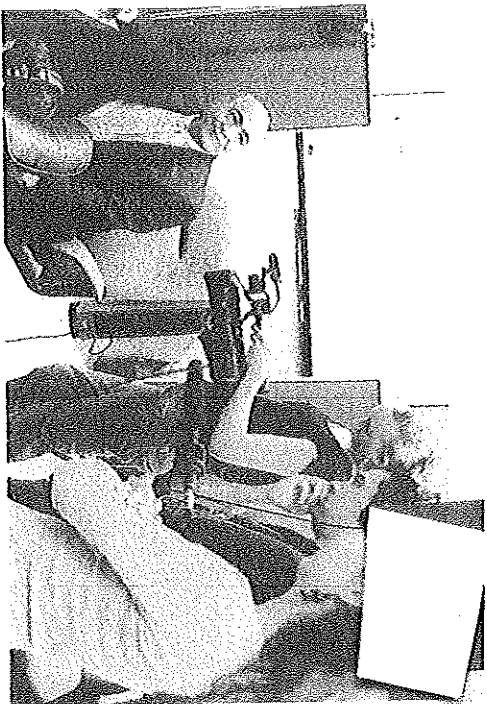


Figure 7.6 In tight quarters, the handheld short shotgun in a pistol grip shock mount is extremely effective.

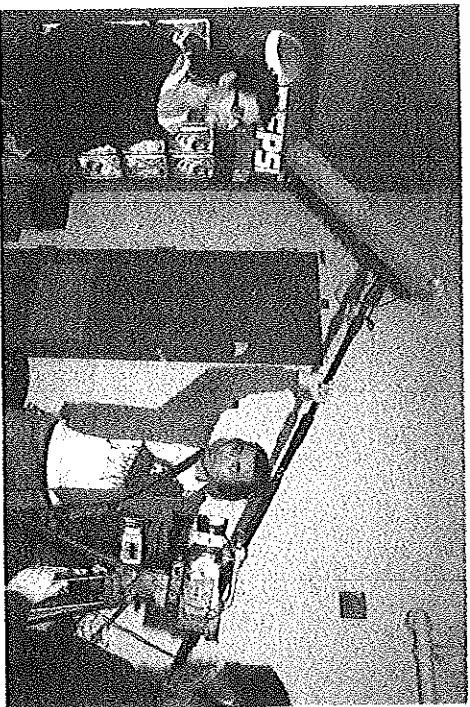


Figure 7.7 The shotgun mic on the boom with a Gray Zeppelin windscreen will pick up the interviewee and the noisy vending machines behind her.

The "Lav" or Lavalier Mic

For interviews, crews attach a tiny lavalier or "lav" mic. Most lavs are condensers and need either phantom power or batteries. More expensive lavs are cardioids; the less expensive usually are omnidirectional. The lav can be clipped to the shirt, and as long as clothing does not obstruct it, it will

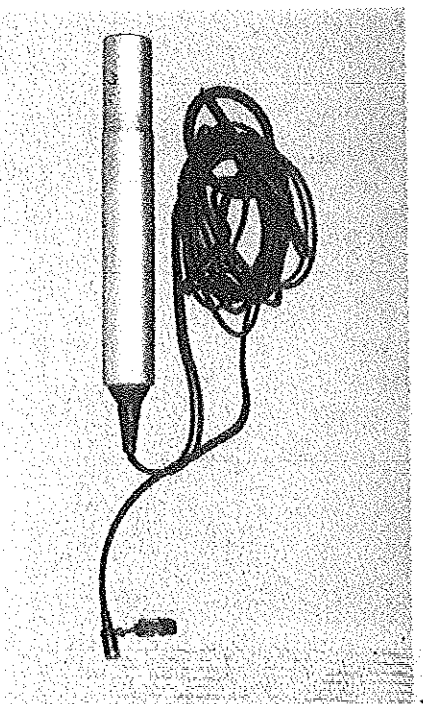


Figure 7.8 Lavalier mic with barrel and battery.



Figure 7.9 A dangling lav cable is distracting.

pick up clear audio without much ambient noise. Some models, such as the Countryman, are designed to go inside thin clothing.

When attaching a lav, place the microphone outside the fabric and directly below the mouth. Hide the cable by tucking it under or inside shirts or jackets. If the subject is wearing a turtleneck collar or tee shirt, run the cable over their shoulder and clip the mic near the front. Do not let the cable dangle.

When using a lav, be careful with placement. Make sure that it doesn't rub against skin, beads, or jewelry. A necklace brushing against the lav may destroy valuable audio.

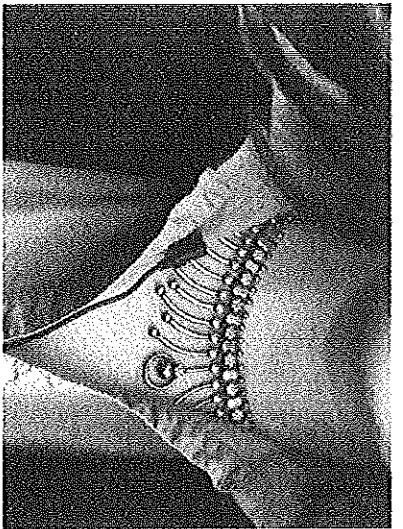


Figure 7.10 The tiny lav mic may strike her necklace if she moves.

Wireless Microphones

The wireless is the documentary maker's dream. These systems eliminate the cables and provide clear audio at a distance.

The wireless or radio mic uses a lav cabled to a small transmitter or a bulb attached to the end of a stick mic or shotgun, and these send the audio by radio signal to a receiver mounted on the camcorder.

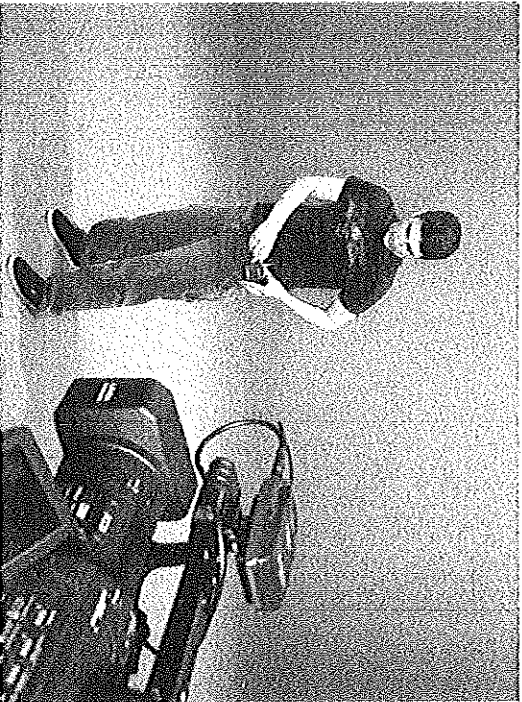


Figure 7.11 Wireless mic transmitter is usually attached to the belt or placed in a pocket. The receiver (right) sits atop this particular camera but attaches to the back of others. Bulb transmitter (not shown) can be used attached to a shotgun mic.

The transmitter clips onto a subject's belt or is placed in their pocket and in most cases, the audio is clean. Although wireless systems have improved in recent years, they still have limitations due to distance or outside signal interference.

Damaged Sound and Postproduction Foley Work

Producers who view dailies of field footage should also evaluate the audio quality. Tapes with damaged or degraded sound should be turned over to audio engineers immediately for testing on laboratory sound programs.

When the field production sync sound is damaged, documentarians must reshoot or look for other ways to fill the gaps for critical pieces. This could mean orchestrating new interviews to replace the damaged answers, the capture of wild location sound to swap for the unusable material, the use of foley or manufactured sound to fill in unrecorded elements or the construction of voiced segments to substitute for missing sentiments.

In the past, certain organizations had written policies against the use of nonlocation or manufactured sound. Old CBS news policy forbade using any sound other than that which was recorded on the shoot. However, that policy is debatable. For many producers, the question goes once again to the overall truthfulness of the representation.

Producer Ellen Bruno, whose documentaries chronicle the rugged life of villagers in politically troubled countries, often finds it too dangerous to pull out the camera and record someone's story. But she knows it is imperative that the audience hears it.

What often happens... a lot of the material I get is not recorded so I have to figure a way to get that material in there. And what I have done in the past is that I've synthesized a lot of stories I have heard and a lot of material from interviews that I haven't used and created a voice, really, that is a constructed voice and then based on this material and I've had people speak that voice, creating a character, so to speak, a universal character within the film in a way. I tried that a few times... I'm not doing that anymore.

Legal Issues

There are very important considerations when recording sound.

First, crews should not use extraordinary means to record someone's private conversations. Courts might consider high performance shotgun mics that pick up at a great distance as an invasion of privacy.

Second, telephone conversations cannot be recorded without alerting the other party. In many states, that is against the law and could even be a felony.

Surreptitious recording with hidden microphones is an "extraordinary event" and could land the producer in court. Don't do that unless everyone is ready to fight the legal battles that will ensue.

Your subjects have an expectation of privacy. However, anytime that the subjects know the camera is recording, they must assume that it will pick up anything they are saying. If you tell people you have stopped recording, you have given them back that expectation of privacy; but if you violate that by secretly recording, then you may be at risk.

Don't Leave Home Without

This is a suggested list of items for an audio kit:

- 2 lav mics (can be used with wireless)(check for clips)
 - 1 unidirectional shotgun (short one)
 - 1 wireless mic kit with both belt and bulb transmitters
 - Microphone manuals
 - Windscreen covers for all the mics
 - 1 pistol grip with shock mount for handheld shotgun
 - 1 fishpole boom for the shotgun
 - Camera mounts for the wireless receiver and the shotgun
 - 2 XLR to XLR 20-foot cables (best quality)
 - 1 XLR to XLR 6-foot and 1 XLR to XLR 1-foot (for camera mounting)
 - 1 set of high-quality headphones (full ear cover)
- Don't buy cheap cables. Get the best you can afford

Summary

The importance of recording clean audio on every location shoot cannot be overstressed. Crews must choose the right mics for each location. The natural sound segments are powerful and can be used to carry the principal story. Documentaries are often assembled from natural sound segments alone, without narration. For all these uses, it is crucial that camera crews pay attention to the sound quality.

Shaping Your Skills

1. Attend a lecture or a panel discussion in a large hall. Attempt to get clean audio from platform speakers using different mics. Find out what you need to patch into the audio system.

2. Attempt to interview someone using only the mic on the camera. Try five locations with different intensities of ambient noise. Decide if the audio is clean enough to use.
3. Interview a person on a noisy public street using a shotgun mic. Then use a lav in the same location. Review the audio to test the value and effectiveness of each mic.