The Hierarchy of Mic Techniques

Achieving clear, crisp dialogue and sound effects on a film or video production is no easy task. Production Sound Mixing is a craft that requires a blend of technical expertise and proper tools.

The key to good sound gathering is to work from some basic strategies, and then work up from there.

Anticipate instead of react. Don't limit yourself capability-wise to what you have been led to expect based on the production meeting. Things often change at the last minute, and producers/directors are notorious for not bothering to inform all of the crew. Be prepared for as many contingencies as possible. For instance, if the shooting schedule calls for only interior interviews that day, I would still bring along a good exterior shotgun mic and windscreen just in case someone decides that a long "walk & talk" against a scenic city background is visually more interesting than a talking head in a cramped office.

Think in terms of what is known as the Hierarchy of Microphone Techniques. This hierarchy serves as your starting game plan in approaching a scene in terms of microphone selection and utilization.

Here is a summary of the Hierarchy:

1) Overhead boom.
2) Boom from underneath.
3) Boom mics as plant mics.
4) Lavalier mics as plant mics.
5) Lavalier mics as body mics.
6) Lavalier mics, as wireless or radio mics.

Now, let's examine these options in detail.

1) Overhead miking from a fishpole or studio boom is the most favored technique in the feature/TV/commercial industry. It is probably the best choice 90% of the time.

Generally, overhead miking will yield the most natural sounding dialogue with the least amount of mixing and editing effort.

It provides a pleasant blend when there are multiple actors involved. Two, three, even a small group of people interacting can all be recorded from a single mic.

A mic on a fishpole or boom allows for a fair amount of physical activity and movement by the talent. Actors are free to enter and exit a scene, move around, jump around, climb around, etc. There are no trailing mic cables to inhibit their range of motion.

An overhead mic will pick up sufficient sound effects, footsteps, and hand-prop noise to give the soundtrack a full texture. Because the faces are closer to the mic, dialogue will dominate the track, but other sound effects will still be audible.

Audio perspective is easier to maintain with an overhead mic. On a wide master shot, the mic tends to be higher so that the resulting dialogue seems thinner and more "distant". On close-ups, the mic can be lowered giving the sound much greater presence and "near-ness" to the screen.

But what if there are physical obstructions in the set that prevent deploying a microphone from overhead?

That brings us to the next option: 2) Boom miking from underneath. The boom mic can be fishpoled up at the talent from knee, thigh, or waist level with good results. The sound will be slightly more bassy than miking from overhead, but still quite usable and acceptable. Note that a mic aimed up at a person tends to pick up more of the chest cavity, thus accounting for the increase in bass.

Personally, I find that it is much more difficult to boom from below, due to the presence of set furniture or the choreography of foreground persons. Camera operators also have to be much more careful, since it is more

likely to widen the frame to show more of an actor's torso than to show more empty headroom above. Never-the-less, there will be many shots where miking from below is the simplest solution.

If the overhead microphone does not have to move, does it make any acoustical difference whether the mic is held up by human hands with a fishpole or rigged to a C-stand or clamp?

The definition of a **plant mic** is any mic fixed in place on a set. It can be a boom mic secured by any imaginative or convenient means over a dialogue mark. Or it can be a boom mic secured in an "underneath" position, such as behind a table or potted tree. Or it can be a miniature lavalier strategically attached or hidden anywhere in the set.

Which type of plant mic you choose depends on the situation you are faced with.

Let's say you are covering dialogue of two actors in a room and a third actor pokes his head into a doorway and delivers a line. Your two key actors are probably being covered by a handheld fishpole. The doorway could be easily miked either by a boom mic positioned above the door arch with a clamp or C-stand. Another choice could be to tape a lavalier to the inside of the door frame.

A telephone booth can be readily miked by hiding a lavalier onto the surface where the caller will be facing.

A desktop can be miked by hiding a lavalier on a pen set or a rollidex. A restaurant table can be miked by sticking a mic into the floral centerpiece. (Okay, cue the "plant" mic puns.)

To mic an automobile, merely attach a lavalier to the sun visor. Determine to which side the actor/driver will be speaking, and cheat the position of the plant mic to accommodate that.

A microphone on the visor is preferable to using a mic on the actor's body. A body mic would give you lots of clothing rustle, seat belt rubbing, and other noise. On the visor, it is completely clean. Being high up in the vehicle, the mic is distant from road noise (gravel striking the underbelly of the car), as well as less susceptible to engine rumble. The padded ceiling of the vehicle reduces sound reflections and echo, and the padding of the visor provides additional isolation.

To cover driver and passenger, put the mic on the visor near the center of the car. If the passenger has a much weaker voice than the driver, place the mic on the center-facing edge of the passenger's visor. Or, if the driver faces forward most of the time, but also has a line or two directed out of his window, cheat the position of the mic to the far left of this visor. If necessary, use two plant mics to cover driver's window, driver front, passenger front, and passenger window. A second or third mic can be used to cover dialogue from the rear seat.

Be imaginative in your mic placement, but don't overdo it. Let one mic do as much work as possible; multiple mics in close proximity to each other will interfere with each other, creating echo and a tinny sound.

One caution about planting mics around on the set. They will only be effective if the dialogue is directed in their general direction. A plant mic that is behind someone's head won't be much good. Also, their range is limited; don't expect miracles. This is filmmaking, not surveillance. What works fine for a stake-out may not be acceptable in a professional sound mix.

Next in our bag of tricks is the lavalier used as a body mic. Lavs tend to have three major problems: perspective, clothing noise, and mobility.

Perspective is the biggest problem. Dialogue recorded with lavs usually sounds like dialogue recorded with lavs. Talent always sounds like they are close to the camera, even in long shots. If talent turns their heads over one shoulder, their voice drops off. If talent leans over a hard podium or tabletop surface, their dialogue suddenly becomes infused with reverb.

The lav sound is sterile and somewhat free of natural sound effects and ambiance. The result is more authoritative and reporter-ish, less slice-of-life. Depending on the effect you are looking for, this could be a plus or a minus.

For example, an instructor will sound more dominant on a lavalier. But a community relations spokesperson will sound warmer and more natural if miked with an overhead boom.

Perspective can be improved by using some simple cheats. Place the lavaliers further down on the chest or further away from the voice to "open" up the sound. Two people standing close to each other and can be miked off of each other's mics to increase the air space.

Be aware that the audio characteristics of lavaliers vary from make and model. Some lavaliers are more reporter-ish, and others are more natural. Some reject background noise and focus on the individual, and others reach out to include other elements in the scene.

A boom mic on the set can be used to record footsteps and sound effects that the lavs might ignore. Recording just a smidgen of ambient "noise" (open the mic channel just a little bit) will wash out the normal sterility of the lavaliers. Use more "mic bleed" in long shots to thin out the dialogue, and then reduce the mixture for close-ups.

Clothing noise is a major problem with lavaliers. Although we don't have the space in this article to fully explore that area, one simple solution to clothing noise is to avoid the problem by attaching lavaliers to non-traditional sites, such as a hat brim or a clipboard.

When lavs do have to be hidden under clothing, secure the clothing carefully on all sides of the mic head. If the clothes are taped to the mic, then they cannot rub against the mic. Any loose flap of clothing that could strike the mic should be secured with tape or pins. Break the stiff starch near the mic with some water, so that noise does not conduct to the mic. The use of StaticGuard can also help reduce clothing friction.

Mic cables should be connected at the ankle. Never let talent drag the power supply of a lavalier by the thin mic cable that attaches it to the capsule. Instead, secure the power supply to the leg (put it in the sock, or use an ankle strap, or line the ankle with a protective strip of cloth or toilet tissue and then use gaffer tape). Attach the mic cable to the connector at the ankle, during a take. Remember to disconnect immediately during breaks so that talent is free to move off of the set.

Obviously, there will be situations when it is either not practical nor safe for talent to be tethered by a mic cable. Our last resort as a miking solution is to use radio mics.

Radio mics suffer from all of the limitations of lavaliers, plus those of their own such as electronic failure, radio interference, and bad karma that the scientific types are loathe to admit exist (such as mysterious magnetic black holes). Everything that has ever made your television reception bobble for a moment can interfere with radio mics: appliances, computers, passing trucks, overhead airplanes, CB's, and so on. Radio communications can also be a source of interference: walkie-talkies, mobile radios, repeaters, etc.

Try to use wireless as sparingly as possible. Sometimes, you can start a scene with a wireless, and then go hard-wire after talent has settled into a spot.

Only use fresh batteries, and change them routinely every couple of hours, or sooner!

If you are planning to use radio mics, bring along back-up units for contingency. There may be interference on one channel, or a unit may fail go sour on you, or talent may break a unit accidentally.