THE FINAL MIX:
STRATEGIES & TIPS
TO ACHIEVE GREAT MOVIE SOUND

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Prep and Principal Photography

- **Calling "CUT" too soon:** Allow any sound event occurring during filming or wild track recording to finish completely before yelling cut. Most wild tracks are ruined because the beginnings and ends are talked over during their recording. The beginnings and ends of sounds are usually the defining characteristics of the sound and are the hardest to get clean.

- **Sound pre-production:** Arrange a meeting of the supervising sound editor, the production mixer and the film editor/first assistant and coordinate the proper technical adherence to post-production specs for sound recording and proper digitization of sound for editing. Compatibility is critical, and digital file format standards do not exist yet. Insure that your sound supervisor has read your script before production begins. This allows for a detailed concordance of wild tracks to be generated and arrangements for sound capture of unique/hard to reproduce sound events.

- **Record Impulse Responses:** Allow time for your production sound mixer to record IR's (impulse responses) of each of the locations you shoot. IR's are a recording of the acoustic "signature" of an environment or set that are then used in post-production to create computerized settings in a digital reverb for processing of ADR and Foley. The process takes only a few minutes, with some setup, but yields much more accurate blending of post-produced audio into existing production sound.

- **Ingest All Tracks of Sound Into Your Editing Workstation:** Allocate time or resources for the assistant editor to ingest all tracks/channels of the full-bandwidth (i.e. original masters) production sound into your NLW (non-linear workstation). This facilitates two critical needs: (1) Your picture editor will have available all the isolation tracks recorded for each take, allowing you to select a cleaner version of a compromised audio recording rather than use the "mix" track. It is most common that your production sound mixer will record each actor(s) on separate tracks of a multi-channel sound recorder and simultaneously create a "mixed" track of the separate tracks to facilitate ease of editing. While the "mixed" track is easier to use for editing purposes, it is rarely, if ever utilized in post. (2) By ingesting the raw tracks and ISO's, picture editorial can turn over OMF exports from your NLW to post for immediate use and massaging without the need for costly reconstruction. This technique has the added advantage of allowing post to maintain your virtual mixing settings (i.e. volume and fades) throughout the post process. See Post Production - Virtual mixing.

- **Periodic review:** If possible, have the production sound track reviewed early on in production so that potential problems may be caught early. This should be done in sound studio. Arrange for periodic sound dailies review in a controlled and aligned mix environment to check questionable material for possible on-set re-recording or ADR and general quality control.

- **Get it right in production:** Make sound part of your priorities. Give the production sound team time to place microphones, participate in the scouting of locations where possible, and work with costumers and set dressers. You will never know how good the sound of a film could have been after you lost your first and best chance. ADR is a tool, not a panacea. Do not use it as a crutch. There is no substitute for great production sound in dialogue **and** sound effects.

- **Large crowds:** If your shoot involves large crowds, make arrangements to record them. These are, by far, the hardest sounds to cheat or duplicate in post. Twelve men and women in a walla group on the ADR stage cannot do justice to every situation. These sounds can become critical in unique cases such as political rallies, Romans in the coliseum, or places where foreign languages are spoken. Coordinate with the AD to record these crowds between setups, in-situ, whenever possible. The extras are already there and usually eager to participate. By coordinating with the sound supervisor in pre-production, lists can be generated for specific needs, attitudes, dramatic or comedic content and mic placement.

- **Unique sounds:** Coordinate with the sound department re. the use and release of hard to find or unusual sounding props, vehicles, and locations. If your production is spending thousands to rent a one of a kind Sherman tank, aircraft carrier, exotic car, musical instrument, etc., give your sound team an opportunity to record it as a wild sound effect. This will give your editors a proper recording of something that only a mediocre example of exists in the sound effects library. It is very common to re-rent these things in post to get a proper recording that fits the specific film. Thusly, clean “room tone” is also important. It is most beneficial to make these recordings the responsibility of the Post Sound team and should be budgeted as such. These types of sounds, most often, need to be captured off site where there is no sound “pollution” from set construction, setup work, etc.

- **Music playback:** If music is to be played back on set, allocate time to create a technically correct playback master that adheres to some standard or playback reference (i.e. SMPTE time code, etc.). Insure, where possible, that the mix down of the PLAYBACK MASTER for set is generated from the original multi-track master (original studio session, 24 track, etc) and not a CD. This allows the music department to generate a proper 5.1, cinema compatible mix, later on in post for final mixing. Stereo mixes (common in popular music CD releases), are a sonic compromise and will be artificially “spread” or “up-mixed” to 5.1 for a cinema mix. It is better to have this 5.1 mix made from the original studio tracking sessions and the associated mix down done with the artists/recording engineers approval and input.

- **Live music:** If live music is to be used on camera, preferably shoot the master with the band playing live in the location and use the select take as your sync playback master for all subsequent shots. The track will then have the acoustics of the location and the energy of the musicians interacting in a real performance.

- **ADR on set:** When the talent wraps their last shot and before they are excused from set, have a list of problematic dialog and missing expository material prepared for recording at location. First, the actor is still in character and more able to provide an accurate reproduction of their performance (something that is much more difficult with inexperienced actors in an ADR stage environment). Second, you have the opportunity to make these recordings in a better acoustic environment. This is much harder to approximate in post, digital reverbs and EQ notwithstanding. Third, they are still on payroll, which may save some money down the road. These recordings become more valuable when shooting with young, adolescent and teen actors. Their voices ARE changing before your very eyes. By the time you get to post, their voices HAVE changed and will be extremely problematic in making a match in ADR.

- **Multi-channel production sound recording:** It is not necessarily better. In most cases, one person is talking at a time for obvious reasons. One microphone, properly boomed, can capture most of the dialog accurately. There are many exceptions, of course. For example, ensemble pieces shot with multiple cameras where critical dialogue is happening across a large geographic space precludes efficient booming. Sound recorded with a boom mic is generally preferable to using a body mic. Multiple source feeds for on-set TV, movie, live bands, etc. necessitate multi-channel recording for post synchronization. Multi-channel recording will increase the editorial time necessary to prepare the dialog tracks for Dialog PreMixing as well as increase the amount of time necessary to PreMix them.

  Be prepared for these tracks to sound differently than what you have heard during the picture editing phase, in your editors works station. Most NLE's cannot easily accommodate the multi-channel production sound recordings. As such, a crash down or mix down of the multi-channel master is created during recording or done in tele-cine for digitization in preparation for editing. This "crash-down" is not always a mirror of what is on the separated tracks that it was made from and will be used as the sources for dialog premixing.

- **Production sound gear & mixing:** Before starting photography, the production mixer should check his equipment with an (studio) engineer to be sure that it meets specs and any possibility of incorrect gain structure is rectified. No EQ should be used during filming, and mic roll-offs should be avoided (nothing over 90 cycles). Before previews, the picture editor and a projection engineer go over the theatre system with a fine tooth comb. The very least should be done for sound before shooting begins.

Post-Production

- **Editing:** Make your editing environment as quiet as possible by removing or sound dampening the hard disks that source your workstation. The sound pollution emanating from these drives will mask an accurate understanding of the quality (or lack thereof) of

your production sound. Don't be surprised by the amount of ADR the dialog supervisor recommends because inherent noise in the tracks was masked by the sound of hard disks whirring.

Many a director has been shocked to hear what is actually in their tracks at the mix because of sub-standard editing room monitoring. Align the speakers in the editing room to the cinema standard "X" curve at 85dB SPL. In this way, what you hear in the mix will sound like what you heard in the editing suite. Most edit rooms are set below the standard 85 SPL. This causes two associated problems: the ear hears frequency response differently at lower levels and, as such, you will not know what the actual timbre of your tracks is and, to get the impact desired for an important sound moment, you will overdrive the editing systems sound capabilities and induce distortion into your various outputs for screenings and delivery requirements.

- **Review Your Audio:** Make time to review the materials your sound team has prepared BEFORE the mix. This not only facilitates a faster and more efficient mix, it gives the team more insight into your aesthetic and helps them build future work with your goals in mind.

- **Communicate:** Sound has no codified language. Communicate in whatever vernacular works for you. There are no rules. To communicate the sound you hear in your minds ear, describe it with the things you know best. Speak musically, if need be, in terms of rhythm, tempo, or voicing. Speak graphically in terms of color, mood, form and shape. Speak emotionally and talk about how you want a scene to feel, or not feel. But most importantly, find ways to communicate effectively to your post-production sound team. Work on your sonic vocabulary.

- **Virtual Mixing:** Consider using "virtual" mixing technology to leverage time and money. Virtual mixing is a non-linear (no recordings) process of capturing all the mix work in a project regardless of it's timeline status. Thus, every mix decision you make is stored regardless of it's sync relationship within the project. In this fashion, all the work you do in the edit room, sound design room and temp dubs is saved and leveraged towards your final mix. In the traditional paradigm, this is not the case: once the final mix has begun, all mixing work is discarded and all audio elements re-start their lives in the soundtrack from a null position, having lost any capability to recapture their volume, equalisation, panning or reverberation previously created at other points in the post process.

- **Sound Editors and Mixers:** Be open to new work paradigms. It is becoming increasingly common for the Supervising Sound and Dialogue editors to also be your Dialogue and Sound effects mixers. There are significant advantages creatively AND financially to de-compartmentalizing these tasks. Doesn't it make sense for the person who edits the sounds in your project to be the person who mixes them? That thorough knowledge of the makeup of the tracks reaps immeasurable benefits at your final. Not only will you have established an ongoing rapport and creative shorthand, having already spent weeks or months guiding this individual through the creation of your soundtrack (editing and design) but their familiarity with the tracks themselves will yield a much more efficient work flow once the mix itself has begun.

- **Design and review sessions:** Build time into your schedules to work with the sound team. Sound design and mix review sessions can make a difference to the success of your sound track.

- **Sound design and music:** Create communication between your Sound Designer and Composer regarding placement, timbre, frequency, mood and fell of a sequence. Many a train wreck at the mix has been avoided when you interact this way and work in harmony to achieve the desired result. One often will cede dominance to the other based on passion for a given sequence or creative interpretation heretofore not considered.

- **Looping integration:** The process of replacing a production dialogue line at the ADR studio with an actor again speaking and recording a particular dialogue line is relatively simple, but also problematic. The actor is often "not into it," can't do it, and will even make up excuses. Also the ADR mixer works in an isolated environment, which does not represent the original. Occasionally, the director is "not into it," and the guidance for actor and ADR mixer is not all it should be. Remember, at the final mix the re-recording mixer receives that particular ADR dialogue with no noise associated with what the original dialogue had. Digital reverbs and EQ can't do it all.

  There is a new technology in digital sound processing called "Convolution Reverb". In essence, it allows a "snapshot" of the acoustic characteristics of a location to be recorded and converted into a digital reverberation device set of parameters. To create this "snapshot", a burst of controlled sound (pink noise) must be played in the location and rerecorded with special microphones. This "burst" only takes seconds but allows the re-recording mixer to create a very accurate reverb setting to process ADR that will need to be integrated into a scene shot in that environment. These reverbs are always a better match than the ones that come as a "preset" in most digital reverberation devices.

- **Know the limits:** Be aware of your post production spending capacity. Use it wisely for your goals. Too much micromanagement can be very ineffective. Choose the emphasis for sound requirements carefully to get the most mileage in quality. Every movie has its own time and money limits. Protect against coming up short on results at the end of the road.

- **Be decisive in post sound:** If you don't know what you want, allow your sound team to help find it for you.

- **Genres:** Sound is perceived emotionally, as well as intellectually. Each genre, such as comedy, action or drama, demands its own approach and sound sensibilities. Tap into the re-recording mixers' well of experience as a vital resource; and, then, give clarity to the director guidance.

- **Digital elixir:** Digital technology is not a substitute for common sense quality in every phase of the production and post process. It is a tool that enhances what we can do, but is not the answer to every problem. Incorrectly used, digital can lead to disaster like anything else. Good decisions in a timely manner will always help you get the best sound.