Audio Production Tips

Audio is often over looked and under-heard; careful attention to detail and listening lead to good solid audio on a video/film set/location and in the studio.

Rule: Always record the best quality that your project requires from the start, appropriate levels etc. Like carpentry, you can always take away but it is difficult to add ...

Mic selection:
- type of mic: dynamic, condenser, ribbon
- pickup pattern
- size of diaphragm
- distance from mic
- wind, pop, spit screen change dynamic response

Each of these "colors" the sound recorded.

Pickup pattern:

- Condenser Mics need phantom power, tend to be sensitive; have a typical sensitivity to higher frequencies - This is not a rule!! Think about a Kick drum condenser mic - it is certainly set for lower frequency response. However, it can be said that it is "brighter" than a comparable dynamic mic - which would be "warmer."
- Dynamic - warmer, needs no phantom power, Can create a heavier mid-range EQ.
- When selecting a mic think about: frequency response, provision for phantom power, size of diaphragm, type of microphone, pickup pattern. eg. Shotgun= directional condenser
- Create a "line of sight" with the mic such that it "sees" the talent's voice but not the background. DIRECT SIGNAL. Micing from above or below, just out of camera frame, is often the best method.
- Rule: The more directional the mic, the more it will emphasize the echo in a small room.
• If wind, then take the time to cover the mic with a windsock, zeppelin, windscreen etc.
• Two types of noise:
  1) Contact (translational) - a physical abrasion of the microphone surface by object (clothing) or wind creating a rustling distorted static
  2) Acoustic- background noise such as wind howling through trees or buildings.
• Pop screen – cuts down on consonance, and/or percussive voice signature
• More than one mic: then distance mics 3X the distance between talent and mic. This will cut down on phase cancellations
• EQ tips for vocals, but can certainly be applied to other “instrumentation”
  o Voice 300Hz to 3kHz
  o Top boost 6-12 kHz but be aware of sibilance.
  o 1-2kHz range boost will result in a honk-ing sound, not advised
  o Presence added with boost to 3-4kHz
  o Rolling off a touch of bass, makes the track sound a bit thin when soloed but in the mix will allow the vocal or other instrument to ride on top of other sounds.
• Bright – high end reverb can add sizzle
• Drums – careful dampening for unwanted sympathetic sounds.
• Stereo mic drums with 2 additional kick and snare mics (4 mics total)
• Bright = hihat; cymbal = condenser mic.
• Mic 2” from head; 2” from the edge
• 3:1 to 5:1 The distance between adjacent mics should be 5 times the distance between mic and source.
• 2:1 Rule of Ambience To capture an equal amount of room ambience, a cardioid microphone must be placed twice as far from a source as an omnidirectional pattern microphone. - capture some of a room’s natural sound when recording (Sweetwater.com)
• Chorus – This can double a track; set up a nice stereo relationship; provide opportunities to pick off a channel and create different affects with one source sound. In general leads to a broader harmonic signature.
• Reverb applied across tracks can unify the mix but it is not a “real” situation - in a real situation each sound source would have a distinct reverb signature. Using a high level of reverb coupled with a HF cut places a source away from listener.
• Reverb can distance sounds in the mix if each sound has different spatial depth ANDs it can unify sounds if you treat multiple tracks or sounds with the same reverb parameters.
• Compression is almost always desired when recording vocals.
• Limiter = high compression.

• Panning scenario

<table>
<thead>
<tr>
<th>Left</th>
<th>Center</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percussion</td>
<td></td>
<td>Lead guitar</td>
</tr>
<tr>
<td>Drum kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keyboards</td>
<td></td>
<td>Backing vocals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main reverb</td>
<td>Main reverb</td>
<td>Main reverb</td>
</tr>
</tbody>
</table>

• Signal efficiency and amp/pre-amp. Keep an ear out for over saturation. Levels on pre-amps should be kept at about 75-85% so as not to introduce distortion
• When mixing: use pan, relative volume and frequency/dynamic processing in order to open spaces in which sounds may slip.
• 3-D sound construction. Pan – x axis; volume and time processing z axis; freq. spread y axis (high freq. are perceived higher than low)
• Music –
• Guitars with single coil pickup take less acoustic space than humbuckers. Humbuckers tend toward a wall of sound...and thus a “live” sound.
• Boost freq. 2K-6K for improved presence, especially guitars.
• Slow weak flange on hi-hats allow the frequencies to cut through the mix and improve presence as the flanged hi-hat oscillates through the mix.
• Ducking with a compressor: input primary signal and in side chain input secondary signal. When the primary signal is present the
secondary is attenuated or ducked so that the primary signal is more prevalent in the mix

- Reverberation is used to simulate a real acoustic environment, informing the audience about space.
- Gating: by use of a side chain or gate, you control the tail or release of a sound. The gate does not allow unwanted signal to pass through. A threshold setting determines what part of the signal is wanted and/or unwanted. For example: if you had a loud noise floor, you could impose a gate so that as soon as a wanted sound signal finished, the gate would close and the noise floor would attenuated to 0dB
- Reverse gate: the gated signal is only passed when there is no signal at the trigger input. And so, the two sounds are assured of being counterpoint to each other.
- Acoustic guitar – single mic pointed at junction of neck and body
- over-the-shoulder mic technique to best represent the player’s ear
- Think tonally as you mic. SM-57 gives you a wide mid-range sound. If you point a mic at the neck you get the strum and rhythm but also the squeaks from the strings
- Resonance from the body
- Separate two like sounding guitars by accenting their Bite (2-6kHz) with different EQ
- Compression on guitar is often used to create a long sustain
- Consider an aural exciter and spectral gate for filtering and adding harmonics

Top issues (+/- )

- Lack of direct signal – poor technique, off-axis
- Too much distance between mic and source
- Be aware of wireless frequency choices – higher means short throw but less interference
- Monitor with headphones, not just watch the meter – Closed back headphones for field work. Shoot for holding around (-6dB FS). Do not peak over 0dB (digital distortion) or have a signal that is too low. A too low signal means you are decreasing the signal:::noise ratio
- Mic noise – contact, translational
- Listen carefully for background noise – AC, fridge etc.
- Avoid distortion – monitor Amp and pre-amp scenarios
- ROOM TONE – please record!!
- Not enough mics or careful micing
  - Use plant mics
- Redundant mics – record and mix multiple mics on-site
- Boom needs to be just out of vision

- Record pre or post roll – for room noise/noise signature.
- Sample at min. 48K not 32K
- If wind, then take the time to cover the mic with a windsock, zeppelin, windscreen etc.
- Matching dialog levels. Have all voices be the same audio level. May be hard to do when shooting but can be fixed post production. (Normalize)
- Master your final audio. Once all the levels are correct add compression on the final mix and bring up the levels a bit and make everything more uniform.
- Foley sound is an art form and takes a lot of practice and mixing skills to get it right. Hearing a door close too loudly or have the timing be off is fatal to your mix. Reusing a sample is fatal – the ear can hear a loop or resample without variation – we live in an analog world so are accustomed to difference. Don’t simply grab a door closing from the BBC library and throw it down on the time line. Mix it into the scene by thinking about what characteristics YOUR door has not just A door.
- IN post – edit to the frame and/or zero crossing to avoid pops and clicks