

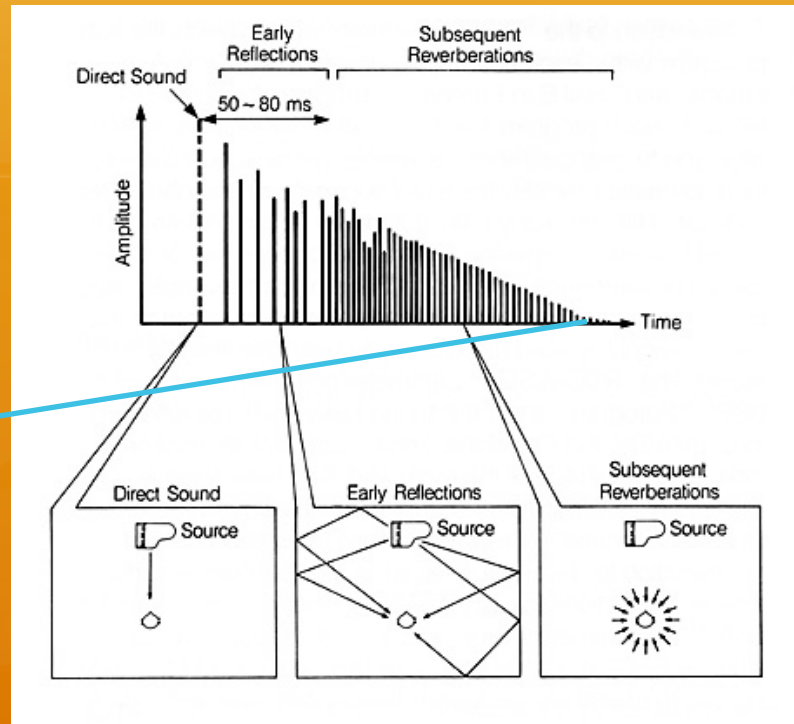
Reverb

Audio Engineering I

What is reverb?

- Reverberation
- Many closely spaced and random echoes from reflections off the different boundaries in a space
 - Direct signal
 - Early reflections
 - Reverberation
- RT60

RT60: the amount of time it takes the reverb sound to reach 60 dB below the original signal level.



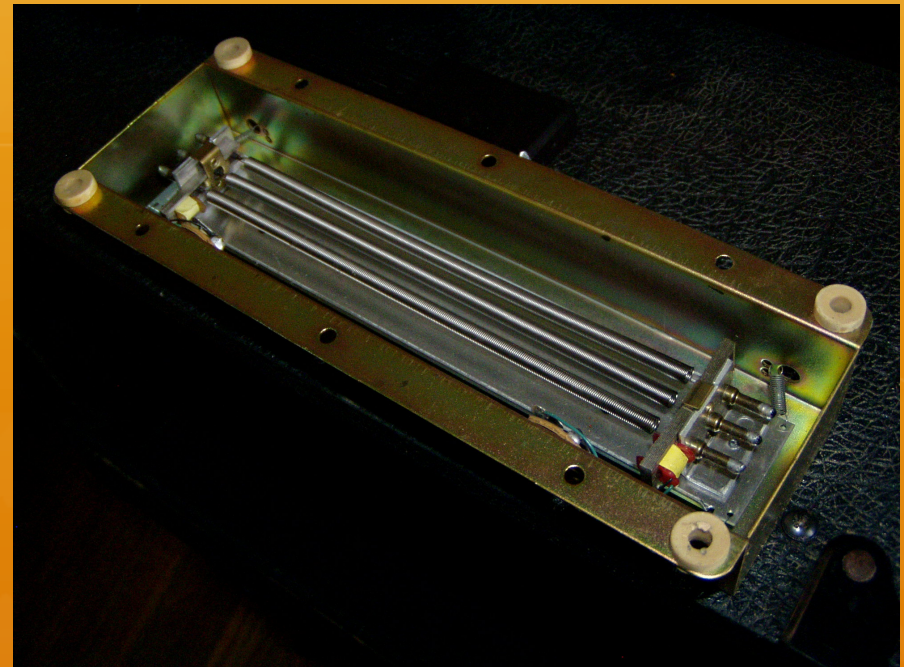
Different types of Reverb

- **Hall**: simulates the reverb acoustics of a concert hall. Longer RT60 time.
- **Chamber**: simulates the acoustics of an echo chamber – more emphasis on direct reflections off hard surfaces, shorter reverb time.
- **Live (stage)**: simulates a live stage. Often has longer early reflections but can vary a lot.
- **Spring**: simulates a spring reverb device.
- **Plate**: simulates the bright character of metallic plate reverb devices. Often used on vocals and drums.
- **Gate**: cuts off the tail of a reverb signal. Used on drums.

Reverb back in the day

➤ Spring Reverb

- Created by Hammond Organ Company in 1960, and released as the Accusonics Type 4 Spring Reverb.
- Leo Fender was an early adopter – installed in the 1963 Fender Vibroverb amp
- Audio signal sent to one end of the spring by a transducer
- Motion in springs is picked up from the other end by another transducer, which is added in with the dry sound.
- Spring Reverb



Reverb back in the day

- Plate Reverb
 - One of the first types of artificial reverb used
 - Steel plate held in tension by springs
 - Transducer in center sends audio into the plate; contact microphone(s) elsewhere on the plate pick up the reverb effect
- Main type of reverb used until digital reverb came around
- Commonly used on vocals and drums
- Plate Reverb



Pro Tools D-Verb

- **Algorithms:** seven different types of reverb
- **Size:** simulates different sized rooms
 - **Hall:** general purpose concert hall
 - **Church:** long decay time, high diffusion, and some pre-delay
 - **Plate:** high diffusion and generally bright sound; thickens the sound.
 - **Room 1:** medium-sized, natural-sounding room. An additional size option, “very small” is possible on the room algorithms
 - **Room 2:** smaller, brighter-sounding room
 - **Ambient:** a transparent response that adds a sense of space without a lot of depth or density. Extreme settings create interesting results.
 - **Nonlinear:** reverb with natural buildup and abrupt cutoff. Useful on percussion



Pro Tools D-Verb

- **Pre-Delay**: sets the amount of time between the sound and when reverb begins.
 - Used to create a sense of distance and volume
- **Diffusion**: how much echo density increases over time
 - High settings enhance percussion
 - Low settings are clearer and more natural-sounding
- **Decay**: the time it takes for the reverb to decay



Pro Tools D-Verb

- **Hi-Frequency Cut:** low settings mean the high frequencies decay more quickly than low, resembling a natural air absorption. Higher settings allow more high frequencies through.
- **Low Pass Filter:** controls the overall high frequency content of the reverb by setting the frequency above which a -6 dB per octave filter attenuates the processed signal.



Reverb Strategies

- Reverb's purpose is to give a sense of space to a recording. The individual parts of a song are all recorded with different reverb characteristics, or none at all. Adding reverb later glues different tracks together spatially.
- **Insert** the Reverb on an **Aux track** and use **sends** from the tracks that you want to have reverb.
 - This way, different tracks can share a common reverb effect.
 - By changing the level of the send on each track, you can control how much reverb has been added to it.
 - Make sure the sends are **post-fader** (not pre)
 - This way, the reverb follows along with volume changes on the track.
- A little goes a long way! It's easy to over-do reverb.
- Drums: "place" the drums in a new space.
 - Useful if recorded without a room mic or in a small space
 - [Video](#)

Reverb Strategies

- A lot can be learned from presets
 - No preset is perfect for your context – tweaking settings is almost always necessary.
- Roll off the low and high frequencies.
 - Makes reverb more natural, less conspicuous, and gives it depth.
- Avoid a reverb setting that has a metallic sound.
- Longer pre-delay settings make a sound seem closer. Shorter times make it seem farther away.
- **Dual Reverb:** Use more than one reverb in a mix
 - One with a short decay time (well under 1 second) and pre-delay (5-10 ms)... “ambience”... provides some distance to dry sounds but isn’t very audible itself.
 - Another with a longer tail and possibly brighter sound (less high frequency cut), and longer pre-delay (30-70ms - to keep things from sounding too distant)

Reverb Strategies

- Specific instruments
 - Kick and bass often have no reverb, although it's not always bad for them to have it.
 - Synth pads often have little or no reverb.
 - Drier synth sounds may need both short and long reverb
 - Lead vocals need just enough reverb to blend them with the mix, but not enough to make them seem distant.
- Again – lean towards using too little reverb rather than too much.
 - Set it so that you really only notice the reverb when you mute it.