Effects and Processes

Echo, Reverberation, Delay

- **Reverb**: When sound is produced in an enclosed space, multiple reflections build up and blend together.
  - Recreates diffusion / scattering.
- **Delay**: Making the effect occur after a brief pause.
  - Related to echo, but usually without a feedback option. Sometimes it is echo.
  - An optional control in many reverbs.

Reverb Settings

- Reverb Time
  - How long does it take for the full envelope?
- Damping
  - How intense is the reverb level through the envelope?
- Delay
  - How soon after original sound does it start?
- Bandwidth
  - High and low pass filters applied
- Dry - Wet
  - Dry = original only. Wet = reverb only.
- Hall - Room - Plate
  - Shortcuts to typical settings
  - Plate is brighter and more metallic

Echo, Reverberation, Delay

- **Echo**: repeat of a sound occuring some time after the original sound.
  - Recreates a clear reflection.
  - Often used to produce a series of diminishing reflections at regular intervals.
  - “Feedback”- the echo has an echo!

Applying Reverb and Echo/Delay

- Fits a sound track to a perceived physical space
  - To simulate a wall 50 ft away?
    - 50/1130 fps = 44 ms delay
  - Small room?
    - 5-10 ms
  - Room with hard surfaces?
    - Longer reverb time + echo + some low pass
  - Whisper in character’s ear?
    - No reverb + boost high frequencies

Applying Reverb and Echo/Delay

- In a music mix
  - Giving one instrument extra reverb makes it appear behind the other instruments
  - Reverb tends to add the perception of brightness to the original sound
  - The delay is almost always timed to the tempo of the piece.
    - 130 beats per minute?
      - Each beat is .46 second
      - Reverb delay could be set at .46s or .23s or .92s or?
      - Reverb time also usually matched

Chorus and Pitch Shifting

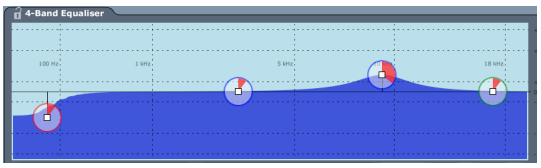
- Chorus: The perception of similar sounds from multiple sources as a single, richer, sound.
  - Makes copies of the original with slightly altered pitch, and adds them back in with original.
- Pitch Shifting: The changing of pitch frequency either up or down.
  - In an effect, usually has the amount of shift vary over time.

Compressors and Limiters

- Basically versions of the same processes
  - Compressors compress the dynamic range
  - Limiters limit how high the level can get, like a safety valve. Great for live sound control also.
- Both manipulate the dynamic range of a signal
- Limiters are said to have a quicker attack time and a stronger compression ratio—this is not accepted in all circles.

Equalization - EQ

- A evolved bass and treble control
- Usually many bands of control across the range of hearing



EQ Uses

- Adjust timber of an instrument, formant or sibilance of a voice, character of a sound
- Fixing a poor recording (dull, boomy, tinny)
- Compensating for room resonances
- Eliminating a noise centered on a particular frequency
- Making two sounds mix together better
- Roll off low frequencies to make something stand out. Roll off highs to make it blend.

High Pass - Low Pass

- Sharply cut frequencies above or below a threshold you set.
  - Remove the bass drum from the snare drum track
  - Remove the background hum from a track recorded with a poor quality mic cable
  - Remove hiss from a bass track
- How sharply?
  - Example: Using a high-pass filter set at 200 Hz threshold, frequencies around 100 Hz will be at -18 dB, frequencies around 50 Hz will be at -36 dB