Composition: Electronic Media I
Oct. 15, 2007
Reverberation

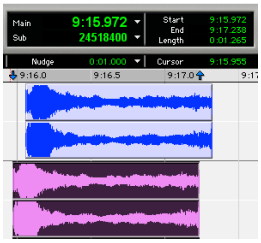
1. Definition of reverberation:
   a. Repeated overlapping iterations of a sound at progressively softer dynamics.
   b. Absorption coefficient
   c. Reverberation time
   d. Wet and dry

2. Reverb technology:
   a. Natural room
   b. Echo chamber
   c. Plate
   d. Springs
   e. Tape delay
   f. Digital

3. Examples:
   a. "Peg-o-my Heart," Jerry Murad and the Harmonicats, late 1940s.
      - Bill Putnam, engineer, recorded speaker in bathroom at Chicago Opera House.
      - Recording bathed in reverb.
   b. "Money," Pink Floyd
      - Different types of reverb used to create new orientations for listener.

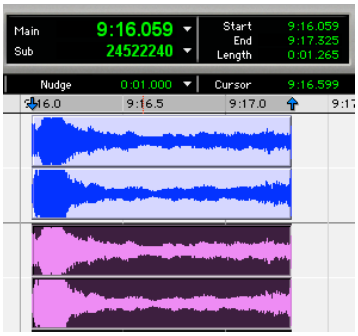
4. To create an echo tail in Pro Tools, do the following:
   a. Place in Track 1 any sound.
   b. Place the same sound in Track 2, 0.1 seconds after the sound in Track 1.
   c. In Track 2, set the volume automation to the lowest value (designated by the infinity sign).
   d. As the sound in Track 1 begins to fade out, use the volume automation to fade in the sound in Track 2. This is a cross-fade.
   e. Fade out.
   f. The is a very clean and subtle way to create a slight reverb or echo bounce for a sound.

5. To create a reverb tail in Pro Tools, do the following:
   a. In Track 1, insert your sound, as shown below on the left.

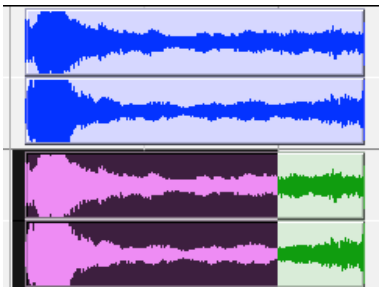


   b. In Track 2, insert a copy of that sound underneath the original, as shown above on the right.
   c. Notice that the sound in Track 2 comes in early. Sounds that are off by even a millisecond will produce phase-induced interference, resulting in the comb-filter effect.
   d. Notice that the sound in Track 1 begins at 9:16:059.

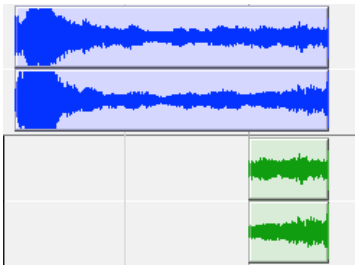
e. In slip mode, slide the sound in Track 2 to the correct start time. Use the timing display to help guide you. When the sounds are exactly aligned, they should look like this:



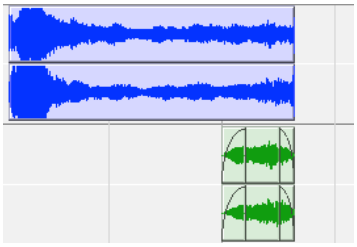
f. Highlight the portion of the second sound that you do not wish to reverberate, as shown below:



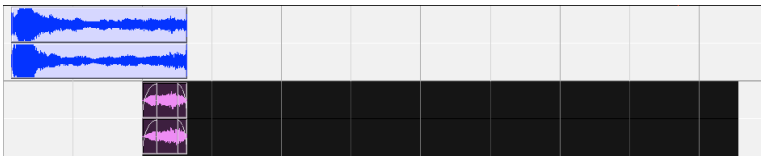
g. Cut the highlighted section, leaving only the end of the sound in Track 2, as shown below:



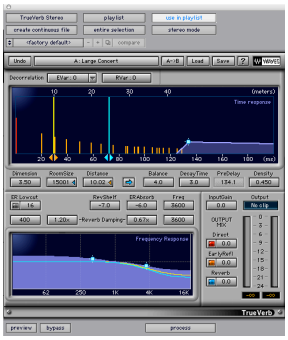
h. Fade this section in and out, as shown below:



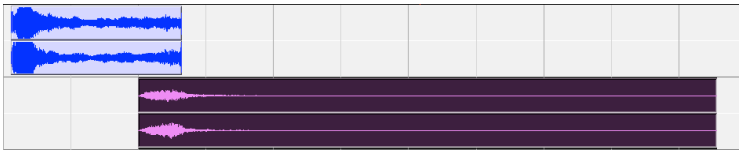
i. Highlight the sound in Track 2 and extend the highlighted area to several seconds past the end of the sound, as shown below:



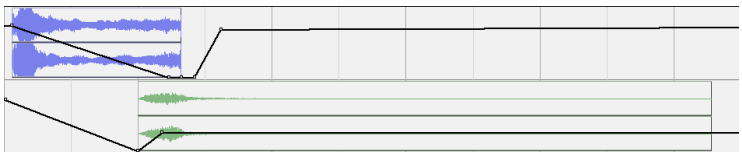
j. Go to Audiosuite>Reverb>TrueVerb Stereo. A window like the one below will appear:



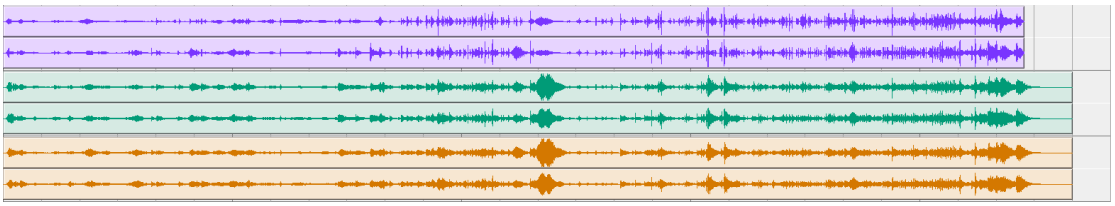
k. Set the reverb parameters to those desired (as discussed in class), then click process. The processed sound is shown below.



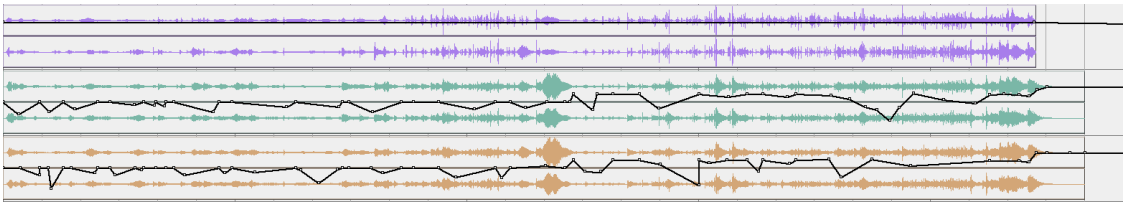
l. Use volume automation to fade out the dry sound in Track 1 and fade in the wet sound of Track 2 (producing a cross-fade), as shown below:



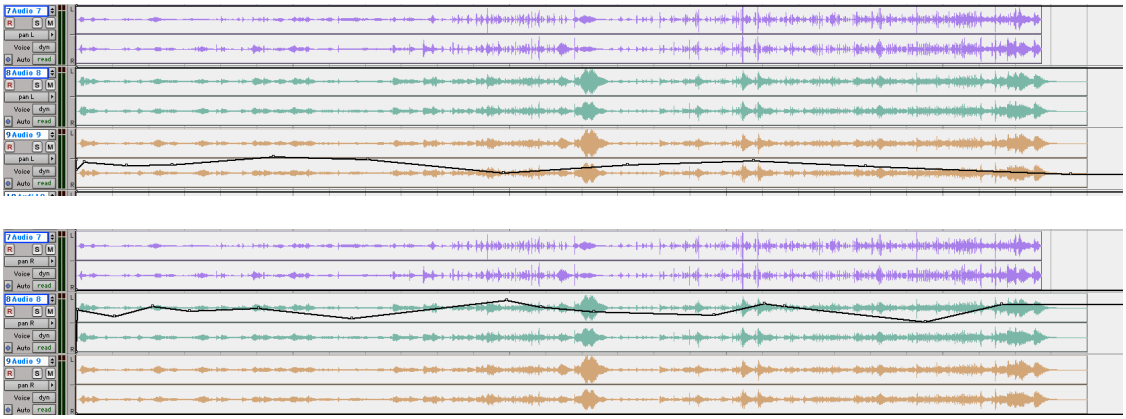
6. To apply a reverb wash to a long sound, do the following:
   a. Place the original sound in Track 1.
   b. Place a copy in Track 2.
   c. Place a copy in Track 3.
   d. Track 1 will be regarded as the dry track, so no reverb will be applied to it.
   e. Apply any type of reverb to Track 2, as discussed in Step 5j-k.
   f. Apply a different type of reverb to Track 3. The resulting three tracks look like the ones below:



7. To create a lively reverb space, avoid resonant peaks, and minimize the metal can effect, do the following:
   a. Freely change the volume automation for Tracks 2 and 3, as shown below:



   b. Using pan automation, position Track 2 close to the left and Track 3 close to the right, as shown below:



8. Good principles of digital reverberation for acousmatic music:
   a. When adding reverb to an individual sound, do not apply it to the beginning of the sound, since the attack contains important sonic information that can be muddied by smearing.
   b. When add reverb to an individual sound, apply it to the tail, since that will be the part that should resound as the sound is fading away. This was described in Steps 4 and 5.
   c. When adding reverb to an entire sound, make at least 2 reverb versions.
   d. Avoid letting the reverb sound like a metal can. The best way to do this is to continuously vary the volume and pan of each track. This was described in Steps 6 and 7.
   e. Consider enriching the reverb of a piece by applying reverb to a sound that had had reverb added to it earlier.
   f. Consider modifying a track with EQ before, after (or both) applying reverb. The most sensitive area is 600-1200 hz.