

025:250 COMPOSITION: ELECTRONIC MEDIA I

Fall 2009

Sound mining in Peak

1. Concept of source file.
 - a. Type 1: Long, unedited recorded studio take (clarinet in EMS Studio 1, voice in anechoic chamber, etc.) or long, unedited found sonic object (political speech, audio from a movie, blues song, etc.).
 - b. Type 2: Short, isolated sound used in Pro Tools or Max/MSP. Usually derived from Type 1 source files.
 - c. Type 3: Intermediate stage of composition created in Pro Tools and bounced to a soundfile. Created out of Type 2 soundfiles to create Type 1 soundfiles.

2. Sound mining is the process of creating Type 2 soundfiles from Type 1 source files, usually done in the sequence shown below:
 - a. Record or find a suitable source file of Type 1, and open it in Peak.
 - b. Convert the file format to the one used in the composition, such as 44.1 khz, 16-bit, aiff.
 - c. If the file source file is stereo, considering leaving it stereo, using one channel only, or mixing to mono (watch out for phase problems).
 - d. Normalize either the entire file, or segments of it if some segments are louder than others.
 - e. Consider breaking the file into more than one segment.
 - f. Consider using a naming scheme such as 1, 2, 3 to 1a, 1b, 1c, 1d, 2a, 2b, 2c, 3a, 3b, 3c, or A, B, C, Aa, Ab, Ac,... or A1, A2, A3, etc.
 - g. Discussion of sound classes.
 - h. Discussion of expressiveness in sounds.
 - i. Discussion of Audacity, an excellent, free, cross-platform, and purportedly stable digital sound editor similar to Peak. Can be used for students working at home on either Mac or Windows computers.
 - j. Discussion of data mining and machine listening. The field of computer sound research is developing machine listening algorithms that is continually improving. Sound mining, as discussed in this handout, will become automated soon.

3. What to extract from the Type 1 source file to create a Type 2 soundfile:
 - a. Sound classes
 - b. Single-beat vs. multiple beat sounds
 - c. Short vs. long sounds
 - d. Hits vs. sustained sounds
 - e. The choice of sounds extracted both reflects and initiates the overall compositional thinking of the work. Keep an open mind.
 - f. Chose sounds that can be used for their compositional functions, such as sustained choral sounds, granular sound clouds, or rhythmic motives.
 - g. Chose sounds for their transformational potential, such as extreme pitch-shifting, time expansion, or EQing.

4. When sound mining a Type 1 source file, consider the following actions on each Type 2 sound:
 - a. Normalize
 - b. Fade in and fade out to smooth out the sharp cuts.
 - c. Fade in and fade out to reveal, heighten, or suppress a particular emotional or musical quality.
 - d. Pitch shift to create and explore a particular emotional or musical quality (in-class discussion of merits of doing this as part of the creation of a Type 2 file in Peak, or as part of the creation of a Type 3 file in Pro Tools).
 - d. Repeat steps 4a-c as needed.
 - e. Finally, make sure the Type 2 file is normalized, has no extra silence at the beginning or end, and is named appropriately.

5. The length of a sound is often measured in milliseconds, as discussed below.
 - a. One millisecond is $1/1,000$ of a second.
 - b. 1,000 milliseconds = 1 second.
 - c. ms = abbreviation of millisecond.

6. An envelope is how a sound changes in time, as discussed below:
 - a. The term ADSR is often used in discussions of envelopes.
 - b. A = Attack
 - c. D = Decay
 - e. S = Sustain
 - f. R = Release
 - g. Short sounds can be said to have an attack and a tail.
 - h. Hit = Short sound less than 250 ms, usually with attack and tail.
 - i. Long or sustained sound = Greater than 1 second, usually with smooth attack and tail.

7. In-class demonstration of Steps 3-4, including such basic moves as:
 - a. Sharpening and softening the attack of a sound.
 - b. Sharpening and softening the decay of a sound.
 - c. Sharpening and softening the end of a sound.
 - d. Making a hit into a short smooth sound.
 - e. Making a smooth sound into a hit.