

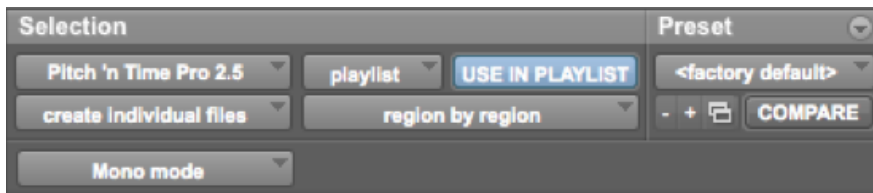
## 025:250 COMPOSITION: ELECTRONIC MEDIA I

Fall 2014

### Serato Pitch 'n Time

1. Audiosuite Plug-ins
  - a. Pro Tools has a number of Audiosuite Plug-ins that act destructively on audio files and regions.
  - b. To use a plug-in, first select a region in the edit window.
  - c. Select a plug-in from the Audiosuite menu.
  - d. Specify the desired values for particular parameters.
  - e. Click the “process” button. A progress window will be displayed while the calculations are being performed.
  - f. When the process is finished, the region is now an audio file, which can be viewed in the region list in a bold font, which signifies audio file.
  - g. The steps above will be discussed in class.
2. Principles of Pitch-Shifting
  - a. Definition of pitch-based sound: harmonic
  - b. Non-pitch: inharmonic
  - c. Instrument-like
  - d. Other-like
  - e. Sounds that are 1-2 semitones apart have voice-leading motion.
  - f. Sounds that are 3-5 semitones apart have gap-fill potential and suggestion for listener.
  - g. Sounds that are 6- and higher semitones apart have strong potential to be disjoint and unrelated.
  - h. Glisses have comical effect when rate is short.
  - i. Glisses have foreboding effect when rate is long.
  - j. Multiple glisses should have independent rates for rich, non-mechanical textures.
  - k. Multiple glisses with the same rate have potential to seem mechanical or synthesized.
  - l. Short sounds in a cloud or mass can create a virtual gliss when each successive note is a microtone higher.
  - m. Discussion of the relation between pitch and frequency.
3. Principles of Time-Expansion and Compression
  - a. Smearing
  - b. Metallic artifact
  - c. Shortened sounds have more punch
  - d. Lengthened sounds have ethereal quality that dominate the emotional structure of the context.
  - e. Long sounds in general, should not be very loud. They will have a strong presence even when played softly.
4. Pitch-shifting in Pro Tools.
  - a. There are two basic ways an audio file can be pitch-shifted.
  - b. One method is called *varispeed*. This term originally was used with tape recorders when the playback speed was varied. When the speed increased, the pitch was raised. When the speed decreased, the pitch was lower.
  - c. The major shortcoming of varispeed transformations is that pitch and time are linked. Higher sounds are played back faster, and lower sounds are played back slower.
  - d. The biggest advantage of varispeed transformations is that the audio quality is very clean, and unadulterated by calculation artifacts.
  - e. Another method of pitch-shifting an audio file is to use a signal-processing algorithm to change pitch and timing independently. There are many pitch-shifting algorithms. One of the best is employed in the plug-in, Pitch 'n Time Pro, by Serato.
5. Serato Pitch 'n Time.
  - a. This plug-in has been used by people in the audio field for over 10 years. There are currently two versions: Pitch 'n Time LE, and Pitch 'n Time Pro.
  - b. Pitch 'n Time LE sells for around \$250, while the Pro version sells for around \$700.
  - c. In the Electronic Music Studios, the desktop computers in Studios 1 and 2 have the Pro version installed.
  - d. The studio's laptop computers running Pro Tools has the LE version installed.
  - e. The LE and Pro versions used the same basic algorithms, and thus produce the same quality of sonic output.
  - f. The Pro version has additional features than the LE, as will be discussed below.

6. The example below shows how to apply Pitch 'n Time to a region.



a. The menu below navigates through all of the plug-ins in the Audiosuite.

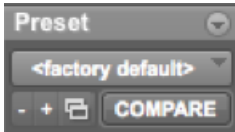


b. The menus below act on a selected region in the edit window (which is called the *playlist*) in Pro Tools.



The relation between *playlist* and *region list* will be reviewed in class.

c. The menus below allow presets to be created, saved, and compared.



For the purposes of this class, presets are probably not worth the effort to create. Studio recordings of performances, as well as research projects that require consistency and rigor, might find presets useful.

d. The menus below allow the creation of individual files, which is generally desired.



The menus are interactive, as will be demonstrated in class. For the purposes of this class, the menu items shown above are probably the most useful.

7. The panel below allows one to set several general functions.



- The scale options are Lin, for linear, and Log, for logarithmic. In the grid window, discussed below, lines that appear straight when Lin is selected will appear curved when Log is selected. The sliders in the lower panels will also appear scaled differently. In music, we hear in a linear fashion what is electrically a logarithmic function. In general, I recommend viewing such functions linearly, as this corresponds visually to what we hear.
- When the grid window is selected, the Show button displays lines in the background. When both Show and Snap are selected, edit handles will snap to the gridlines, as discussed below.
- The Range options are 2x, 4x, and 8x. When 2x is selected, time can be expanded up to twice as long and pitch can be shifted up or down an octave. When 4x is selected, time can be expanded up to 4 times as long and pitch can be shifted up or down 2 octaves. When 8x is selected, time can be expanded up to 8 times as long and pitch can be shifted up or down 4 octaves.

8. Other functions will be discussed in class, using the example below for reference.

