025:250 Composition: Electronic Media I
Sept. 12, 2005
Basic Operations in SoundHack

1. Power up the studio, bring up Mackies faders 1, 2, 9, 10, and send these to desired busses and outputs.

2. Find or create a mono or stereo (interleaved) soundfile. Open the soundfile in **SoundHack** as follows:
   a) Launch **Soundhack** from the dock.
   b) Select a select a soundfile from File>Open. Two windows will appear.
   c) The window below shows soundfile information.
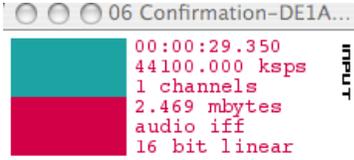
   d) The window below shows playback information. Press **spacebar** to play; press **return** to stop.

2. The **Hack** menu displays the following functions:
   a) Binaural Filter
   b) Convolution
   c) Spectral Dynamics
   d) Mutation
   e) Phase Vocoder
   f) Varispeed
   g) Spectral Extractor
   h) Normalize

3. The **Binaural Filter** looks like this:
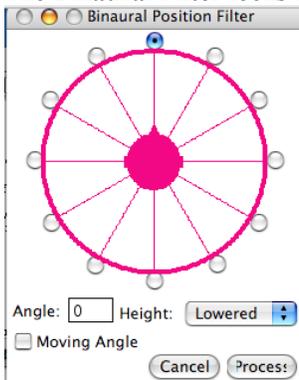
4. To use the **convolution** function, do the following:
   a) Open any soundfile you wish to convolve.
   b) Select **Hack>Convolution**
   c) A dialog like the one below will appear:
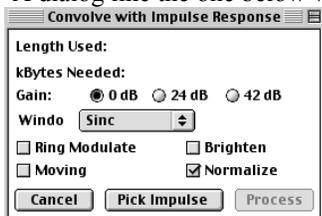
   d) Select the options shown above, then click on "Pick Impulse".
   e) An **open** dialog will appear. Select a very short soundfile to use as an impulse.
   f) Click on "Process". A new file will be created named "file1 * file2".

5. To use the **Phase Vocoder**, do the following:
   a) From the menu, select Hack>Phase Vocoder. A window like the one below will appear.

   Phase Vocoder

   Bands: 4096   Overlap: ...
   Band Freq. Spacing: 5.383301
   Window: Sinc
   Scaling: 10.000000
   ● Time Scale   ○ Pitch Scale

   Analysis Rate (samps/FFT):   51
   Synthesis Rate (samps/FFT):   512
   ☐ Scaling Function
   ☑ Resynthesis Gating
   Minimum Amplitude (dB):   −80
   Threshold Under Max.(dB):   −60
   Cancel   Process
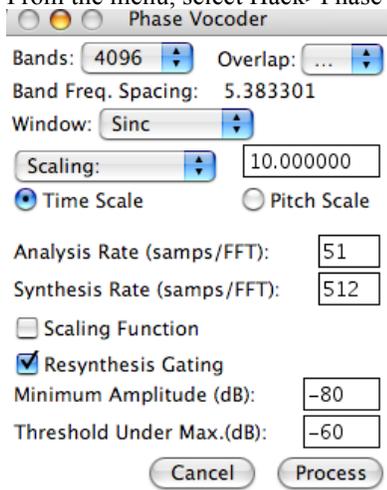
   b) Note that **Bands** = 4096, **Overlap** = .5x, **Window** = Sinc, **Scaling** = 10, **Time Scale** is checked, **Resynthesis Gating** is checked. Click **Process** to create a new processed file.

   c) To raise the pitch of the sound 31 semitones higher, enter the values shown below:

   Phase Vocoder

   Bands: 4096   Overlap: ...
   Band Freq. Spacing: 5.383301
   Window: Sinc
   Scaling: 31.000000
   ○ Time Scale   ● Pitch Scale

   Analysis Rate (samps/FFT):   512
   Synthesis Rate (samps/FFT):   512
   ☐ Scaling Function
   ☑ Resynthesis Gating
   Minimum Amplitude (dB):   −80
   Threshold Under Max.(dB):   −60
   Cancel   Process
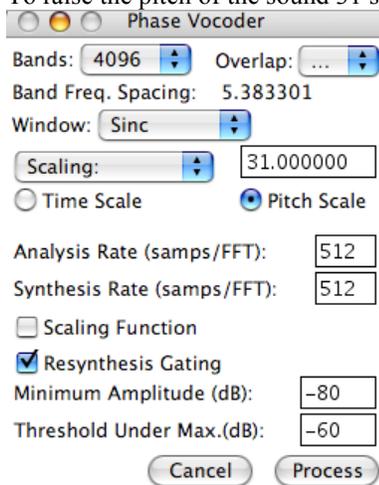
   d) Note that **Semitone Shift** = 31 and **Pitch Scale** is checked.

6. Use the **Varispeed** function as follows.
   a) Set the parameters to those shown below:

   Varispeed or Sample Rate C...
   Quality: ● Best ○ Medium ○ Fast
   New Rate:
   ☑ Varispeed   Varispeed Function...
   ○ Vary by Pitch   ● Vary by Scale
   Cancel   Process
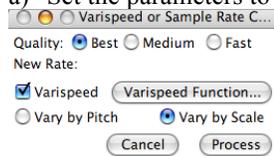
   b) Click on the "Varispeed Function". A window like the one below will appear:

   Function Window

   Top: 32.0000
   Set
   Reverse
   Invert
   Shift
   Smooth
   Normalize
   Set Mean
   Write
   Read
   Scaling:
   0.268056
   Bot: 0.03125
   Cycles: 1.0   Time: 00:00:   Done
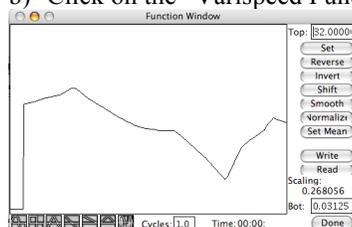
   c) Click and draw in the edit window. Press "done."
   d) Return to the Varispeed window and select process.