

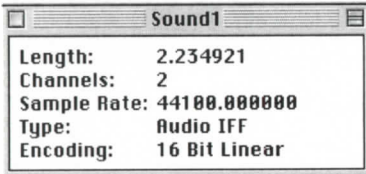
025:250 Composition: Electronic Media I
Basic Operations in SoundHack
Oct. 1, 2001

1) Power up the studio and make the following patch connections:

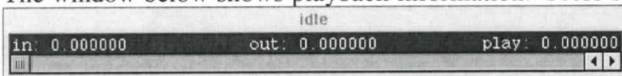
- Mac Out 1 -> Mackie In 1
- Mac Out 2 -> Mackie In 2

2) Find or create a mono or stereo (interleaved) soundfile. Open the soundfile in **SoundHack** as follows:

- a) Launch **Soundhack** from Apple Menu>Process/Synthesize>SoundHack.
- b) Select a select a soundfile from File>Open. Two windows will appear.
- c) The window below shows soundfile information.

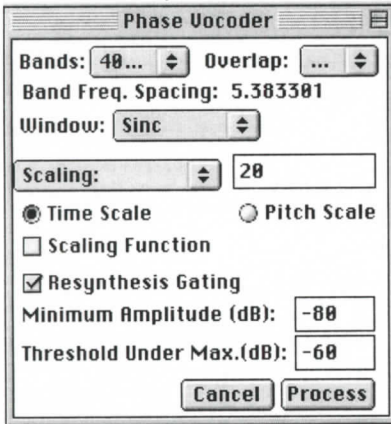


d) The window below shows playback information. Press **spacebar** to play; press **return** to stop.



3) To use the **Phase Vocoder** on the open file, do the following:

- a) From the menu, select Hack>Phase Vocoder. To make the sound 20 times longer, enter the values shown below:



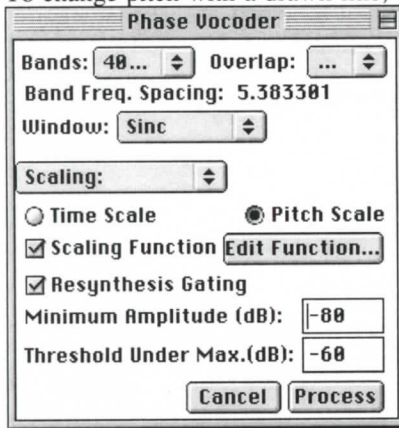
Note that **Bands** = 4096, **Overlap** = .5x, **Window** = Sinc, **Scaling** = 20, **Time Scale** is checked, **Resynthesis Gating** is checked. Click **Process** to create a new processed file.

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

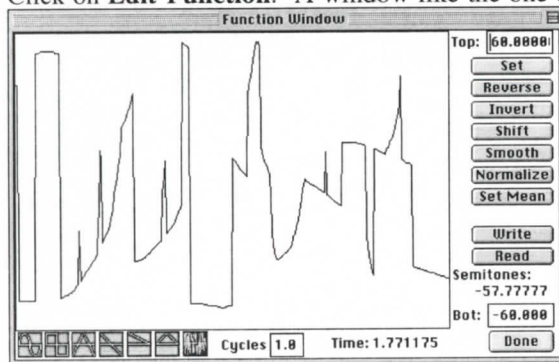


Note that **Semitone Shift** = 31 and **Pitch Scale** is checked.

- c) To change pitch with a drawn line, check the **Scaling Function**, as shown below.

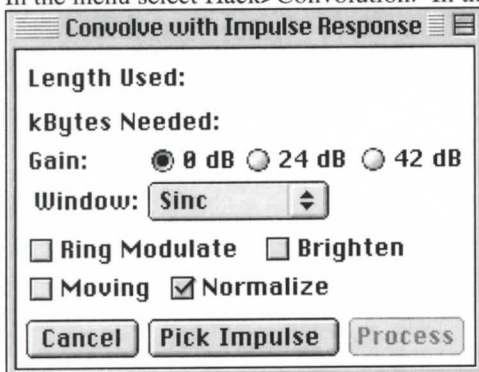


Click on **Edit Function**. A window like the one below will appear.



Use the mouse to draw pitch change over time.

- 4) About Convolution
- Convolution is a process that filters a source soundfile through an Impulse Response file.
 - The Impulse Response file can be any sound file; very short files are better from a computational standpoint.
 - The amplitude of the harmonics of the Impulse Response file can be visualized as a graphic equalizer, like ones shown in class.
 - During convolution, the source file is filtered through the Impulse Response file. The resultant file, source * IR, generally sounds like a mixture or cross-synthesis of the two files.
 - For a mathematical description of convolution, see [Computer Music Tutorial](#), 479-432.
- 5) To convolve a soundfile with an Impulse Response file, do the following:
- Create an Impulse Response file by taking a small slice (under 0.25 sec) out of any sound you wish (pitched is better).
 - Normalize this file and name it file "Sound.Imp"
 - Find a file that you wish to convolve with "Sound.Imp." Call this file "Sound1."
 - In **SoundHack**, open "Sound1."
 - In the menu select Hack>Convolution. In the window like the one below that appears, set the values to those shown.



- Click **Pick Impulse**. In the navigation window, select your file "Sound.Imp."
- The resultant file will be called "Sound1 * Sound.Imp."