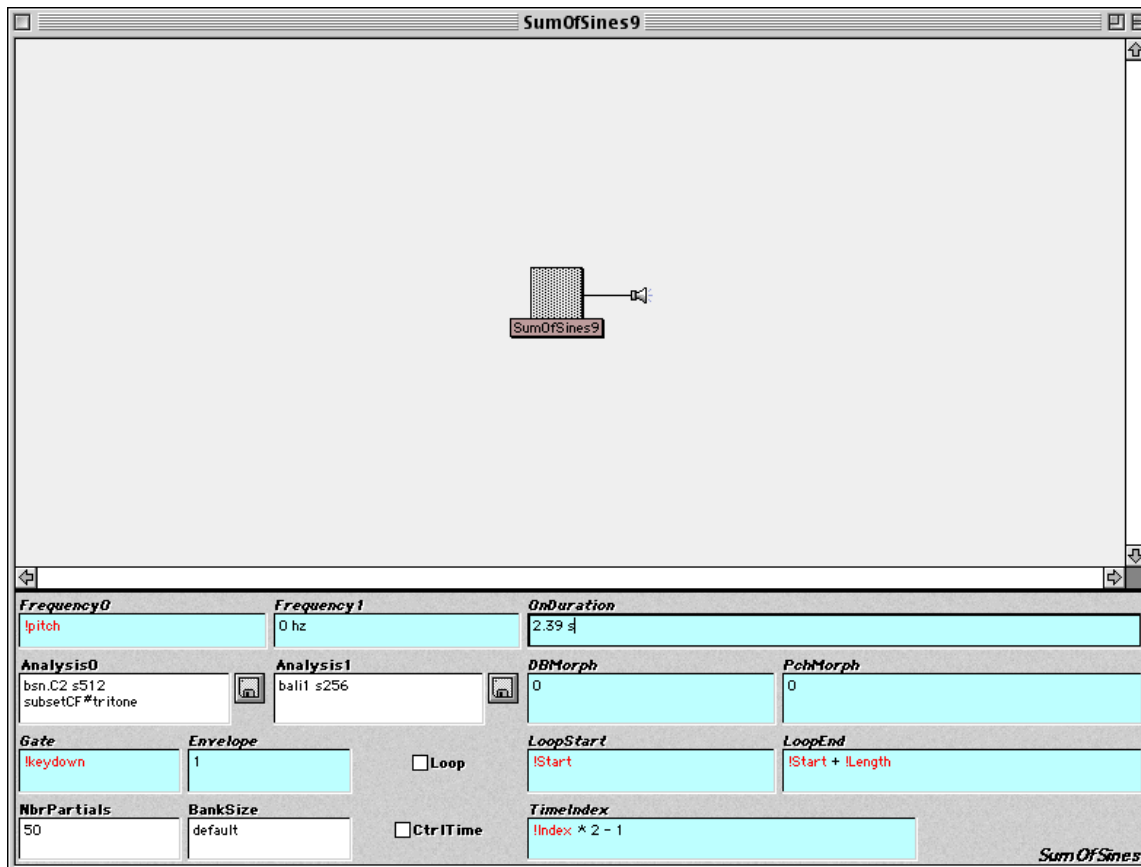**Composition: Electronic Media I**
Fall 2004
Spectral Resynthesis Using Sum of Sines in Kyma

1. As discussed in class, analyize several interesting sounds using the **Spectral Analysis** tool. Then, using the **Spectral Editor**, extract individual or multiple harmonics and save them as subsets of the original analysis file.

2. To resynthesize these files and record them to aiff files, do the following:
   a. Create a New Soundfile, as discussed in class.
   b. From the **Prototypes** window drag **Sources&Generators>Sum of Sines** prototype and drop it on the Soundfile window. Double-click on the **Sum of Sines** icon to display the edit window, as shown below:

SumOfSines9

SumOfSines9

Frequency0	Frequency1	OnDuration	
!pitch	0 hz	2.39 s	

Analysis0	Analysis1	DBMorph	PchMorph
bsn.C2 s512 subsetCF#tritone	bali1 s256	0	0

Gate	Envelope		LoopStart	LoopEnd
!keydown	1	☐Loop	!Start	!Start + !Length

NbrPartials	BankSize		TimeIndex	
50	default	☐CtrlTime	!Index * 2 - 1	

Sum Of Sines

   c. Set the parameters to those shown above, where:
   Frequency0 = !pitch (this allows the pitch of the sound to be controlled by the MIDI keyboard)
   Analysis0 = the analysis file or subset you wish to use (click on the disk icon and navigate)
   Gate = !keydown (this allows the sound to be triggered by any key of the MIDI keyboard)
   NbrPartials = 50 (use the least number of partials possible for better processing)
   Envelope = 1 (this is the maximum volume)
   OnDuration = 2.39 s (here, the duration of the analysis file)
   Loop = off
   CtrlTime = off
   All other parameters leave untouched for now.

3. To boost the volume of the sound, select from the **Prototypes** window **Gain & Level>Boost 12 dB**, drag, and drop it onto the signal flow chart between **Sum of Sines** and the speaker icon, as shown below.
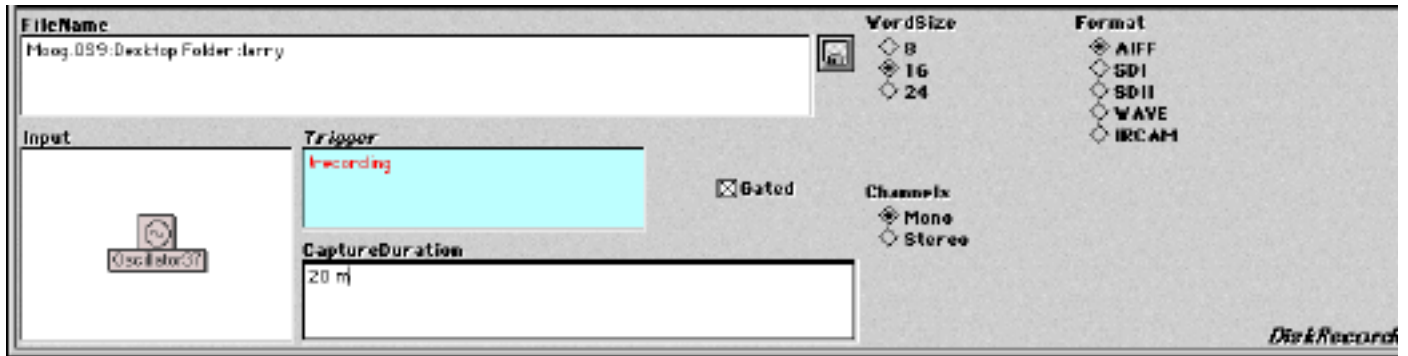
SumOfSines9   Boost 12dB4
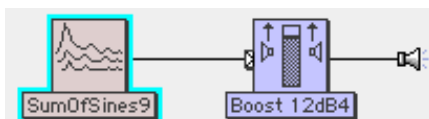
4. To record the sound to disk, do the following:
   a. Select from the **Prototypes** window **Disk>DiskRecorder**, drag, and drop it onto the signal flow chart between **Boost12dB** and the speaker icon, as shown below.
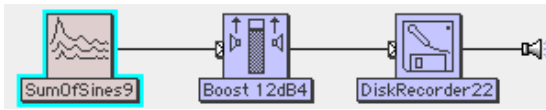
   b. To set the recording parameters, double-click on the **DiskRecord** icon. An edit window like the one below will appear.

   c. Set the parameters to those shown above, where:
      FileName = "larry" (created by clicking on the disk icon)
      WordSize = 16 (for 16-bit files)
      Format = AIFF
      Channels = Mono
      Trigger = !recording (this hot parameter works only when the EMSGlobalMap is loaded; an alternative is to type in another hot parameter name, which will appear in the **Virtual Control Surface** as a slider)
      Gated = on (this allows you to turn the recording on and off)
      CaptureDuration = 20 m (this allows the **DiskRecorder** to be active for 20 minutes).

   d. To record, do the following:
      i. Click on the **DiskRecorder** icon and compile. A virtual control surface like the one below will appear:

      ii When you're ready to record press the **recording** toggle. To stop reording, press on the **recording** toggle again. To resume recording, press again on the **recording** toggle, ad infinitum,
      iii. When you're finished record uncompile the sound (cmd k).
      iv. You should now has a continuous aiff file, with starts and stops that correspond to the times you click on !**recording** in the **Virtual Control Surface**.