

## Oscillator Options

As mentioned earlier, ***Hyperupic*** uses oscillator-bank synthesis to transduce images to sounds. The default method, 'Cosine Oscillator' requires the least thinking on the part of the user; it computes an oscillator table derived from a cosine function.

'Complex Oscillator' allows the user to enter harmonic magnitudes to generate a complex waveform for oscillator synthesis. Selecting this radio button will prompt the user for a string of harmonic magnitudes:

```
.7 0 .2 0 .1
```

This particular string of numbers specifies a magnitude of .7 for the first harmonic of the table function, .2 for the third harmonic, and .1 for the fifth. Any non-numeric characters will cause the rest of the input string to be ignored. A single space between each harmonic magnitude should suffice to discriminate them from the other input values.

'Oscillator Table from File' allows you to specify an arbitrary function as an oscillator table. These functions can be specified by soundfiles of reasonable size:

```
HyperupicGen.h:20:#define Max_Osc_Size 1048576
```

The functions can also be specified as a headerless stream of 32-bit binary floating point numbers. You can also use waveforms generated by Jean LaRoche's **WaveForm Editor**.

'Adjust Frequency Offset' is specifically designed to adjust the frequency offset for 'pitched' oscillator tables. By thinking in terms of relative intervals (frequency offset '1.0' = no pitch change) and adjusting the offset with this switch, you can maintain a relative reference to the pitch of the oscillator table. Frequency distribution can be thought of being relative to the content of the oscillator table. This is always the case, but generally the fundamental frequency of typical oscillator tables generally has a period equal to the entire table length. If you use sound data for oscillator tables, this will usually not be the case -- the soundfile's spectrum will have a distant relationship to the period of the table length.

**Note:** This switch may scale the offset in strange ways if you do not have an oscillator table already loaded into ***Hyperupic***. Also, I wish to make clear that this switch simply modifies the value of the frequency offset; it has no other (intentional) side-effects upon the state of the application.