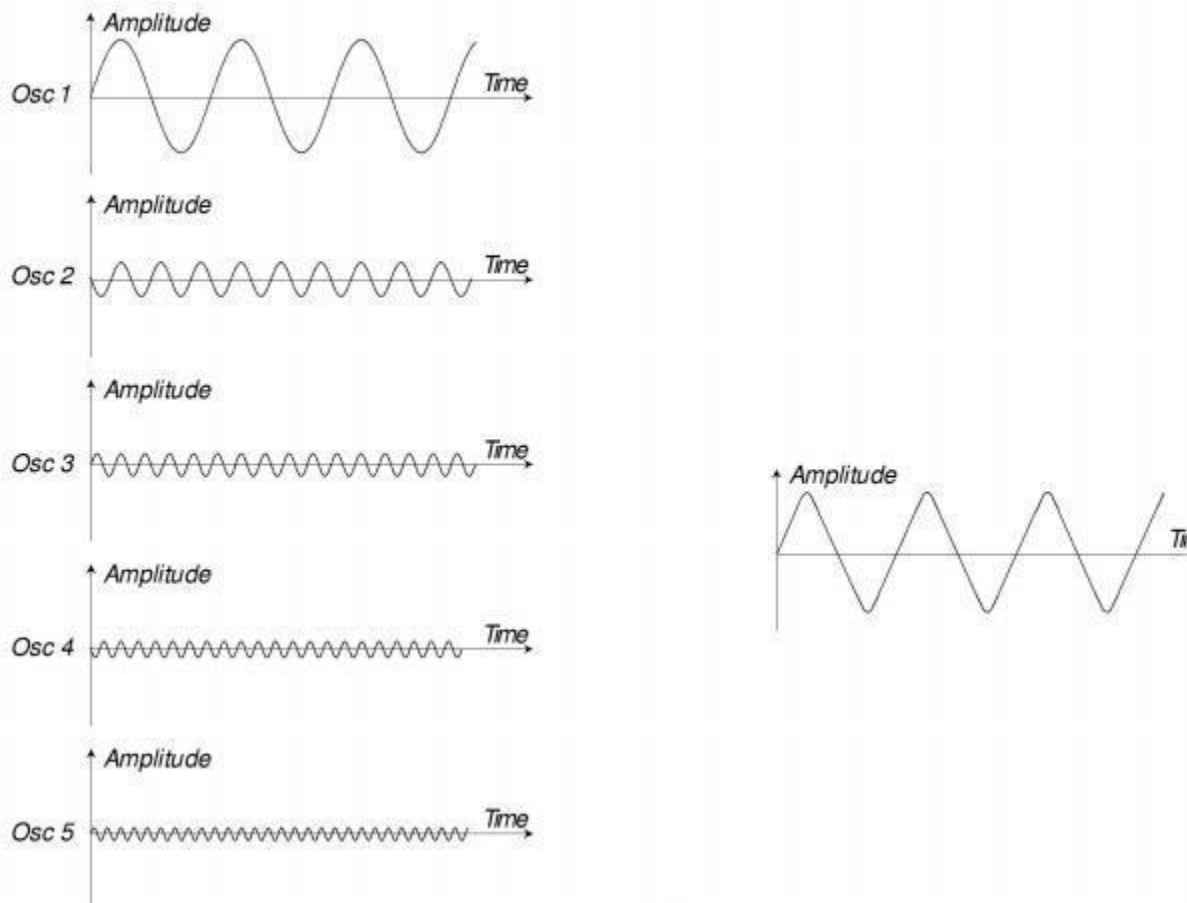


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CREATING A WAVEFORM

To show the basic principle of additive synthesis, let's create a "rough" triangle wave out of several sine waves. The triangle wave does not have very strong harmonics. Furthermore, they only appear at odd harmonic numbers. The first fact makes the tone pure, a bit like a flute, and the second fact gives the sound a slightly "hollow" character. Since a "perfect" triangle wave consists of an infinite number of sine waves, it's not practically possible to get a perfect result, but we can get pretty close. In the example below, we use six different sine waves to create our triangle wave. Note that the levels of the different oscillator harmonics is only schematic. The resulting waveform shape is also a rough estimation:



Why should you use additive synthesis to create complex waveforms, when you can easily get similar or even better results using subtractive synthesis, you may ask. Here is an important difference:

- With additive synthesis, you have total control over each single harmonic in the waveform. This makes it possible to really tailor-make your waveform. With subtractive synthesis, you can only control segments of the harmonic content.