Additive synthesis

For the module 7MU009, It was decided to create an additive synthesiser after substantial research was carried out. Additive synthesis generally relates to a technique that creates timbre by adding sine waves together.

Within my patch, which was created in pure data, the Fourier theory was considered, and the patch therefore consisted of multiple harmonic partials played by a keyboard. The patch not only had control over a sine wave but also a square and sawtooth wave. The waves could be added together using fader controls to alter and create new sounds, 'This method of generating a complex sound is often called Fourier synthesis' (Reid, 2010). The sawtooth wave also had a delay unit installed on to it, changing the numbers in the patch allowed this to be activated. The patch is controlled by an ADSR envelope which is the main component of most synthesisers.

Additive synthesis is considered the oldest form of sound synthesis and can be traced back as early as the Telharmonium, which was invented by Thaddeus Cahill. It employed an array of alternators that spun rapidly, producing sine waves that in turn produced some fairly complex sounds for the time. Furthermore, the Hammond Organ was a successful pioneer of additive synthesis. The synthesiser I was inspired by was Massive by Native Instruments. This synthesiser is a wavetable software plugin which utilises several wavetables and oscillators in the creation of synthetic timbres.

Even though I did not create a wavetable synthesiser, the massive plug in gave you the option of selecting different waves over three oscillators which was of course something that was used in my creation. The general idea was to create an additive synthesiser to create complex and fun sounds controlled by an ADSR to further allow user creation by controlling how a sound would change over time. This brief was met, however there could've been further implementation in the patch of different effects and modulators. There could've also been research conducted in to different input mediums as I only really looked in to keyboard inputs. With more time the patch could be built upon with various different ideas installed in to the patch.

References

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