



Drill Duet

Two Drills, Linear Actuators, Arduino and motor shield and program

Karlheinz Stockhausen's *Helicopter String Quartet* was inspired by a dream, where "string players played tremoli which blended so well with the timbres and the rhythms of the rotor blades that the helicopters sounded like musical instruments." Stockhausen then went about producing this work, with the performers leaving the space where the audience was, to then be lifted into the air in helicopters and within which they would then play the composition, sent back to the audience in the form of live television.

One of my friends and I share the tendency to harmonise with electric motors. Fridges, Blenders, Bathroom fans; all of these electro-mechanical devices offer a rarely appreciated symphony of audible tones in the standard domestic domicile. The human voice offers one possible manner of introducing composition into these abstract sounds – within our own homes no less. Along these lines, Phil Niblock, New York musical minimalist, had his musical revelation while driving up a mountain on his motorbike. As he followed a truck, he received the inspiration for his later career: "Both of our throttles were very open...Soon, the revolutions of our respective engines came to a nearly harmonic coincidence. But not quite. The strong physical presence of the beats resulting from the two engines running at slightly different frequencies put me in such a trance that I nearly rode off the side of the mountain."

I am reminded in all of this of one of my heroes, Maryanne Amacher, who dedicated her life to what she called 'eartones' or otoacoustic emissions, the production from two tones played simultaneously of a third responding tone that is not part of the audio, but rather produced from within the ear itself. Somewhat like Binaural Beats, but another psycho-or-physio-acoustic phenomenon. Amacher used the Muse Triadex, created by famous artificial intelligence researcher Marvin Minsky to produce most of her music. This strange device is an algorithmic sequencer, that puts out game-boy like low-bit-rate music, but composed within the Triadex by a series of algorithms. Amacher is a hero of mine for this wilfully bizarre methodology, and her wildly speculative thinking. A favourite passage of hers is about the sonification of the sun:

"One day, we'll have minds for music. Imagine, there are six listening posts where people are currently studying the sound of the sun in a project called "the Gong". In the last few decades interferometry techniques have revealed defined patterns of acoustic oscillations corresponding to a series of harmonics produced as sound waves reflect off the thermal boundaries surrounding the sun's core. Separated from us by 93 million miles of vacuum, the sun is in effect a big silent gong. In its interior, middle C (which on our earth has a wavelength of roughly four feet in air at room temperature) has a length of about one half mile. Imagine the sound."

The recordings from this project are available online, though you'll have to find them yourself.

Drill Duet is an attempt to come towards some of these ideas, from my own experience harmonising with mechanical instruments. These drills are ostensibly useful machines that have been removed from the realm of intended purpose and become agents of evocation – whether of terror, disgust or pleasure, it is a music proper to them.

