

## Cort Lippe Program Notes

*Music for Septet and Computer* (2013) was Commissioned by the E-Mex Ensemble für neue Musik, and made possible with funds from the Ministerium für Familie, Kinder, Jugend, Kultur und Sport des Landes Nordrhein-Westfalen. The piece was premiered by the E-Mex Ensemble, conducted by Cristoph Maria Wagner, at the 2013 Now Festival in Essen, Germany.

The piece, in two sections, has a very strong connection to a composition I wrote twenty years before (in 1993) for sextet and computer, in which one of the fundamental musical ideas of the piece was *tutti* ensemble playing, based on a set of six harmonies ordered in a quasi-series. Contrastingly, with the 2013 septet, the focus is more on instrumental *solis* and small formations of duos, trios, etc. One of the influences for this came from my great admiration for Schoenberg's Op. 21 *Pierrot Lunaire*, in which he exploits a maximum of sub-ensemble combinatorial possibilities in the composition's 21 sections. In the septet, rather than using a set of composed harmonies as in the earlier sextet, the formants of the eleven most common vowel sounds found in North American English serve as the raw material for the horizontal and vertical pitch organization of the piece. The eleven vowels are variously ordered based on their first, second (poetic ordering), and third formants. But, I could not entirely escape the influence of the 1993 sextet, and the second section of the septet quotes approximately 30 seconds of the older sextet, where the six harmonies are first presented. This material is spread over the second section of the newer piece as points of departure from which the music transitions from one of the harmonies to vowel formants and back again to another of the harmonies. (While I have quoted my own music in an electronic context, the first time being the 1993 sextet, in which 24 short audio samples taken from my earlier pieces are used, this marks a rare occurrence where appropriation of my own instrumental music is used in the instrumental part of another piece.)

On the technical side, the computer part was created at the Hiller Computer Music Studios of the University at Buffalo, New York, using the software Max/MSP. Technically, the computer tracks parameters of the musicians' performance using two of Miller Puckette's external objects: the *bonk~* object, which does an analysis of incoming instrumental signals and gives out information as to when the instruments are attacked, how loud they are, the timbre of each strike, and details about relative loudness across the frequency range in 11 independent frequency bands; and the *sigmund~* object, which tracks pitch and loudness of instruments, along with a detailed analysis of their timbral evolution. These tools are used to detect everything from micro-level frequency band information of individual attacks up to large scale rhythmic and phrase activity, and this information continuously influences and manipulates the computer sound output by directly affecting digital synthesis and compositional algorithms in real-time. The digital synthesis algorithms focus on various kinds of filtering, including resonant filter banks, formant filters, and comb filters (which special thanks to Richard Dudas and Jae Hyun Ahn at Hanyang University for their research into inharmonic resonators) along with FFT-based processing, including filtering, delay, feedback, bin ordering, spatialization, spectral snapshots, and cross synthesis.

While performing with the computer system, the musicians have a significant role in shaping the computer output. The intent is to create a certain degree of intimacy and interactivity between the performers and the computer, in which the performers have the potential to influence the computer output based on aspects of their interpretation of the score. The computer part, like the seven instrumental parts, functions in various roles: as an integral part of the ensemble, as an extension of the ensemble, and as a soloist with an independent voice. Unlike with most instruments, all three roles can exist simultaneously in the computer part. Much like chamber music playing, where individual musical expressivity is sometimes meant to serve the whole while at the other times it has a fundamental influence on the rest of the ensemble, the musically intertwined relationships between the performers and computer are integral to the musical results.

This piece is dedicated to the composer Takayuki Rai.  
Duration: 14 minutes.