Timothy Roy

The Many Become One
Technical Description

The Many Become One is a work for audience participation and live, interactive electronics. Audience members participate by speaking into one of several microphones whose signals are fed to a computer running Max/MSP. In addition to analyzing participants' voices and generating the electronic sounds, the Max patch governs the work's overall proportions. *The Many Become One* is an open-duration work, scalable to the approximate number of individuals participating. Nevertheless, it is a process piece whose gradual evolution steers toward a particular sonic outcome.

Logistics

The Many… is best performed in a large space with no seating and room to move about. An array of loudspeakers is arranged around the perimeter of the room, wide enough for audience members to assemble and listen. (A quadraphonic array was used for the premiere performance, but more speakers are recommended for wider arrays.) There should be ample room outside the array for people to move about.

The audio technician's setup is located in the center of the array and consists of a laptop, audio interface, mixing console, and small MIDI controller.

Stand-mounted dynamic microphones are placed outside of the loudspeaker array and at a distance from one another. At least two should be used, but more may be necessary to accommodate larger audiences. These microphones are run to the technician's station and fed to the audio interface via auxiliary sends from the mixing console. Outputs from the Max patch (matching the number of loudspeakers) are sent to the mixing console via the audio interface and subsequently out to the loudspeakers.

Inner-Workings (at a glance)

Each participant is asked to (at his or her own leisure) approach one of the microphones and speak, stating something of personal significance.

Participants' voices are not amplified; rather, each vocalization is passed through an envelope follower and used to modulate the amplitude of a musical tone. The speech rhythm is superimposed upon an ever-emerging web of pitches.

Proportions

The Many… is scalable to the number of individuals participating, an approximate headcount entered into the patch prior to performance. This figure determines (among other things) the proportions of the piece's five sections, which I refer to as "stages." The diagram below illustrates these proportions.
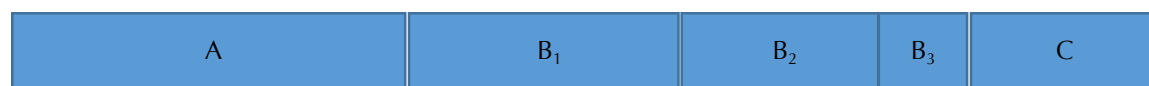
A	B_1	B_2	B_3	C

Proportions are defined in terms of the number of voices per stage. For instance, a headcount of 60 will yield proportions of 20:30:10 voices per stage for A:B:C (with B exhibiting an internal ratio of 15:10:5 for sub-stages B_1:B_2:B_3).

Pitch Organization

The patch generates a list of frequencies for a harmonic series arising from a user-defined fundamental (55 Hz was used for the premiere performance). This series is partitioned into five bands:

1st–20th partials
21st–30th partials
31st–50th partials
51st–80th partials
81st–120th partials

These five bands correspond to Stages C, B_3, B_2, B_1, and A, respectively. The piece progresses through the harmonic series from top to bottom.

Inner-Workings (detailed)

Once a participant finishes speaking into microphone, a partial is selected from the band that is currently activated. (If in Stage A, for instance, a partial between the 81st and 120th will be chosen.) This frequency is octave-displaced to a lower register and fed to the center-frequency inlet of a resonant bandpass filter, tuning pink noise to produce a tone. The tone "belongs" to the participant who instantiated it.

A sound file of the participant's speech is also sent to this area of the patch. Playback of the file is looped and routed to an envelope follower, the output of which is multiplied by the signal of the musical tone. Consequently, the rhythm of the participant's speech is superimposed upon his or her pitch.

The end of each stage is marked by a slow, ascending glissando. All octave-displaced tones are brought back to their original positions in the harmonic series. The next stage of the piece then commences, proceeding to a lower frequency band.

During the culminating Stage C, all new tones are drawn from partials 1–20 and non-octave-displaced. Additionally, the harmonic series is reinforced by an additive synthesizer drone, growing in strength. The many musical tones instigated by participants, once seemingly disconnected, are re-contextualized as members of a common harmonic series and fuse into a single, complex timbre.

Additional Elements

Sine tones are sporadically introduced at the composer's discretion. They are difference tones, derived from the most recent participant-initiated tones.

An amassment of participants' voices, processed and filtered beyond intelligibility, are also interjected intermittently at the composer's discretion (not present in this particular realization).