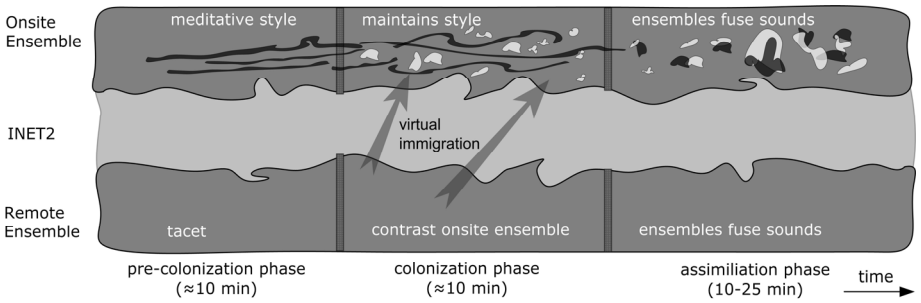
Tintinnabulate Ensemble & *SoundWIRE Ensemble*
Pauline Oliveros, Director Chris Chafe, Director

Tele-Colonization

A group improvisation based on a music concept and adaptive sound scapes by Jonas Braasch with video design by Bart Woodstrup

Tele-Colonization is a compositional concept for a semistructured group improvisation for two or more co-located ensembles. It was recorded during the *International Conference on Auditory Display (ICAD)* in Montreal on June 26, 2007, where the work was performed by two ensembles: *Tintinnabulate* and *SoundWIRE*. The main site was located in Tanna Schulich Hall at McGill University. Members of the Tintinnabulate ensemble performed in Montreal under the guidance of Pauline Oliveros. Three remote sites contributed to the concert: Rensselaer Polytechnic Institute with members from Tintinnabulate, Stanford University and KAIST in Seoul, South Korea. The SoundWIRE ensemble, directed by Chris Chafe, performed at the latter two locations.

In Tele-Colonization, we assumed an opposite standpoint from the traditional telepresence co-located approach to highlight and create awareness of dislocatedness. This awareness was formed by disclosing the remote sites over the time course of the piece in a related fashion to unfold the musical material as a compositional element. Tele-Colonization aims to take the audience through a journey in which the discovery of the remote concert venues is part of the performance. For this purpose, the remote locations were uncovered over the course of the piece. To achieve the effect of unfolding the remote locations, the musicians at the co-located sites virtually populate the aural and visual space of the main concert site.



Tele-Colonization is structured in three phases as shown in the score above. In the *pre-colonization phase* (duration approximately 10 minutes) only the onsite ensemble performs and the video image does not show the remote site(s), but a substitute picture instead. The onsite ensemble is joined by the remote ensemble in the *colonization phase* (duration about 10 minutes). While the onsite ensemble is requested to maintain its style, the remote ensemble is encouraged to contrast the performance of the onsite ensemble. The remote ensemble is allowed to discuss a (common) strategy as long as the members do not inform the onsite ensemble about their plans before the concert. In the *colonization phase* the video stream reveals electronically altered elements of the remote ensemble without fully uncovering ensemble members. In the last phase of the piece, the *assimilation phase* (duration 10 minutes or more), the musicians are encouraged to slowly adapt their styles from the previous phase to form a unified ensemble. To support this movement, the video stream reveals the remote ensemble fully over time.

Technical Notes

Before the recording, Tintinnabulate and SoundWIRE had collaborated on a weekly basis beginning in Fall 2006 using Internet2 with 8-channels of CD-quality audio supported by the software *Jacktrip*. To avoid audible acoustic feedback across remote sites, all acoustic instruments were captured using closely spaced microphones and then positioned in space based on a technique called *Virtual Microphone Control* (ViMiC). During the live concert, the Montreal audience had the rare opportunity to switch between the remote acoustic environment at RPI using wireless headphones, which were provided by Sennheiser, and the natural acoustical setting of Tanna Schulich Hall. The latter was spanned by acoustic

instruments and loudspeaker projected electronic sounds, while the headphones displayed a binaural transmission of a dummy head which was located in the recording space at RPI.

The visual unveiling process was an essential part of the performance. Woodstrup's software design in Max/MSP/Jitter incorporated a series of still images representing the spaces to be "colonized" – hence referred to as "static images." The performers were revealed within these spaces through their movement as they performed with their instruments. The more motion created by the performer, the more their image was revealed. Gradually over the course of the performance the static image of the space became increasingly opaque, and the end revealed the performers in the actual space of the studio.

In order to achieve this effect, a video frame taken of the performance space was captured into a buffer at an adjustable interval of every 500 ms to 2,000 ms. This frame was then subtracted from each successive frame of live video. Any differences between the pixels of the stored frame and the pixels from the live video signal constituted movement. The different pixels were then blended with the alpha channel of the static image, revealing the movements of the performer. The imagery for the Tele-Colonization performance consisted (in order of appearance) of a landscape image of a sunset, the texture of a cave wall, and a partly cloudy sky. The images were changed based upon the progression of the performance. The video system for this performance consisted of two cameras, an analog video mixer, and a computer running the Max/MSP/Jitter application. McGill University's Ultra-Video-conferencing System was used stream the effected video to the remote location.

Performance Credits

McGill University Location
Julien Boissinot, Internet System administration
Jonas Braasch, Soprano Saxophone
Jeremy Cooperstock, Ultra Video-Conferencing support
Kensuke Irie, Sound Recording Assistant
Iskra Kalcheva, Sound Recording Assistant
Sungyoung Kim, Live Sound Engineer
Doyuen Ko, Recording Engineer
William L. Martens, Concert Organization
Peter Matulina, Camera
Pauline Oliveros, Accordion
Federico O'Reilly Regueiro, Camera
Nils Peters, ViMiC Processing
Jeff Pitcher, Electric Guitar
Alain Terriault, Internet System Administration
Doug Van Nort, Live Electronic Processing using GREIS
Kent Walker, Live Sound Engineer

Rensselaer Polytechnic Institute Location
Jayeeta Chowdhury, Camera
Bobby Gibbs, Clarinet
Elizabeth Panzer, Harp
Daniel L. Valente, Violin, ViMiC Processing
Nigel Westlake, Internet System Administration
Bart Woodstrup, Live Video Processing

Stanford University Location
Juan-Pablo Caceres, Synthesizer+Laptop

KAIST (South Korea) Location
Chris Chafe, Celletto
Seungyon-Seny Lee, Camera and Audio Recording

Post Production
CA^{3}RL, Rensselaer Polytechnic Institute
Daniel L. Valente, Audio Editing, Mixing & Post-Processing
Bart Woodstrup, Video Editing & Post-Processing

Participating Institutions
CA^{3}RL/School of Architecture, iEAR Studios/Arts Department, Rensselaer Polytechnic Institute
CCRMA, Stanford University
CIRMMT, McGill University
Deep Listening Institute, Ltd.
KAIST

Incorporated Technology
Granular Expanded Instrument System (D. Van Nort)
Jacktrip (Stanford University)
Ultra-Video Conferencing (McGill University)
Virtual Microphone Control (McGill University, Rensselaer Polytechnic Institute)

Produced by Jonas Braasch, Chris Chafe, Pauline Oliveros & Bart Woodstrup
Tele-Colonization is the first release of Deep Listening Institute's Telematic Music Series.

DL-TMS/DD-1, ASCAP

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