

MUS1215 Discussion Notes

Spatial Music

Primary reference:

A History Of Spatial Music by Dr Richard Zvonar

http://cec.concordia.ca/econtact/Multichannel/spatial_music.html

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Spatial Antiphony

Basically compositions taking into account the spatial relations between musical performers within the performance space. An ancient provenance formalised in the Western musical tradition around the mid 16th century by Flemish composer Adrian Willaert in his 8-part Vespers (1550) performed at the Basilica San Marco in Venice featuring opposing organs and choirs. The work was specifically composed using 'dialog form' and echo effects.

In the modern period spatial compositions were developed by experimental composers such as Charles Ives, the Italian Futurist Luigi Russolo and Henry Brant amongst others. Brant's Antiphony I (1953) called for five spatially-separated orchestras. Other compositions used backstage musicians, circular sound stages surrounding the audience and so on.

Electroacoustic Surround Sound Performance

1. Radiodiffusion-Télévision Française (RTF) and Musique Concrete:

Post WW2 (late 40's early 50's) **Pierre Schaeffer** used multiple mono track tape decks routed to a 4-channel speaker system arranged in a tetrahedral configuration, with Left and Right, Back, and Overhead speakers. Signal routing and spatialization was controlled by a performer conducting within an arrangement of induction coils - the potentiomètre d'espace.

2. **John Cage's** Williams Mix (1952) used 8 mono tapes routed to 8 speakers distributed in equidistant locations around the auditorium.

3. **Karlheinz Stockhausen** influenced by his time at Schaeffer's RTF has spent his entire career composing for multitrack playback and was one of the first major composers to use early 4 track tape recording and true quadraphonic performance (Gesang der Jünglinge, 1956, Kontakte, 1960). His works also include the use of live performers amplified through spatially arranged speakers as well as live mixing to multiple channels.

Audiovisual Surround Environments

1. Vortex multimedia program at the Morrison Planetarium in San Francisco (1957-59) used planetarium lighting system coordinated with various audio works including Karlheinz Stockhausen, Vladimir Ussachevsky, Toru Takemitsu and Luciano Berio, and live mixed by a “rotary console” to 40 speakers.
2. Brussel’s World Fair (1958) – Philip’s Pavillion featured a full theatrical audiovisual soundstage using a 3 track tape composition by Edgard Varèse - Poème Electronique synchronized with the visual effects. The 3 tracks were distributed dynamically to 425 speakers, grouped in threes and fours, via an 11-channel sound system. Spatialization used a switching system controlled by a 15-track sprocketed tape that was programmed with 9 different "Sound Routes".
3. EXPO 70 in Osaka Japan featured a 12-channel tape composition by Iannis Xenakis played through 800 speakers situated around the audience, overhead, and under the seats. In a second venue Karlheinz Stockhausen and a group of 20 soloists performed in a blue steel spherical auditorium 28 meters in diameter holding an audience of 600. Stockhausen controlled the sound projection from a station in the center of the sphere, distributing sound in circular and spiral paths through a set of 55 loudspeakers arranged in seven rings from top to bottom of the sphere.
4. Multimedia environment HPSCHD by John Cage and Lejaren Hiller performed at the University of Illinois Urbana 1969 used seven harpsichord soloists and fifty one tape tracks of computer-synthesized harpsichord sounds all routed through 58 speaker channels producing a dense microtonal sound mass that played non-stop for five hours to an audience of 9,000. The accompanying visuals used 80 slide projectors and 7 film projectors displaying NASA imagery from 40 films and 5000 slides on overhead projection screens, each 100 by 40 feet, with a continuous 340-foot circular screen running around the perimeter.

Digital Technology

1. John Chowning a pioneer of digital FM synthesis and spatialization research including reverb and Doppler effects in quadraphonic compositions (Sabelith 1970).
2. Roger Reynolds composition Eclipse used digital editing and then cutting edge digital reverberation algorithms, was created as part of a collaborative multimedia work with artist Ed

Emshwiller and presented at the Guggenheim Museum in New York. The performance space was its huge central atrium and helical ramp. Emshwiller's imagery was projected on a series of screens while Reynolds' music sounded from seven speaker positions including the extreme top of the atrium. Digital reverb algorithms manipulated the surround stage while digital synthesis harmonized the vocals.

Multichannel Diffusion

Uses multi-channel recordings and multiple groups of different speaker types as instruments in themselves (as opposed to more traditional studio reproduction approach) and remixes works through the different speaker configurations.

1. Pierre Henry's work *L'Apocalypse de Jean* (1968) was performed in Montreal in 1999 and diffused through a speaker system with 24 full-range channels, plus 6 subwoofer channels, by his long-time assistant Nicolas Vérin. The source recording in this case was the commercial CD.

2. Birmingham ElectroAcoustic Sound Theatre (BEAST) uses up to thirty channels of loudspeakers, separately amplified and arranged in pairs, each pair having characteristics which make them appropriate for a particular position or function.

Spatial Music

From antiphony to diffusion the basic idea remains the same, breaking out of the audience-stage relation and distributing the performers/audio sources around the entire performance space, ie., surrounding the listener with sound from multiple sources. Advances in music technology have simply multiplied the possibilities for music composition in a multi-channel context.

Oceans of Sound Project

Spectrum Gallery, 2 October – Surround sound composition and installation/performance.

Tasks: Compose a 5.1 surround sound work for installation and DVD playback. Opening night performance should include live diffusion/spatialization of the groups recorded works.

This is an individual recording for a group collaboration so you will all need to coordinate your proposals and collaborate on the installation.

1. **Individual Proposal** – Write a 1 page (min) description of your proposed 5.1 composition. Include a references page listing your research. **Due 4/9/07** along with the Project 1 draft stereo recording of your proposed composition.

What – a literal description of your individual work as you envisage it.

How – describe the recording process and any commercial studio time, environmental recordings, performers etc. you might need in its production.

Why – a “composers notes” section for inclusion in the programme.

2. **Group Proposal** – how do we present these individual compositions in a gallery environment? You all know the Spectrum space so work together to present a collaborative description of both the diffusion/spatialization performance and its ongoing gallery installation. Possibilities include collaborations with WAAPA lighting crew, electronic video arts students and so on. I'll need a 1 page (min) draft concept for the group installation **due 18/9/07** along with the Project 2 diffusion/spatialization presentations. Split the workload between everyone involved, I only need the one group proposal.

Readings

A History Of Spatial Music

http://cec.concordia.ca/econtact/Multichannel/spatial_music.html

Surround Echoes from 1974

<http://www.stereosociety.com/Quadraphonics.html>

360 Degrees: Women In Sound

<http://www.liquidarchitecture.org.au/360.html>

Acousticity

<http://www.semiconductorfilms.com/root/acousticity/acousticity.htm>

All the Time in the World

<http://www.semiconductorfilms.com/root/attitw/ATTITW.htm>

The Sound of Microclimates

<http://www.semiconductorfilms.com/root/microclimates/microclimates.htm>

Optokinetic Reflex Live Surround Sound at Miami Art Central

<http://www.youtube.com/watch?v=1rx2IDH1vW4>

NYFA Quarterly - Surround Sound

http://www.nyfa.org/nyfa_quarterly.asp?type=2&qid=182&id=108&fid=6&sid=16

Surround Sound Gets Serious

http://transition.turbulence.org/networked_music_review/2007/07/11/surround-sound-gets-serious/