Project CONDOR

I propose a moving multi-channel audio experience implemented through robotic performance. This performance will consist of a group of computer controlled robotic (remote controlled) helicopters, each with a speaker attached to the frame. This performance will feature synchronized robotic helicopter choreography and spatialized audio. This project draws its fundamental motivation from sound spatialization experiments (sound in space), the DARPA desert race (robotic navigation and geographical computer mapping), boids flocking algorithm (movement simulation), and the fountains at the *Belagio* in Las Vegas (synchronized audio and visual presentation),

The core heli-unit for project CONDOR is the recently released *DragonFlyer* remote flying helicopter with a speaker attached to the center of the structure. This would create a spatially configurable "flock" of eight sound-producing helicopters. This flock would be controlled from a central CPU coordinating the position and sound of each member. A typical performance would consist of a twenty-to-thirty-minute routine of carefully synchronized sound and choreography featuring works by a variety of electro-acoustic composers.

The construction and design of project CONDOR is a broad-reaching interdisciplinary project. A staff consisting of (see staff list) electrical engineers, computer programmers, music technologists, choreographers, show designers, and composers has been assembled to design and execute the project over a twelve month period. Members of the staff include Northwestern graduate students, Northwestern staff, Northwestern alumni currently employed at Motorola, and Purdue alumni. Each of these

staff members brings a unique background to the project as well as an appetite for this type of interdisciplinary, highly collaborative project.

I envision performances for project CONDOR taking place in a gymnasium or a similarly large space. Once the design is complete, multiple repeat performances could easily be programmed, exponentially increasing exposure to this genre of new media art experience. Project CONDOR actively engages geographic positioning, flock (boids) modeling, robotic performance, multi-channel composition, video object following, and pure spectacle in contemporary trans-media artwork. Project CONDOR is a presentation of a unique intermedia work outside of the typical art paradigm, hopefully increasing the profile of this genre among the Northwestern population.

The sonic content and choreographic schemes will be designed by a collection of seasoned electro-acoustic music composers eager to engage in this unique performance opportunity. Each composer will be designing a work (between three and four minutes) for eight discrete channels of audio and the accompanying choreography. Some preliminary ideas for works include a tribute to the *Ride of the Valkürie* scene from *Apocalypse Now*, a work which expands upon synthesized bird calls, and a drone work that explores audio beating.

Project CONDOR is a project that explores sound sculpture, robotic performance, machine choreography, and dynamic spatial audio composition in a new and truly unique manner.

CONDOR
Core Staff

Grant Writing, Coordination, Max/MSP programming,
Casey Farina – D.M.A. Music Technology (current)

Music Technolgist
Scott Jeager (analogue specialist) – M.M. Music Technology (current) Northwestern
Theron Humiston – M.M. Music Technology (current) Northwestern

Computer Programming
Zachary Schneirov – Technical Support Consultant MMLC Northwestern

Engineering
James Diomede III – B.S. Electrical Engineering Northwestern University 2004

Support Staff
Music Technologists
David Etlinger
Jonothan Kirk

Composers
Brett Masteller
Rodrigo Cadiz
David Etlinger
Scott Jeager
Casey Farina
Theron Humiston
James Diomede III

Show Design Consultation
Antonio Hernandez

[Project CONDOR tentative schedule

Summer 2006:

- Purchase testing materials (only 1): heli-unit, DAC, Multiplexer, Microcontroller, speaker, battery, amplifier, FM transmitter, FM receiver, and crash kit.
- Purchase necessary Software: softVNS, Keil.
- Construct 3-d model system in Max/MSP of the trajectory correction system.
- Construct a choreography writing environment in Max/MSP to send to the composers and choreographers.
- Begin writing the code in Keil for the microcontroller interface.
- Investigate how to decrease the noise level of the heli-units.
- **GOAL: successfully send trajectory information through the computer system to the heli-unit in flight.**

Fall 2006

- Complete choreography software and send to composers/choreographers.
- Purchase the remaining heli-units (7) and begin custom modifications to transmit on 8 discrete FM channels.
- Begin the process of mapping calculated trajectory information onto real world trajectories.
- Begin simultaneous test flights and determine spacing, wake, and navigation restrictions.
- Begin testing the motion tracking software and determine the necessary lighting conditions for accurate locating.
- **GOAL: multi heli-unit test flight with location tracking.**

Winter 2007

- Complete the process of mapping calculated trajectory information onto real world trajectories.
- Repeated test flights in the performance space.
- Receive completed choreographies and compositions from collaborators.
- Test transmitting audio to heli-units while in flight.
- **Goal: Simultaneous test flights with computer controlled navigation and streaming audio.**

Spring 2007

- Continue to diagnose and fix problems.
- Work out the order, timing, and logistics of the performance.
- Continue to fine-tune the performance for maximum general effect.
- **GOAL: several weekends of performance for the public – Tentative location: Northwestern Gym**