



## Introduction

- Pre-amble ...
- Academic Supervisor Dr Bob Gilmore
- Artistic Supervisor David Dunn

"In recent years there has been what I consider to be a profound change in the world of music through the emergence of a number of new genres of musical form and research. Amongst these is a new research area tentatively termed **Bio-musicology** that attempts to understand the biological origins of music. A somewhat older research area that has come to be known as **Acoustic Ecology**, aims to understand the integrative role that sound has in our natural and urban environments. There is the whole genre called **Sound Art** that attempts to define acoustically based art forms that do not arise from a musical paradigm per se, such as text-sound composition, radio art, gallery type installation sound works, site-specific sound installations and performances, and soundscape recording. Tangential to these new forms, but informing them and being informed by them in essential ways, are two areas of science: **Bioacoustics** which studies the sounds made by non-human living organisms and **Scientific Auralization**, the sonic equivalent to computer visualization techniques through which streams of data are made more direct and experiential to researchers and the general public."

from David Dunn, Santa Fe Institute Public Lecture, 15 August 2001

## Overview

- Introduction
- Leads from Sun Run Sun
- Strategies of Research
- Experiments in Sound
- Position Statement
- Inspirations
- Future Work

## Leads from Sun Run Sun:

### What are the key points for further research?

- Sonification of inaudible data
- Multiple formats of presentation
- Issues of audience/performer/composer roles
- Environment and technology - techno-intuition
- Landscape and outdoor sound
- Non-human ecologies using sound

Sun Run Sun investigates the split between the embodied experience of location and the calculated data of position. A series of portable personal 'instruments', the Satellite Sounders, transform satellite data directly into a sonic composition. This composition constantly varies in response to the changing location of the participant as they move through their physical environment. The participant/navigator's experience of their own locational shifts are augmented by corresponding shifts in the electronic soundscape, as it is calculated/performed in real-time and played via headphones. Sun Run Sun explores the individual experience of current location technologies through a personal experience of sound. It seeks to (re)establish a sense of personal connectedness to one's environment, and to (re)negotiate this through an investigation into old, new, future and animal navigation using sound. (April 2008)

### Sonification of inaudible data

Translation of data into sound for scientific purposes  
Good for detecting changes and patterns over time  
Involves interpretation and composer's choice

### Multiple formats of presentation

Performance, installation, instrument, lecture  
The same content given different forms activates different experiences  
These formats are culturally/institutionally imposed  
Relation of content to form is explored here

### Audience/performer/composer roles

Performance - "I am your navigator"  
Installation - visitor immersed in sounds  
Instrument/walk - audience is performer

### Environment and technology - Techno-Intuition

Relate to environment through the body, cognition and technologies  
To be absorbed by intuition not substitute for it

### Landscape and sound

The map and the territory  
Land art, sound art, acoustic ecology  
Scorescapes - scores, space and music

### Non-human ecologies using sound

Situate human ecology within other ecologies of living beings and information  
Bat navigation - ultrasound  
Cetacean communication (whales, dolphins) - infrasound  
Insect ecologies

## Strategies and Processes

- Discussion with experts
- Conference visits
- Performances
- Scorescapes workshop
- Reading research
- DocArtes themes
- Website development
- Composition sketches and pieces

### Discussion with experts

David Dunn  
Bob Gilmore  
Barbara Held

### Conference visits

Picnic 08, Amsterdam  
Resonance, Barcelona  
Walled Garden, Amsterdam  
Steim Jamboree, Amsterdam

### Performances

Picnic 08, Westergasfabriek, Amsterdam  
Re:visie, Theater Kikker, Utrecht  
Luster Salon, Korzo, Den Haag

### Scorescapes workshop

KHM Academy of Media Arts Cologne

### Reading research

composers interviews - Robert Ashley  
theories of mind and ecology - Gregory Bateson  
land art - Lucy Lippard

### DocArtes themes

intermedia, hermeneutics

### Website development

### Composition sketches and pieces

Jackdaw In-between - soundscape  
Satellite Sounding - language and sonification

## Website development:

framework for collection and dissemination and feedback of ideas

expandable during the research period

acts as an archive of research and development

<http://www.scorescapes.net>

## Scorescapes Workshop no. I

### Academy of Media Arts, Cologne (KHM)

Re:active Platform, Multimedia and Performance Group

4 November 2008

#### Goals:

- To develop an understanding of the relationship between scores, sound, environment and performance.
- To use this concept as the framework for proposing a new work whether intervention, performance or installation.
- To develop a working Scorescape that translates navigation data into sonic and/or visual media for a performance or installation.

<http://www.scorescapes.net/page/2/>

## Walled Garden:

### Working conference on Computer Networks

- Built small technical units that send and receive patterns of information
- Individual parameters can be changed to influence the behavior of the group
- Small ecologies, how to program emergent behaviors in systems
- Applying this as a formal principle for composition

<http://www.scorescapen.net/2008/11/24/notes-on-walled-garden-flwr-pwr/>

### Experiments in Sound

- Jackdaw In-between
- Satellite Sounding

## Jackdaw In-Between.mp3

A jackdaw (the bird) has flown onto my roof and is making a series of complex sounds that appear to articulate something I can only try to understand. Its inflections of tone and timbre that irresistibly seem like language have drawn my attention and I have begun recording the sound. In doing so the jackdaw's voice has made me shift my focus and listen to the environmental sounds outside my room in Amsterdam. My internal space – my concentration on the thoughts – is located in my physical room that is remarkably quiet, the only sound being my computer keyboard whilst I type this. The voice of the Jackdaw comes from just outside my space, I can't see it, only hear as it sits and sounds the in-between space, so close as to be almost in the room. The sounds of Amsterdam then become clearer and present, although distant. The sound of the jackdaw is articulating an in-between, the intermedial, a moving back and forth between the internal, inside, to outside. (October 2008)

## Why make Satellite Sounding?

It seems as if the Satellite Sounders are catalysts for conversation and provoking the imagination, to the point that these personal encounters with participants may be the primary contribution of the work. Is this where the value of the music lies?

(thoughts during a conversation with David Dunn October 2008)

If so, can I make a sound document that conveys both the sonic aspects of the Satellite Sounders, and the kinds of reactions people have to the experience?

## Satellite Sounding combines 2 kinds of sound:

### 1. Sonification of satellite data

difference and similarity in locations around the world

longitude and latitude will be different

moving satellites could in theory be the same

### 2. Reactions of participants to experiencing the Satellite Sounders

meaning of tone of voice and language

## How did these 2 kinds of sound develop into Satellite Sounding?

May - July Recordings of Satellite Sounders in Genova, Los Angeles, Singapore, at sea

August Editing of "4 places" at STEIM  
context left out but adding environmental sounds no solution

September Satellite Sounders exhibited during Picnic08 Conference Amsterdam  
making sound recordings of reactions and conversations with participants

September Performance of Sun Run Sun, at Re:Visie, De Kikker, Utrecht  
combining sounds and voice recordings

October Editing of conversations  
reducing hours of recordings down to minutes  
analysis of conversations - questions, explanations, reactions and imaginations  
identifying only the reactions and imaginations  
reading Gregory Bateson on "relationship" and proto-linguistic communication in mammals

November Combining 4 places and edited voice recordings into one composition

December Presentation of Satellite Sounding, Korzo, Den Haag

## Language, Music, Communication and Meaning

Compositional issues of using spoken language in musical works:

- What are the different levels of meaning of abstract musical structures and communication with spoken word?
- What are the different sonic qualities of sound and speech?
- Are there similarities between certain aspects of language and music?

Examples activating the spaces between language and music:

- Brandon LaBelle "Language Games" performance at DNK Amsterdam
- "Speaking Out Loud" exhibition at NIMk Amsterdam
- Hermeneutics texts on music, meaning and interpretation
- Gregory Bateson on Cetacean communication through sounds

**Gregory Bateson** *Steps to an Ecology of Mind* (1972 Ballantine Books, New York)

Notes on "Problems in Cetacean and other Mammalian Communication" (first published 1966, written while working for John Lilly and his dolphin centre in the Virgin Islands. pp 364 - 378)

Part of the problem of understanding Cetacean communication, mammals such as Dolphins and their sound production, is the difficulty of us as humans approaching communication that may have completely different goals and importance. Bateson describes the predominance of communication of *relationship* (love, hate, dependency etc) in non-human / non-linguistic mammals, where there is no need for a language of data (humans have hands and manipulate objects and language is built out of this ability and necessity). The communication of relationship in humans is less explicit in language but can be found in gesture - proto-linguistic communication - common to all mammals.



## Position Statement

- The composer uses sound to articulate relationship to environment
- Situating our ecology, sounding the inaudible

## The Composer uses Sound to Articulate Relationship with Environment.

Composers engaging with the mental, physical, collaborative and environmental processes of music making, embody concerns that are recurring in music and sound art today. The use of technologies to generate, simulate and sonify sounds in the environment is also pointing beyond issues of performance practice and instrument design. The environment? Humans are part of complex interconnected ecosystems in constant flux. The composer? Organising sound and making audible the inaudible, can help articulate these relationships through music rather than human language.

## Situating our ecology, sounding the inaudible

The now urgent questions of the human contribution to the survival, evolution and destruction of the environment, are forcing us to confront our situation within a complex ecosystem. Moving away from an anthropocentric perspective makes us realize that our experience of sound, our music and our language is limited to part of the sonic spectrum. For example, many communicative sounds of animal species exist outside the confined bandwidth of human hearing. However, many human technologies produce sounds inaudible to us, whether infrasonic or ultrasonic, effecting a kind of sonic imperialism. The world of sound is far more expansive than the human physiological limitation of hearing and as listeners and producers of sound it must no longer stay beyond our interest.

## Inspirations

- Alvin Lucier
- David Dunn
- Pauline Oliveros
- Gregory Bateson

# Alvin Lucier

**Music for Solo Performer 1965**  
for enormously amplified brain waves and percussion

**Quasimodo the Great Lover 1970**  
for any person who wishes to send sounds over long distances through air, water, ice, metal, stone, or any other sound-carrying medium, using the sounds to capture and carry to listeners far away the acoustic characteristics of the environment through which they travel

**Bird and Person Dying 1975**  
for performer with microphones, amplifiers, loudspeakers and electronic sound producing objects

**“Landscape with Alvin Lucier: With and without purpose” : excerpts from the interview by Robert Ashley in his book Music with Roots in the Aether** (first text edition 2000 MusikTexte Cologne, but made for television 1975?)

When you write it's in two dimensions, and sound is not two-dimensional ... but most of the music we know is conceived on the page, two dimensionally. Okay? Now if I'm not thinking about that and if I'm not composing on the page and I really love sound, I begin to hear it as it is, which is a three-dimensional action.

**See, I don't think of technology as technology. I think of it as a landscape. ...**

Yes, the whole physical quality of this sport [fly-fishing] ... The loops, the motion, the physical motion and the laws of wind resistance. ... when I do this hour after hour it sharpens my senses. You know, the standing wave piece [Still and Moving Lines of Silence in Families of Hyperbolas, 1973/74] is exactly this piece here [fly-fishing]. It's exactly what you see when you're on a stream, or on a pond. You know the first picture about the nature of sound in those acoustical books is a pebble in a pond. They show the photograph of how the surface of the pond radiates outward when you put in a pebble. And if you drop another one in and those waves interfere with each other, you have exactly this kind of thing. ... The loops I make are never the same, but the action is. You try to make it the same but each loop is slightly different.... you can see the way the line falls is always slightly different and you can pay attention to that ... The change of light, the change of the volume in the stream, the way sound diffracts around the rock.

*Have you ever noticed, at the moment when you can identify that you're creating something, that previous to that, you were out of balance or you were sick?*

.. It's [composition] like an activity without a purpose - with and without a purpose

# David Dunn

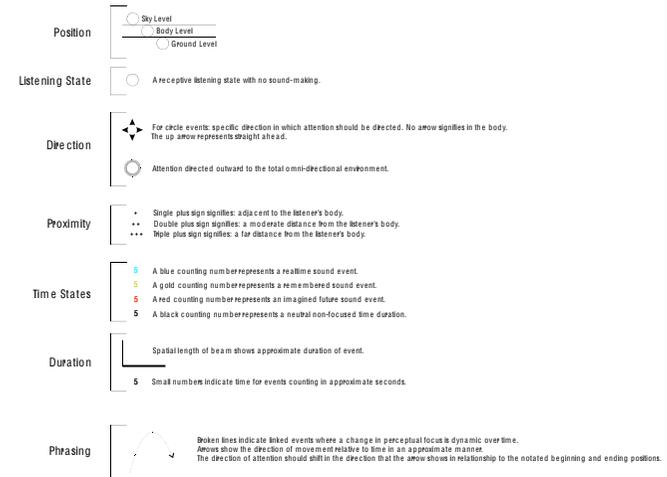
**Mimus Polyglottos 1976**  
(1976): interspecies communication research with Mockingbirds.

**Entertainments I 1984**  
(1984): speaking voice and electroacoustic transforms of the sounds of a specific location in the Cuyamaca Mountains, CA.

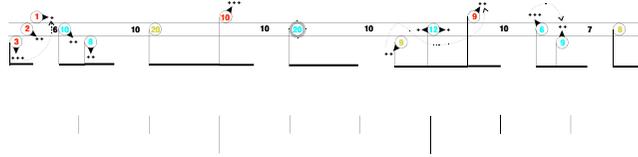
**Chaos and the Emergent Mind of the Pond 1991**  
audio collage of underwater insect recordings for 2-channel playback.

**Purposeful Listening in Complex States of Time 1997-98**  
20 compositions for solo listener.

## NOTATION



1.



Pauline Oliveros

Duet with Dog,  
Barcelona July 2008

Gregory Bateson

distributed mind  
emergent behaviors  
systems theory and cybernetics  
networked environments  
ecologies

Future work

- Bat piece - ultrasound as sculpture
- Cetaceans - sound levels and sonar
- Sonification of GPS sailing data
- Sonic Insects - emergent behavior
- Recording techniques
- Sonification techniques
- Voice and language with sound
- Instrumentalist (percussion)

Bats navigate using ultrasonic pulses detecting echo  
Bats can detect with great precision at high speed

This is a precision the military cannot yet achieve  
If it was possible they could detect the shape of an object by ultrasound

In Bats I will make sculptures out of ultrasound signals  
making shapes of invisible imaginaries

## Bats

Bat-detector microphone that folds down the signal into human  
audible range.

FabLab Amsterdam rapid-prototyping computers and tools to  
make complex three dimensional shapes from computer data.

Thomas Nagel "What is it Like to be a Bat?"

## Sail Training - Techno-Intuition

Collecting GPS tracks from boats training against each other for racing  
Sonifying 2 or more tracks makes audible the subtle differences in speed and direction

