



## ***Portable Audible Ecosystem***

### **Portable Installation for Stereo (XY) Audio Input & Mono Electronics**

Presented on April 23rd, 2025 for Site-Responsive Sonic Art (AME 598) class

Documentation:  Portable Audible Ecosystem Demonstration

Source Code: [TommyMcPhee/portableAudibleEcosystem](https://github.com/TommyMcPhee/portableAudibleEcosystem)

Paper:  Portable Audible Ecosystem.pdf

## ***Remote Interaction***

### **For Infrared Remotes, Stereo Electronics and Video**

Installed at the ASU MIX (Media and Immersive EXperiences) Center from 1-5 pm on March 29th, 2024, as part of the third annual MIXeversery event celebrating the venue

Source Code (C++/GLSL/OpenFrameworks):

<https://github.com/TommyMcPhee/remoteInteraction>

## ***Remote Access***

### **For Infrared Remotes, Stereo Electronics and Video**

Premiered at the Arizona State University Composition Department Recital in the Katzin Concert Hall (located in Tempe, AZ) in February 2025.

Performance Recording:

[https://www.youtube.com/live/-gMwjn\\_2OR4?si=AcCDBKfRalg4\\_6a-&t=578](https://www.youtube.com/live/-gMwjn_2OR4?si=AcCDBKfRalg4_6a-&t=578)

Source Code (C++/GLSL/OpenFrameworks):

<https://github.com/TommyMcPhee/remoteAccess>

## ***Live Set at the Super Bloom Ambient Festival (presented by Desert Drone)***

Performed in the Kiva Lecture Hall at the Arizona State University West Valley campus (located in Glendale, AZ) in January 2025, for improvised stereo electronics and video

Performance Recording: [SuperBloom Ambient Drone Performance \(1/18/2025\)](https://www.youtube.com/watch?v=SuperBloomAmbientDronePerformance(1/18/2025))

Instrument Source Code (C++/GLSL/OpenFrameworks):

<https://github.com/TommyMcPhee/ambientDrone>


## ***Study for Strings***

**For any number and combination of violins, violas, cellos, and double basses**

Performed at the Borromeo String Quartet Residency Showcase concert (Concert #2 on Friday, November 17th, 2024) in the Katzin Concert Hall (located in Tempe, AZ)

Performance Recording:

<https://www.youtube.com/live/7-qKsVfLRXU?si=qJVm2WLre9ii9JHP&t=2625>

Score:  Study for Strings Score.pdf

Composer's Notes: This work allowed me to explore composition for partially undefined instrumentation, in which I developed a partially indeterminate spectralism-influenced piece exploring the timbral possibilities of conventional western string instruments.

### ***Projection Cube*, for stereo real-time generative fixed media**

Premiered at the Arizona State University Composition Department Recital in the Katzin Concert Hall (located in Tempe, AZ) in November 2024

Studio Renditions (two separate possible iterations):

 projectionCubeRecordingSample.wav  projectionCubeRecordingSampleB.wav

Performance (secondary recording):

<https://www.youtube.com/live/2NzeRJYnrg?si=l3MrIaQjDKq9O-uj&t=3093>

Source Code to Render Piece (C++/OpenFrameworks):

<https://github.com/TommyMcPhee/projectionCube>

Program Notes:

*Projection Cube* (2024) applies serialist logic and techniques to a generative electronic context. While the work is principally inspired by the century-old practice of ordering musical notes in a nonrepeating fashion, these procedures are revitalized in a manner uniquely possible with 21st-century technology.

Each performance of the work begins with the computation of a specific order and permutations of eight envelope gestures which control the pitches and dynamics heard from each speaker. This results in radically distinct iterations of the work with each listening, allowing listeners to experience the underlying generative processes differently each time the work is rendered.


Fractal-esque structures in which slower gestures control the specific rates of faster gestures enrich the perceived sonic textures and musical ideas. Strict control over the dimensionality of these structures reveals the organizing principles of the piece from a discrete perspective, contrasting the omnipresent continuity of the gestural syntax.

The title “projection cube” approximates the structural nature of the piece centered around a series of eight elements (represented by the cube’s vertices) which are transformed into four different series (represented by each face of the cube). Each generation of the piece is a “projection” of its underlying algorithm into the sonic world.

Composer’s Notes: This work allowed me to explore the possibilities of serialism applied to an electronic music context. A unique row of eight envelopes exhibiting specific properties is generated in real-time for each iteration of the piece, which determine sound synthesis parameters throughout. I feel that this work may be my strongest audio-only piece to date, if not my strongest fixed media work altogether, as it explores a wide variety of sonic terrain within a short time while retaining substantial cohesion throughout. I also like that the generative aspect of the work makes each rendition extremely unique, rather than just having a subtle effect on the performance.

***Sub-GHz Sonification System*, digital instrument created in Max/MSP**  
**For use with the Flipper Zero portable multi-tool device and MIDI CC (optional)**  
Instrument privately demonstrated in May 2024 via online presentation in AME 511


Recording of demonstration:

 SubGHz Sonification System with Flipper Zero (Max/MSP)

Max Patch: <https://github.com/TommyMcPhee/SubGHzSonificationSystem>


Composer’s Notes: This instrument allows a performer to sonify pre-recorded Sub-GHz radio frequency files made with the Flipper Zero using MIDI and/or GUI controls. This allows them to artistically navigate the distinctions between these recordings. In the demonstration, I illustrate the sounds that can be heard from recordings of an LED radio remote control, as well as crowdsourced signals used to trigger convenience store customer service announcements. The work was made as my final project for AME 511.


***Study for Sinusoidal Spectra*, for stereo fixed media**  
Privately premiered in April 2024 via online presentation in MTC 591: Spectralism

Recording:  Study for Sinusoidal Spectra

Source Code Used to Render Piece (C++):

<https://github.com/TommyMcPhee/StudyForSinusoidalSpectra/tree/main>

Project Slideshow:  Study for Sinusoidal Spectra.pptx


Analysis Paper:  Spectral Study Final Project.pdf

Composer's Notes: This work was created as a final project for MTC 591: Spectralism. See the attached slideshow and paper for more information about the theoretical concerns of this fixed media work, as well as the technical processes used within it.

### **Scape, for ambisonic generative fixed media**

Privately premiered in April 2024 in the fifth order ambisonic dome in the school of Media Arts and Engineering at Arizona State University (located in Tempe, AZ)

Binaural Recording:  ScapeBinauralRecording.wav

Analysis Paper:  Scape Acousmatic Composition Paper.pdf

Composer's Notes: This work was created as a final project in my Acousmatic Composition class. It is a generative work for performance in the ambisonic DAME. Generative procedures were used to spatialize sound throughout the dome, which mostly consisted of fixed media samples. A few of these samples were played back aleatorically using a sampler. The work connected the theoretical frameworks taught in the class concerning space, source surrogacy, and the listener's expectations, as well as spectral processing using SPEAR and the Kyma system to reimagine the very source-bonded sounds of southern trap music in a radically different musical context.

### **Automorphism, for fixed video, soprano, flute and alto saxophone**

Premiered in April 2024 by the Fonema Consort Ensemble-in-Residence in the Organ Hall at Arizona State University (located in Tempe, AZ)

Concert recording: <https://youtu.be/x8Zci3C6zRM>

Score:

[https://drive.google.com/file/d/1nhieK90lfWWXJd7TscR\\_5bfqVxqkmQOo/view?usp=drive\\_link](https://drive.google.com/file/d/1nhieK90lfWWXJd7TscR_5bfqVxqkmQOo/view?usp=drive_link)

Source code to Render Video: <https://github.com/TommyMcPhee/automorphismVideo>

Program Note: *Automorphism* explores the integration of sight and sound, unifying a fixed work of video art with performance practices in acoustic music. The video serves as both an aesthetic framework for the listener and a score for the performers as they sonify the onscreen animations. This piece explores two conceptually similar yet inverse approaches for correlating colors and spatial positions with musical pitches as well as performance directives pertaining to dynamics, timbre, and vibrato. Mathematically, an automorphism is an isomorphism of a set of objects onto itself, which acts as a metaphor for the interpolation that occurs between these two distinct approaches for musically interpreting the video. *Automorphism* leverages the masterful musicianship of

its performers, as well as their humanistic perceptions of the computer-generated video art to create a uniquely “live” audiovisual experience. By demanding performers exert a robust role over the musical decision-making process (rather than deferring to the pre-calculated decisions of traditional score notation), *Automorphism* liberates the musical abilities of its performers, allowing the audience to hear their intricately creative ideas and interpretations.

Composer’s Note: The intention of this piece was to explore a framework for correlating video with the conventional dodecaphonic frameworks of western classical music. Performers responded to the video, which was created with the system’s parameters in mind, with what they perceived as the most pertinent aspects worth highlighting in conjunction with a strict set of guidelines. The work ultimately exhibited behaviors such as those seen in the new complexity movement, some of which was intended prior to working with the ensemble, due to the density of instructions and limitations of rehearsal time. However, the performer’s synthesis of these complicated procedures with their own rich experience resulted in a very compelling partially improvised rendition which showcased many of the intended musical correlations. The title is derived from mathematics, referring to an isomorphism of an object to itself. This informed the composition of the visual component, which I then sonified using the rich performance practice traditions of the three performers in the *Fonema Consort* ensemble.

### **Zero Gravity, for generative video and string orchestra**

Premiered in March 2024 by the Arizona State University Symphony Orchestra as part of the Composer-in-Residence program in the Organ Hall (located in Tempe, AZ)

Concert Recording: [https://youtu.be/L7-S\\_heOCpl](https://youtu.be/L7-S_heOCpl)

Score:

[https://drive.google.com/file/d/14LqIThU2aXEARF\\_iWhm2oFk45qdd2bpS/view?usp=drive\\_link](https://drive.google.com/file/d/14LqIThU2aXEARF_iWhm2oFk45qdd2bpS/view?usp=drive_link)

Source Code to Render Video (C++/GLSL/OpenFrameworks):

[TommyMcPhee/zeroGravity: Visuals for orchestra composition \(github.com\)](https://github.com/TommyMcPhee/zeroGravity_Visuals_for_orchestra_composition)

### **Discretion, for electronics and video**

4-channel fixed media version premiered in April 2024 at the Arizona State University Composition Department Recital in the Katzin Concert Hall (located in Tempe, AZ)

12-channel fixed media version premiered in March 2024 at the SEAMUS Soundscapes of Inner Peace conference (hosted by New York University) in New York, NY

Original digital instrument privately presented in December 2023 in MTC 590: Sound Art

Performance of Dodecaphonic Version (secondary stereo recording):

<https://youtu.be/jRmw3l2Yn4o>

Performance of Quadraphonic Version (secondary stereo recording):

<https://www.youtube.com/live/-KAQOEVkc6c?si=yztWbjFGbXlxad6q&t=699>

Brief improvisation using the original digital instrument:

<https://www.youtube.com/watch?v=DNxAhaTlyLo>

Source code:

<https://github.com/TommyMcPhee/discretion>

<https://github.com/TommyMcPhee/DiscretionQuadraphonic>

<https://github.com/TommyMcPhee/DiscretionFixedMedia>

Composer's Notes: This work originally began as an improvisation with an original digital instrument, and evolved into a static fixed media work for four or twelve channels. It tries to aesthetically capture the implications of discretion, as seen within the technical process of digitization. As such, the work explores Stockhausen's ideas of "composition with pulses", both technically and conceptually generating almost all aspects of form and material from the interactions of binary pulse oscillators. This is mediated through a parametric framework inclusive of some 'linear' approaches such as incrementation.

### ***Collective Perception, for fixed generative stereo electronics and video***

Premiered in February 2024 at the Arizona State University Composition Department Recital in the Katzin Concert Hall (located in Tempe, AZ)

Studio Rendition: [https://www.youtube.com/watch?v=DQwA4UV\\_Jrs](https://www.youtube.com/watch?v=DQwA4UV_Jrs)

Performance (secondary recording):

<https://www.youtube.com/live/LtEResoWD5w?si=BrHRTHzFEj7fJ5ml&t=1465>

Program source code (C++/GLSL/OpenFrameworks):


<https://github.com/TommyMcPhee/collectivePerception>


Composer's Notes: While I don't consider this piece itself to be aesthetically or stylistically revolutionary relative to my musical ideas at the time, this was the first time I had applied many of those ideas to a (generative) fixed-media composition format. This was only my second audiovisual fixed-media work, and my first to utilize OpenFrameworks for audio as well as video. I have found this integrated programming approach strongly tightens my musical ideas, and in particular this work allowed me to integrate audio and video very seamlessly through parametric design. The premise of the work was to leverage the specific nuances of the audience's position throughout the concert hall to create a unique but complementary experience for everyone. I leveraged, rather than avoided the inevitability of each listener perceiving the work differently.

### ***Orbital Observation, for marimba and bass clarinet***

Premiered by the Transient Canvas ensemble in February 2024 in the Katzin Concert Hall at Arizona State University (located in Tempe, AZ)

Score video of recording:

 [Orbital Observation- Score Video \(Performed by Transient Canvas\)](#)

Score:  Tommy McPhee - Orbital Observation (updated).pdf

Precomposition work:

[https://drive.google.com/file/d/1OkgrX7qL8kOMjlOEjciT7zdXoFzNED6u/view?usp=drive\\_link](https://drive.google.com/file/d/1OkgrX7qL8kOMjlOEjciT7zdXoFzNED6u/view?usp=drive_link)

Composer's Notes: This work allowed me to explore applying fractal-esque orbital behavior to a post-tonal writing context. I simulated two "oscillators" exhibiting feedback frequency modulation behavior on each other while they cycled through a series of discrete values (notes, rhythms, etc), then used this data to organize the score. I think this was successful in creating a very interesting sonification of this chaotic effect, intertwining the seemingly unique syntax and style.