Herberger Institute for Design and the Arts
Arizona State University

PORTFOLIO OF WORKS

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***Remote* Access (2025),** for Infrared Remotes, Stereo Electronics and Video. ~5'

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

Performance Recording: https://www.youtube.com/live/-gMwjn_2OR4?si=AcCDBKfRalg4_6a-&t=578
Source Code (C++/GLSL/OpenFrameworks): https://github.com/TommyMcPhee/remoteAccess

Remote Access explores controller abstraction, allowing a variety of found devices to be utilized as instruments for sonification and visualization. The strucure of the piece creatively inspires continued interest among participants and audience members, while shaping the formal structure of the performance through careful tracking of the quantities of infrared commands, addresses, and pulse lengths sent. This serves not only as a means of shaping interaction, but functions to clearly sonify the discrete nature of infrared commands, as well as thier ecological proliferation throughout consumer electronics in ways that make a few data values much more prevelant than others. A stochastic negative correlation between the number of times an address or command was recieved gives more thoughtful sonic and visual consideration to signals chosen carefully from unique remotes.

Sound design principally makes infrared signals sound as distinct as possible from one another within the concert setting of the work, to mediate the challenge of facilitating percievedly meaningful interaction amongst multiple participants sending signals simeltaneously. The video component adds an additional sensory dimension to these previously invisible signals, increasing the ability for participants to dilineate thier interactions. The artistic syntax of the piece adds transparency to previously invisible signals through associative metaphor (pulse counts corrosponding to envelope duration, command bits modulating thier addresses, discretion of sounds and sonic changes reminiscent of binary databits) as well as care to seperate sounds spectrally and spatially as much as possible. This work also demonstrates the capability for algorithmic techniques to mediate tight computational constraints, as a single portable computer is used for synthesizing sound and video from real-time infrared signals.

***Projection Cube* (2024),** for stereo real-time generative fixed media. 3'

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

Studio Renditions (two separate possible iterations):
https://drive.google.com/file/d/1f_IYAfmRJQ3jnCI1zrvLIxExptyAodqd/view?usp=drive_link
https://drive.google.com/file/d/1H8XcINhKKKFDpH_oEP6P3w2Yv0V74-ut/view?usp=drive_link
Performance (secondary recording): https://www.youtube.com/live/2NzeRJIYnrg?si=I3MrIaQjDKq9O-uj&t=3093
Source Code to Render Piece (C++/OpenFrameworks): https://github.com/TommyMcPhee/projectionCube

Projection Cube applies the notion of abstraction to the process of compositional and formal organization, generating a unique row of eight envelopes and accompanying permutations in real-time with each rendition of the piece. 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. Self-similar 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

side of a square). Each generation of the piece is a “projection” of its underlying algorithm into the sonic world. In addition to offering serialism a renewed perspective, *Projection Cube* reflects the ability for process composition to render novel aesthetic results. Almost all composition for this piece was done at an algorithmic level, as it seeks to distil the concept of serialism itself by creating a dense work supported by the similarities shared by generative iterations. This suggests the critical role algorithmic techniques can play in creating context-flexible artistic works.

***Zero Gravity* (2024),** for generative video and string orchestra. ~11’

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

Concert Recording: https://youtu.be/L7-S_heOCpI
Score: https://drive.google.com/file/d/14LqIThU2aXEARF_iWhm2oFk45qdd2bpS/view?usp=drive_link
Source Code to Render Video (C++/GLSL/OpenFrameworks): https://github.com/TommyMcPhee/zeroGravity

An experimental piece for string orchestra and generative video, *Zero Gravity* liberates the audience and performers from the tonal and formal “gravities” so common in Western music. The limited aleatoric and multimedia format of the piece allow an audiovisual experience free of the hierarchies latent within the narrative and syntactical cliches of the orchestral repertoire. This is accomplished through generative visuals, which loosen the traditionally rigorous perception of time demanded by audio as a medium. The subjective nature of individual and group interpretation utilizes the unique experiences of the orchestra within the piece. Since the visuals are distinct in every rehearsal/performance, performers can only learn strategies for execution rather than a specific progression of musical expressions. This approach assists the audience, performers, and the piece in avoiding the destructive “gravity” of temporal narrativity, requiring them to instead tailor the work to its specific performance context.

***Collective Perception* (2024),** for fixed generative stereo electronics and video. 3’

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

Studio Rendition: https://www.youtube.com/watch?v=DQwA4UV_Jrs
Performance (secondary recording): https://www.youtube.com/live/LtEResoWD5w?si=BrHRTHzFEj7fJ5mI&t=1465
Program source code (C++/GLSL/OpenFrameworks): https://github.com/TommyMcPhee/collectivePerception

Collective Perception leverages the unique qualities of a concert listening environment as a generative impetus for novel modes of experience, rather than a flaw to correct. I utilized the stereo electronics and video medium to create a sonic environment that was unique to each viewing and listening position in the room, unified only by an underlying algorithmic logic. This allowed each audience member’s experience with the work to synergize into a *Collective Perception* with meaning beyond that of the initial parts, and furthermore adding an additional dimension to the self-similar syntax and organization of the piece.

This work exhibits close correlations between audio and video, using a combination of parallel audiovisual correlations in conjunction with a hierarchical fractal-based synthesis framework. My previous explorations into auditory fractals inspired much of the sound synthesis, as I applied a linear frequency sweep to three oscillators spaced an equal distance apart (which would then be perceived as converging closer in pitch due to our logarithmic perception of frequency). I embellished this process with carefully-tuned modulatory algorithms which elaborated on the structure of the piece while coloring the sounds. The piece was performed on the house speakers, and is furthermore designed to be relatively portable across playback environments, leveraging the unique sound of each concert hall and stereo system within performance. The algorithmic construction of this piece, informed principally by the physical properties of the waveforms themselves in a somewhat post-spectralist sense, further compliments my artistic exploration into the unification of multiple performance and listening contexts within a cohesive work.