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Thanks to the Ground Beneath My Feet: A Field Guide for Architectural Design Through the Lens of Ritual Sonic Acts

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Thanks to the ground beneath my feet

A field guide for architectural design through the lens of ritual sonic acts

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Rhode Island School of Design

BArch
May 2026

Advisor: Stephanie Choi

Femi is a Providence, RI-based architect and sound artist from New York working with handmade electronic and acoustic instruments to examine the cybernetics of gender, race, and culture through site-specific ritual performance. His work explores the intersections of acousmatics and cultural anthropology through architectural design as a radical and experimental practice. He is particularly interested in generative systems, of sound technology. Femi approaches architecture as a political intervention enacted through vibration. 2018, he has performed solo and collaborative Sonic Acts Biennial (2026, NL), Waterworks Festival (2024, MA), and Ende Tymes (2022, NY), among others.

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Chapter 1 ~ Introduction and Preface

Thanks to the ground
beneath my feet explores sound
as a new media lens for the design of
architecture, using speaker design and acous-
tic intervention as a means for creating immersive
ritual spaces. Drawing from sound system culture,
Indigenous sonic practices, sound art and afrofuturism
it engages with resonance and amplification as tools for
ritual space-making while recognizing the ground as a
carrier of layered Black and Indigenous histories. Sonic ap-
ertures and openings into the earth become methods for
activating these histories as living material for design.
Operating between excavation and landscape, the
work positions architecture as an instrument tuned
to the ground, asking how sound can reconnect
people to place, history, and futures em-
bedded in the earth.

Introduction



Field kit mock up book, 2026

This book is a collection of tools, design, references, experiments, and reflections assembled to explore architectural design through the lens of sound. This field kit excavates sonic practices, technical systems, instrument design, and poetry to uproot conversations through sound design and listening as a new media cybernetic practice, proposing sound as a primary factor in the program of spaces and cosmic experience.

Architecture has a long, privileged history. The discipline's methods of representation are dominated by white males' contribution of technical plans, sections and renderings. Sound is one of the most powerful ways humans understand and interact with spaces and should be used as spatial information to inform these visual representations of space. Sound brings people together, reveals boundaries, protests, fights, serenades, and situates bodies. It operates in the now and on multiple timelines of existence. It has its own identity and is embedded astrally across cultures and planets, even when silent. It's completely physical, a part of the earth and the human body, as visual as it is absent. Sound is the architecture of spatial navigation, as these sonic architectures are the vessels for these séances. This thesis explores the design of architectural spaces

for the ear and body through the poetics of performance and conversations around sound, race, gender, and music politics. Through resonance, feedback, bass, noise, water flowing, speeding cars on the highway, loud techno or droning ambiance, listening deeply will open up worlds of exploration in sonic acts and inter-acts as an essential ingredient in the development of design languages.

My work presented in the book proposes architectural projects that utilize the physical tendencies of vibration and acousmatics to shift the program of infra-structural, infrasonic, machine environments into spaces for mediation and meditation. Through interventions above and beneath ground, we can create community and experience the powers of intentional electro-acoustic spaces in reorganizing

*“To me the drum has
been the communicator since the
beginning of time. I am sure it was
the first message ever sent. When
I think of the beat today and I think
of the beat centuries ago, its the
only thing that kept us together.”*

When We Were Kings (1996)

our listening and production practices and how they influence how we interact with the world as physical bodies moving through space. These projects are rooted in the ground beneath our feet and all the histories it holds. This earth holds memories of past vibrations and in ritual practices since the beginning of time and these vibrations will haunt us if we don't pay homage and acknowledge the absorption of sound on this ground. Through research on indigenous practices and

listening philosophies we can begin to make the connection between current sonic acts and our ancient ancestors, and close these timelines to create new philosophies for new sonic futures.

Afrofuturism is an important bonding agent for these designs. Being an African American living in Harlem for most of my life and education, a desire for new Black futures has always been of interest to me. Through sound art and performance, I explore the sonic Afrosurreal, the distortion, delirium and instability in my experience. I have always been poetically exploring these ideas, but why aren't these ideas embedded architecturally, and what might that look like? Most, if not all, architecture is against the BIPOC and queer body. It's hard, sharp, white, and masculine. Race has been constructed in America, and sonic interactions outlive the bureaucracy and systems America has put in place to make life as a black and brown individual hard. These frameworks can be broken with

sound, even solely as voice and conversation, to bring forward these topics, but most importantly listening. What does it mean for a space to be afrofuturist or, more poetically, afrosurrealist? These proposed frameworks can start to change black-and-white inherent racial and political constructs that have been beaten and embedded into the way we interact with art and the world, to imagine a distant future system of organic, shifting, imperfect utopias. Sound has historically functioned as both a technology of communication and a medium of resistance. Writers and musicians like Amiri Baraka understood sound and poetry as political instruments capable of disrupting dominant cultural structures and opening space for new Black social and artistic imaginaries. Through experimental acts and impossible spaces, we can turn the poetics of these radical propositions into collective dream consciousness. I hope to explore these themes in future iterations of this writing as I feel I have only scratched the surface of this infinite research and what it means to design for the black body specifically.



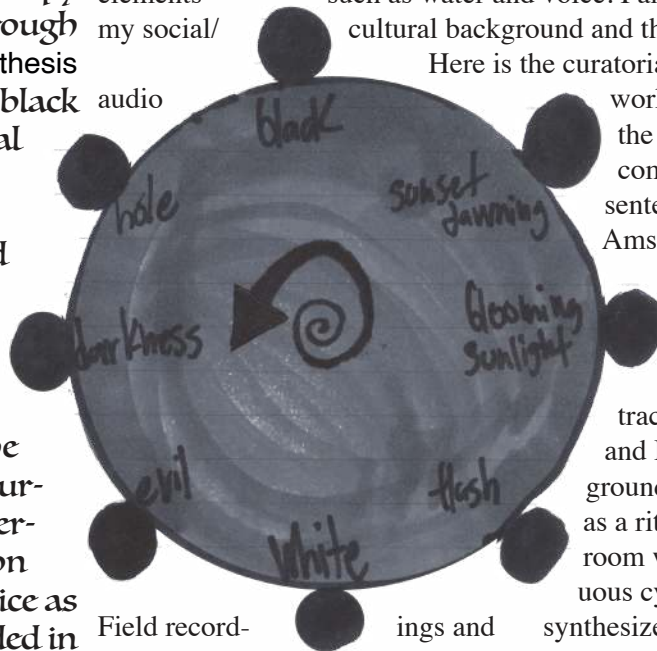
I entered the world of architecture through my practice as an experimental electronic musician, performing under the moniker Sadnoise since 2019. Sadnoise is embedded in ritual practice of performance, discussing the cybernetics of sonic acts and architecture as a lens into impossible infrastructures for design. It is in conversation with the performer and audience, the sound and the surround. The space orientation and acoustics informs the performance in all of its composition and sonic profile. Sadnoise lives in environments as nonlinear moments in time. It is an abstract representation of the esotericism of the Internet and binary code, bed within dying grass and mossy floors. It lives online as a flowing faucet, with homages to breath, air, birds, and the ground. Sadnoise gives thanks to and acknowledges Indigenous land, traditions, and philosophy, as well as the ground

beneath our feet. Over the course of my studies and research, it became clear that the two overlapped. I always thought of my compositions as explorations of imaginary impossible spaces and extensions of my dream world. Through technical techniques such as **granular synthesis**, convolution reverb, and live coding languages to create generative systems, I create organic and dynamic worlds that focus heavily on their spatial information. The manipulation of voice and found/field content has always been present. Now I am thinking of the different sonic qualities of these performances and recordings as spatial and diagrammatic pendants through drawings and graphic scores. I am exploring queerness through the design of new futurist synthesizers with unisex nodes rather than male-to-female **patching**, or ins and outs. My performances unfold slowly into new atmospheres, transporting myself (and hopefully the audience) into a completely new, immersive space, focused on listening rather than some visual performance act. I like building these layers as egress in these sonic structures to drive depth into these spaces before grounding back into reality and humanness with recognizable elements such as water and voice. I am creating relationships between my social/ cultural background and these worlds.

Here is the curatorial description of my spatial work, *Information Adjustment and the Cybernetics of Afrofuturism*, composed for playback and presented at the Sonic Acts Biennial in Amsterdam in February 2026: “Sound moved through the room like a river, forming slow eddies and sudden surges across imagined moss-covered floors. The work traced nonlinear histories of Black and Indigenous organic technologies, grounding bodies through deep listening as a ritual act. Drums pulsed through the room while jazz dissolved into continuous cycles of return and interruption.

Field recordings and synthesized tones held vibration like breath, while the speakers themselves functioned as ritual objects positioned within the space. In moments like these, the audience did not simply observe sound; they inhabited it together.”

Pendant 1 is the modular synth in its representation of copy paper through granular synthesis and magic black cyclical crystal formations. It represents evil darkness and black futures in its predictions. Use it to create the architectural reverberation of voice as grounded in future astral societies.



Researching and developing my work as Sadnoise and recent commis-

sioned work like this revealed something fundamental about cybernetics, sound and architecture. Sound produces spatial relationships that extend beyond the physical boundaries of walls and structures. These installations form a temporal architecture of attention. Having accessible spaces for this valuable attention is essential. Sound systems and instruments act as spatial anchors that organize bodies within these resonant spaces. Feedback becomes both literal and informant (and in-formant as in the format of synthesis). Architecture has historically supported



ed ritual practices of listening. Temples, amphitheaters, churches, and ceremonial landscapes have all been designed around amplifying the voice acoustically. Contemporary sound culture continues this tradition in environments not explicitly considered sacred. Organizations like Non-Event and Ambient Church break these norms and push their boundaries by organizing events in churches and unique environments such as the Metropolitan Waterworks Museum or Boston City Hall. Sound system culture transforms clubs, warehouses, and outdoor environments into these temporary sonic temples. Massive speaker stacks become architectural elements that shape movement and attention.

Within dominant cultural narratives, a sharp distinction is often drawn between the sacred and the profane. Sacred spaces are elevated as controlled environments associated with established institutions, while counter-cultural gatherings are frequently framed as deviant or disorderly. These narratives are often used to marginalize communities that form around music, nightlife, and underground cultural movements. Yet, for

*Sound is a new media
cybernetic medium for
discussing the politics
of race, gender and
community.*

many participants, the discotheque (rave) functions as a deeply spiritual environment. The trance-like quality of this atmosphere pulls people together to create one large, moving, breathing spiritual experience (with the right DJ, of course, the other architect). The merging of the sacred and the profane creates free spaces for counter-cultural expression. Within a dominant mono-culture, depictions of the sacred often reinforce established values, while the profane represents spaces of resistance. It's the profane we have to thank for the songs of resistance and power, and the sacred that helps us collect and create these values. Communities respond by reclaiming symbols, reshaping rituals, and building new spaces of gathering. Through this process, we can create environments where members can experience safety, belonging, and transformation. Clubs, DIY venues, and underground gatherings become temporary sanctuaries where new forms of social architecture can emerge. The relationship between sound and architecture has been explored by numerous sound artists, architects, and designers that inform this thesis and its proposals. Composer and architect Iannis Xenakis developed mathematical relationships between sonic composition and spatial forms to explore experiments in sound and acoustics through parabolic architectural design, electro-acoustic performance, spatial audio, and graphic notation. Sound artist Bernhard Leitner created installations that allow listeners to physically inhabit sound waves, transforming space with trajectories of synthesized sound.

Pauline Oliveros' concept of Deep Listening expands awareness of the sonic environment and emphasizes the communal aspects of attentive hearing. Through the lens of listening, sound-focused design can create environments that mediate and encourage spaces for reflection, meditation, and adjacent sonic or non-sonic acts. The spaces become both the temple and the anti-temple, spaces that nurture communities. In doing so, sound becomes a medium for shaping spaces that gather, put listening forward, and create stronger communities for the future.

This book gives you the references and tools as fragments of this vast world that are zoomed in on afrofuturism, sound as a ritual practice, and sound as a design language for architecture. The goal is not to provide a single definitive answer, but to assemble tools for thinking about architecture differently through performances, installations, interviews, book notes, drawings, poetry, sound, and architectural design. It's a field kit for listening in the contemporary sonic world.



Chapter 2 ~ Sadnoise and Ritual Experimental Performance



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Ritual, Repetition, and the Development of my Sonic Profile as Sadnoise

The experimental electronics performance practice under the moniker Sadnoise is fundamentally ritualistic. Live improvisation with generative, probabilistic systems, electronic and acoustic, has been essential to the development of my relationship with my instruments and how I compose for and interact with space

as a performing

artist. Each

performance

becomes

a star on a

non-linear astral

timeline, a constantly informed inner dialogue between my body and the machines that extend. I've always been interested in the cybernetics of the tools I use for production and performance, and how these tools can be an extension of myself and the world around me.

Sadnoise is powered by the ritual of repeated performances in site specific locations.

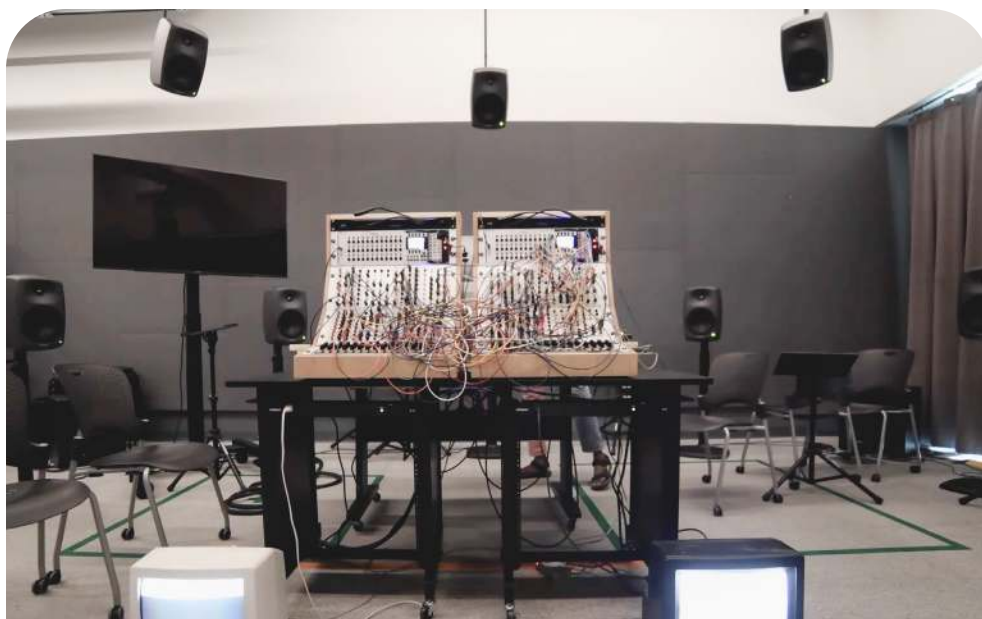
I have no traditional music training. I've always learned by doing. During COVID, I dove into the deep end of the world of modular synths. At the time I was bugging everyone I was following on Instagram about their modular systems and how to get into it in some affordable format. Eventually an e-friend of mine who's profile I can't even find anymore was getting rid of a few things and sent an empty 84hp Erica Synths case my way with a few modules and so the journey began. Over the years I began saving up, buying, selling, and trading modules to sculpt my Eurorack setup. My roommate at the time (and best friend to this day), Martin Baggarly, even built a solid walnut enclosure for the case, which I still tour with today (although it's falling apart, the wear and tear is nice to see). Unlike traditional composition, where pieces are rehearsed into stable forms, Sadnoise is focused on iteration and variations. I was attracted to the resistance of fixed compositions within modular. The ritual is the collection of bodies in a space, listening to sound actively all at once. The ritual is the repetition of performance



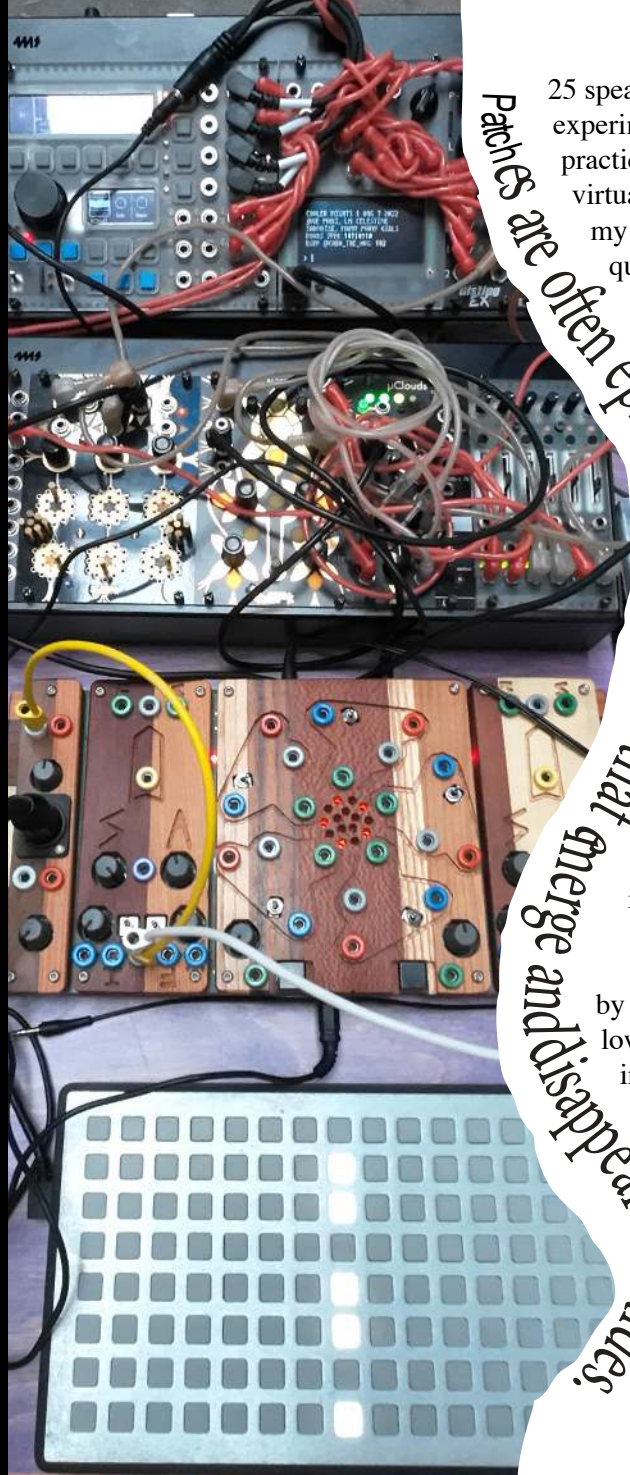
and growth of your love, touch, and intuitive relationship with your instruments as a performer. The ritual is being a part of the event, rather than just the performer or just the audience. The ritual is the creation of these experimental and impossible environments, and navigating them through your own lens. The ritual is the cybernetics between your ears and these machines. This ritual is also spatial. Sound behaves differently in every environment, giving each space its own personality

to converse with.

In early work, I experimented with performing inside inflatable plastic enclosures and in abandoned warehouses. I was interested in how the acoustics of a space can change its sonic qualities. I took a course at RISD titled Spatial Audio. RISD has a Spatial Audio studio (SRST) with a dome array of







Patches are often ephemeral systems that merge and disappear like ades.

25 speakers and 4 subwoofers placed in quad. In this course, I explored the experimental sounds I had already been playing with in my performance practice as food for mapping new trajectories and the manipulation of virtual, impossible, simulated spaces. It was really eye-opening to hear my sounds in these rooms, which change dimensions and their reflective qualities dynamically as alien sounds whipped and dopplered around the studio. This brought attention to the importance of creating a spatial field in my work, even when I'm just performing in stereo. Performing at Waterworks Festival exemplified this dynamic relationship between sound and site. Similarly, performing at Boston City Hall presented another form of spatial dialogue.

The Waterworks Museum is a museum in the Chestnut Hill Waterworks building, originally a high-service pumping station of the Boston Metropolitan Waterworks. It contains well-preserved mechanical engineering devices in a Richardsonian Romanesque building. The natural acoustics and reverberation of the space are something that could never be recreated or simulated with any software. The soft diffusion and reflections of sound off the water pumps, steel pipes, and cast-iron machinery brought a completely unique sonic palette to everyone's performances that night. On the other hand, outdoor performances transform sound entirely, forcing the music to disperse into open air.

Algotrek is a performance series originally organized by M. DeNardo and iterated by many friends. In the form of a short, low-intensity hike, artists and attendees gather to perform sound rituals in the mountains. Artists bring anything from small synths, acousitic instruments, laptops and other doo-dads. On my first hike I brought way too many synths and the weight started getting to me about halfway through the hike, but it was worth it. Performances varied anywhere from 10-40 minutes. This originally focused on live coding rituals in the woods, hence the name Algo for algorithmic. After performing at Algotrek in Cold Spring, New York, in the spring of 2023, it became very clear that nature was important in the conversation of ritual. These performances invited me to listen to the reflections of the rock, or how the dirt absorbed the bass, or how the trees and birds respond to amplified



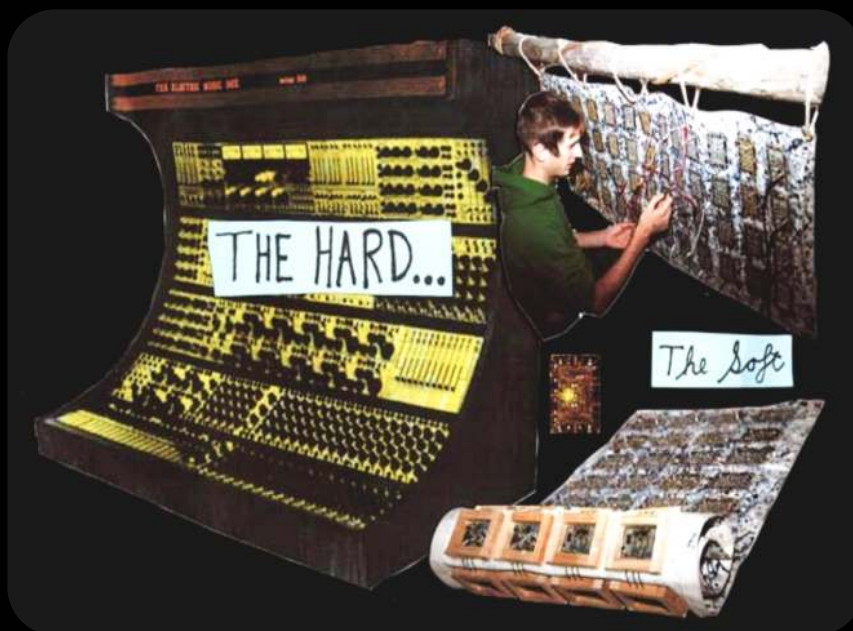
Tomoya Matsura 松浦知也 performing at “a hike and sonic gathering” organized by 松浦知也

electronics. The spaces brought peace and air to these performances that often would have happened otherwise in a small room with big speakers, at night. There is no orientation for people at the summit of a mountain, you gather around and everyone hears something unique from their point of view. Most often we played in stereo but due to the unique site specific environments and natural stone there seemed to be an extreme spatial quality to the sound unlike any architectural room design, in a really magical way. Nature dissolves the architectural typologies of electronic performance, giving them an ecologically situated and materially embedded acoustic environment for this very physical ritual. The blood flowing through artists and attendees veins, the intention behind the movement of the body and the control and mindfulness of breath calms the state of mind and is extremely apparent in how the performances unfold in the space.

A few years after diving into modular synthesis, I came across Peter Blasser’s website late one night on the Wayback Machine. I was immediately drawn to the magical, deep world he had built there filled

Through performance and our connection to the ground beneath our feet we will celebrate and acknowledge the land and its indigenous roots.

with dense HTML pages, invented words, poetic technical drawings, and extensive often hand written documentation of his synthesizer designs. It was a real living digital garden. Blasser's work is realized through his instrument-making practice



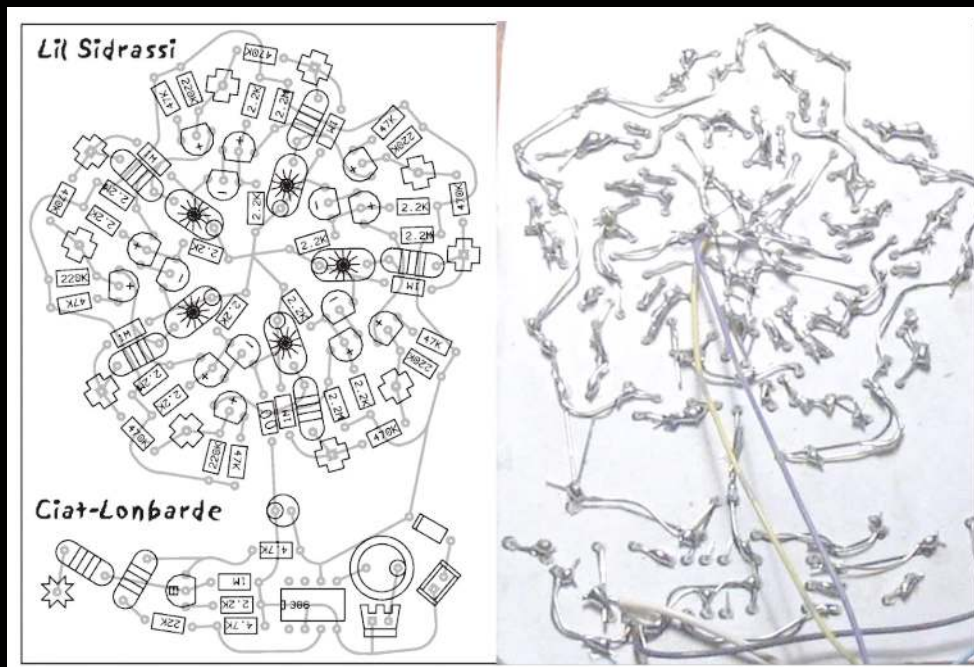
under the name Ciat-Lonbarde. His synthesizers reject conventional clarity and instruction; they are deliberately open-ended and encourage exploration of a new world of interaction and self discovery. The enclosures are often built from locally sourced, sand-

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wiched wood panels, assembled like cutting boards. The collection of wood turned these synths into ritual objects and were the complete opposite of the traditional aluminum rectangular synthesizers I was so used to seeing.

"Some namings lack a name, only using combinations of letters and numbers as a sort of codename. A good example is the Yamaha "DX7," billed as the first keyboard instrument to solely use synthesis. It seems that for a while, successful synthesizers had codenames: Korg had the "M1", Roland had the "D-50", "S-50" and "JX-10", and so on. I've always wondered if this phenomenon was a weapons metaphor, seeing that in the milieu of these synths, there was a steady global war between two forces, the AK-47 semi-automatic rifle of the "eastern bloc", and the M16 machine gun."

His circuit design language departs from the standard grid. Instead of the rectangular, grid based component layouts for PCBs, his designs unfold as maps, landscapes, and diagrammatic terrains shaped by personal geography, his studies on Asian, and the spatial logic of geographical locations he's passed through along the journey of designing synths. The circuits are engineered but more importantly situated in gesture, the organic and the surrounding. Each instrument is embedded in a specific cultural and spatial memory. In Blasser's 2015 dissertation *Stores at the Mall*, he talks about the hardness and masculinity embedded in synthesizer design. These synths are often manu-



factured square with aluminum panels. The brands are named after the creators, who are often white men. Moog, created by Robert Moog, Buchla by Don Buchla, Verbos by Mark Verbos are just a few examples.

Blasser was interested in breaking these norms and having these conversations through synth design. His instruments focus on gesture, nature, generativeness, and the queerness of the synthesizer. Most of the prototyping for his instruments happens on paper in the form of paper circuits, using organic material as the structure for sketching and soldering new synth designs. He makes these sketches and the simpler designs available to the public to print at home, and I have hosted a few workshops building these paper circuits. I was drawn to this way of working because of how the environment and larger ecologies directly influence and embed themselves in the design process and evidently in the music created with these synthesizers. You can hear these timelines and personalities in the design regardless of if it is your intention with the instrument or not and Blasser has really etched his personality into these synths both poetically and literally.

Another important development in Sadnoise has been the addition of my electro-acoustic practice, which right now literally means electronics alongside

non-traditional acoustic instrumentation. I have been using borrowed handmade reeded instruments for Anarchestra, made from plumbing pipes, as anarchist saxophones in most of my recent performances. That, alongside bells, flutes, kitchen timers, and solar-powered synths (circuits designed by Blasser), powered by black lights in indoor venues, creates a hybrid sound. These acoustic elements are both dry and processed by my modular synth to stretch them and create landscapes and textures encapsulated in the sonic world of the instruments. These have been new forms in ritual interaction and performance in my practice, introducing more gesture and connection between my body and my performance practice. In relation to the cybernetics of Afrofuturism, these developments in my physical relationship to these sonic technologies are an extraction of my Blackness, as skin bonds these poetic interactions. Acoustic instruments can be understood as carriers of embodied history, while electronic processes project those sounds into new temporal and spatial dimensions. The electro-acoustic approach therefore becomes a method for imagining sonic futures rooted in both technological experimentation and human presence.

Sadnoise has gradually become less rooted solely in experimental sound design and has grown to cultivate a field of relations between bodies, machines, materials, and landscapes. Each is a continuation of a ritual practice that unfolds over years, shaped by the spaces it wanders and the communities that gather within them.

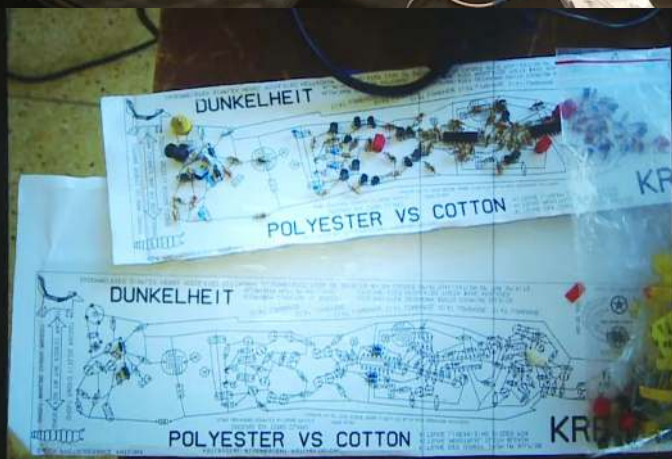
“Structuralist analog synthesizers rely on a strongly typed system of inputs and outputs, and it is this linearity that makes them arborescent. What if nodes could be made that are both input and output, or neither? Would this lead to a sort of rhizomality wherein connections could be made horizontally and thus any node could manifest a facet of the entire assemblage? This led me to name a concept, sandrodes, to hold the meaning of “androgynous nodes.” In naming a concept much is done towards taming it.”

Stores at the Mall (Blasser, 15)

On paper circuits, from Peter Blasser: “PAPER CIRCUITS In 2006 I began making circuits on paper. Paper circuits are easier, cheaper, and environmentally safer than the alternative- greenboards etched with heavy chemicals at a factory. The idea, which I got from a St. Louis collective known as “commonsound”, puts front (component) face and back (trace) face adjacent and mirrored on the paper. The pattern is cut out, folded in the middle, then pierced with a needle. The components are inserted and their leads woven and soldered according to the trace pattern. I created several pocket-size paper circuits that explore touchability and the complexity of circular modulations. I play them by intuitively wiring or touching nodes to each other to create different re-weavings of the internal circuits. I consider these the most accessible of my designs; anyone can salvage or buy the components after downloading the plans from my website (www.ci-at-lonbarde.net). Each build of a paper circuit is unique, because the time elements vary by changing values in key locations. The transcription of electronic ideas onto paper stimulates a free and open distribution of craft, where the final pieces vary based on the skills of the maker. This appeals to an ideal of medieval individuality, where information is distributed personally through guilds as well as mnemonically in spellbooks and mandalas. The paper circuit projects attempt to bring the art of electronics from an impersonal, industrial approach to one which is individual and magical. This crafty use of electronics encourages everyone who pursues it to personally reduce waste; creativity leads to resourcefulness and vice versa.”



Mixology - Ciat-Lonbarde Paper Circuit
Workshop with Femi Shonuga March 2025



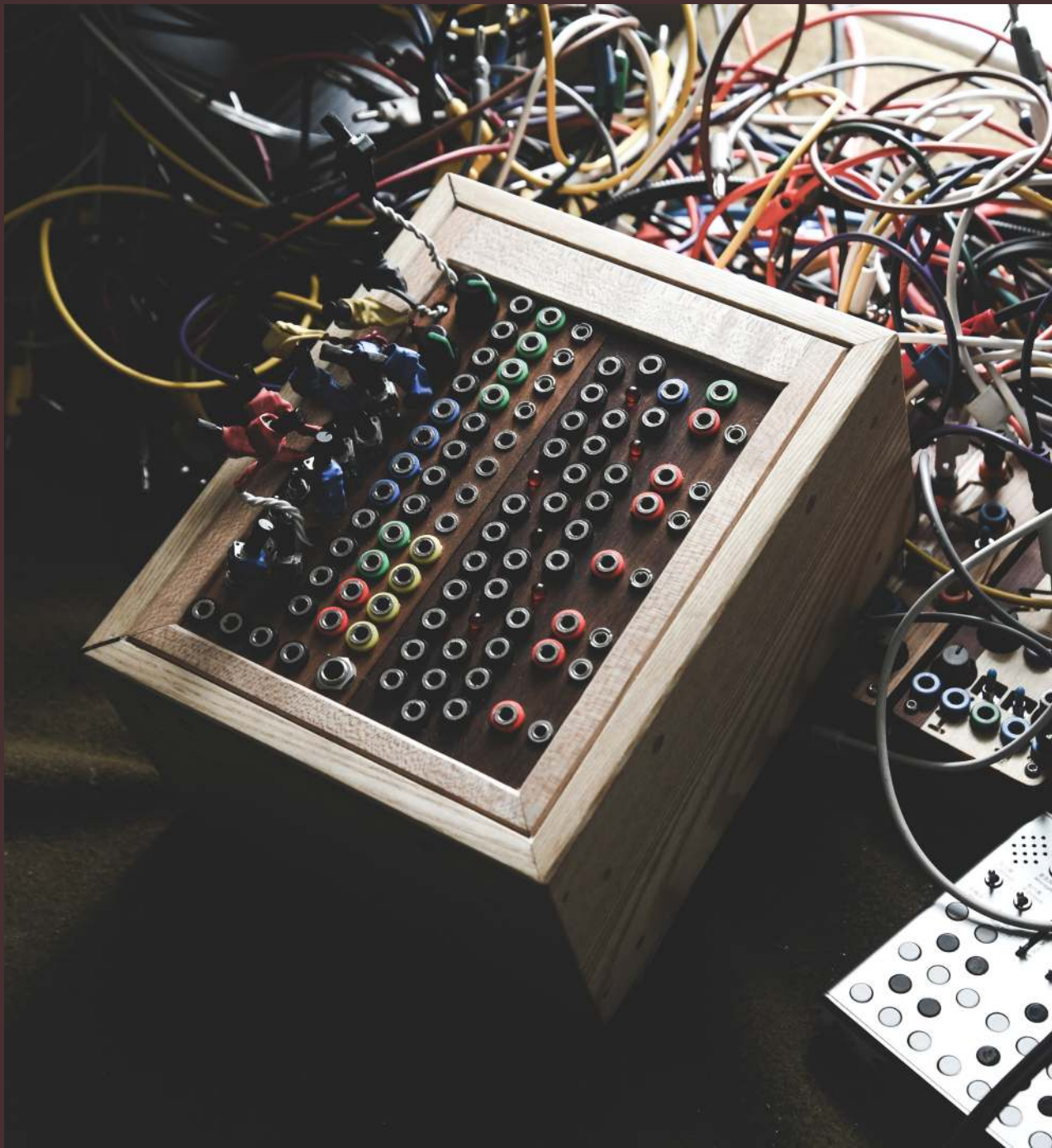




Ciat-Lonbarde DIY
Handmade Instruments by Femi Shonuga Fleming, Circuit Design by Peter Blasser, Daniel Fishkin and CrucFX



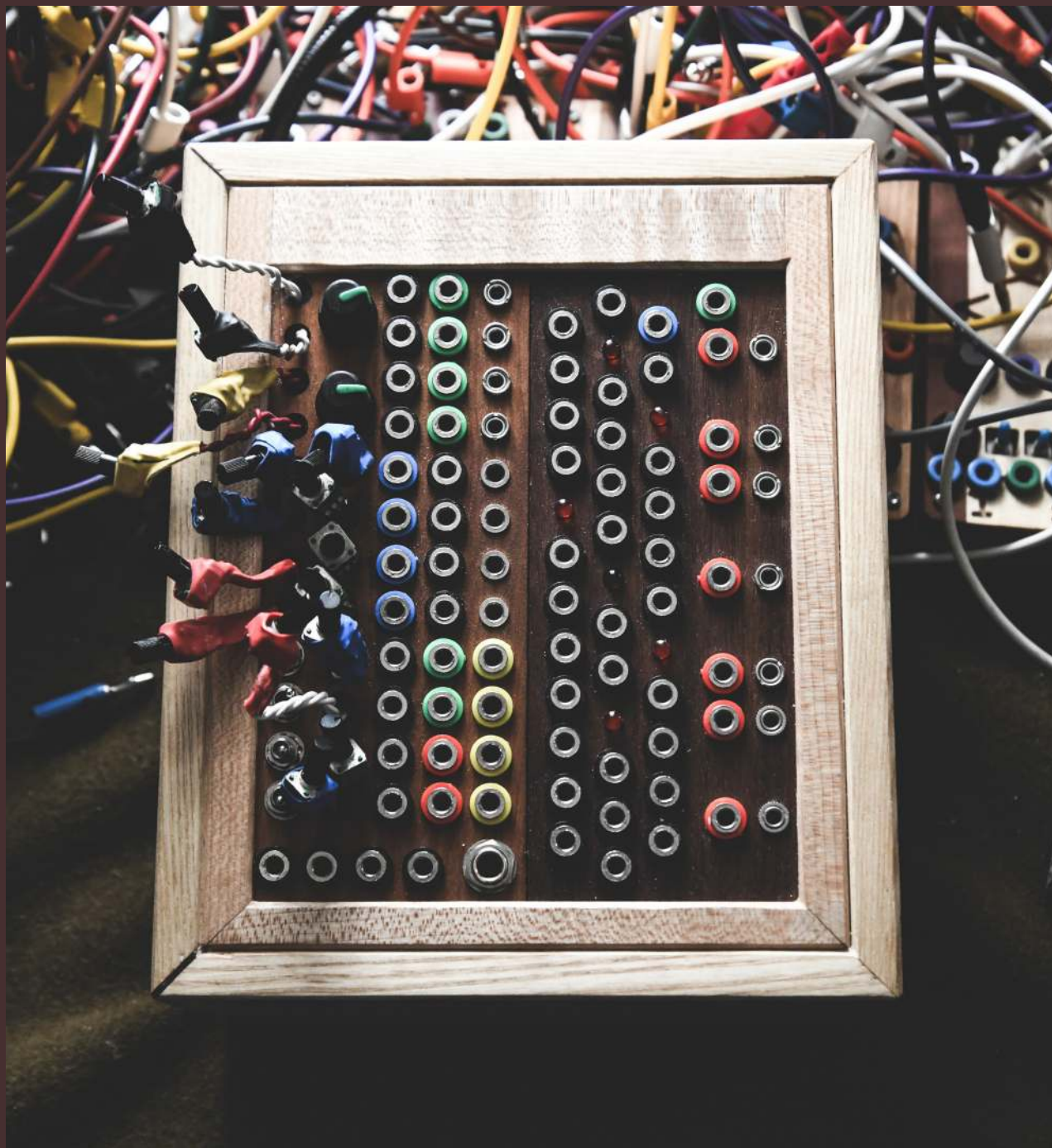




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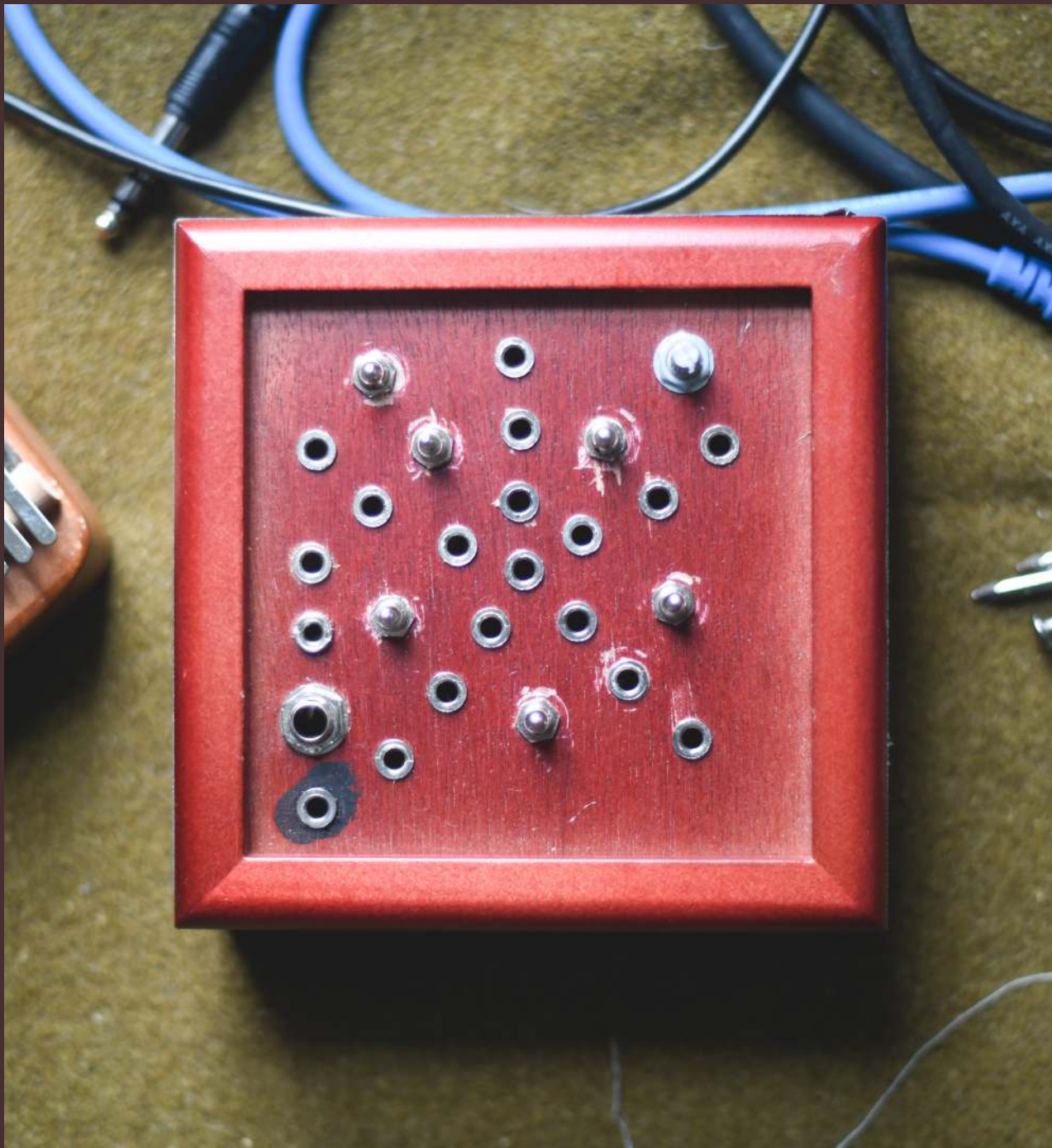
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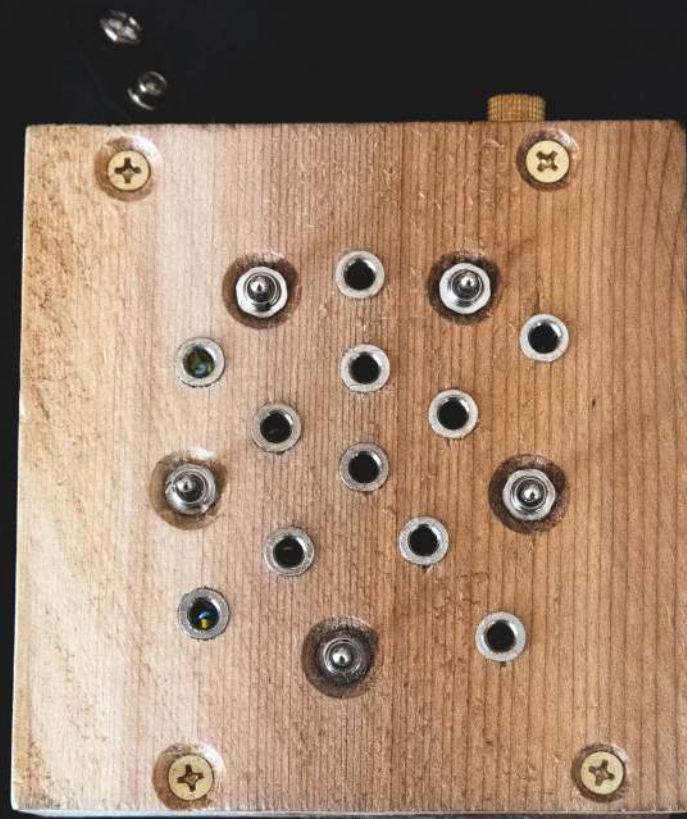
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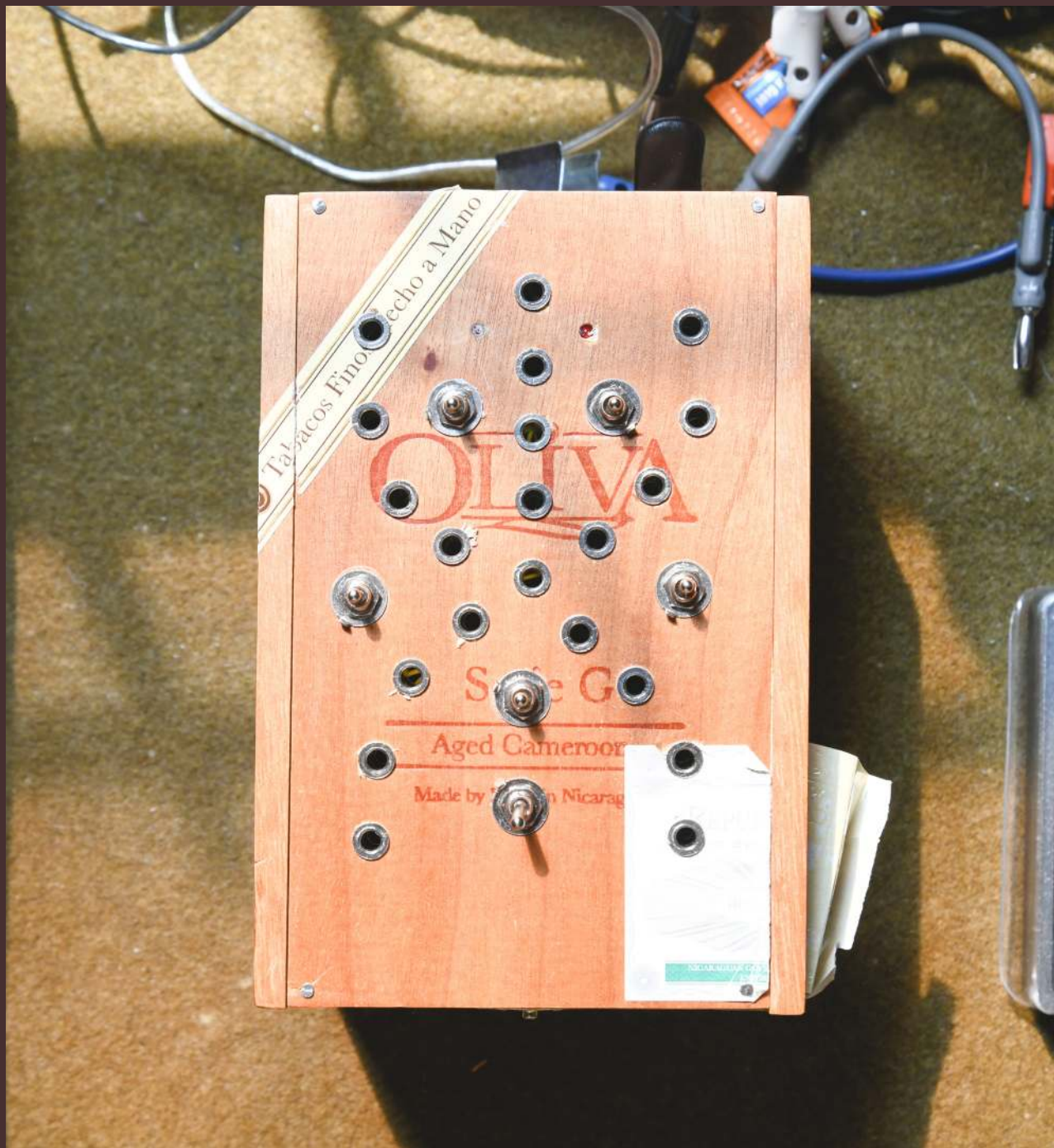
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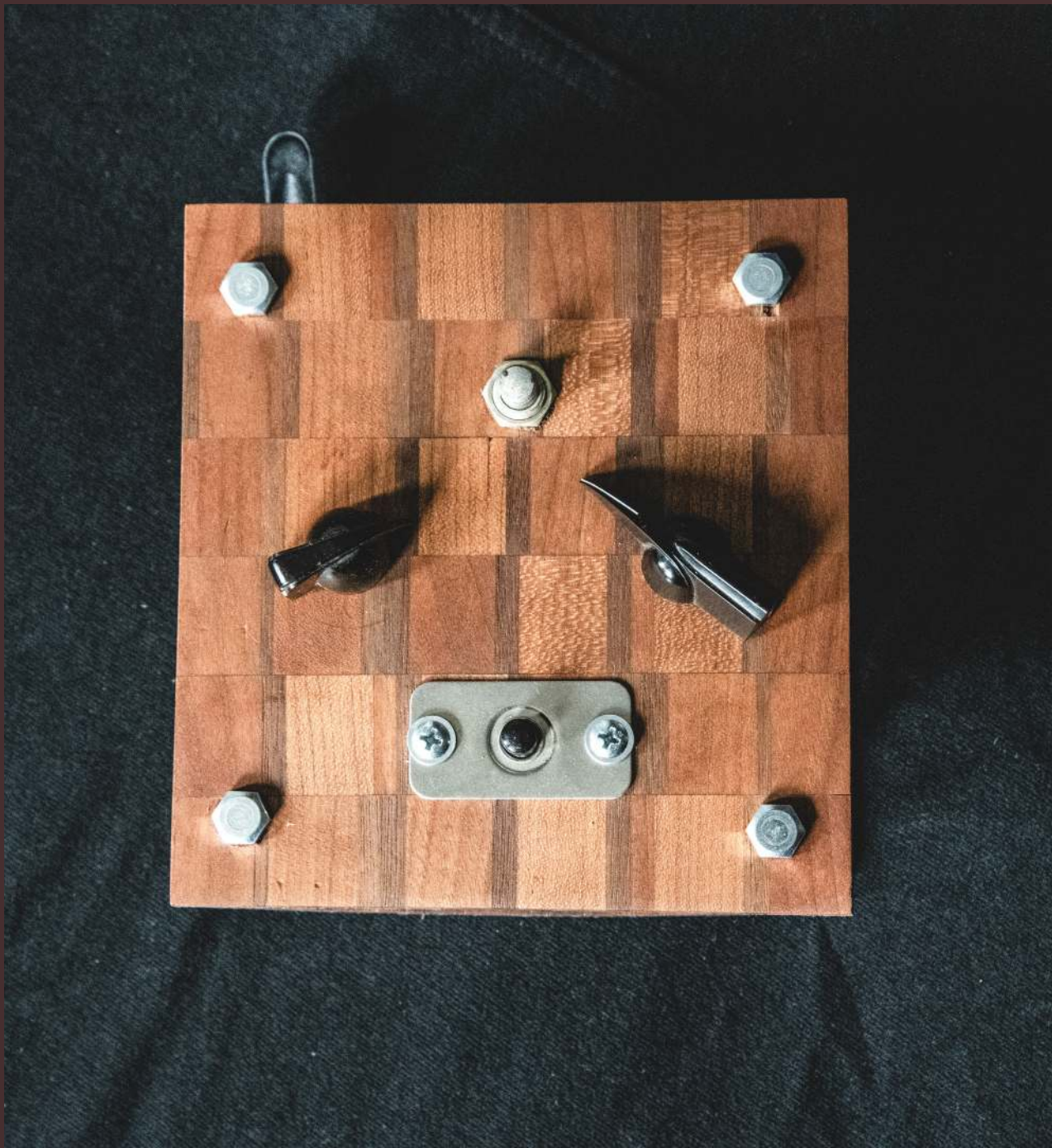




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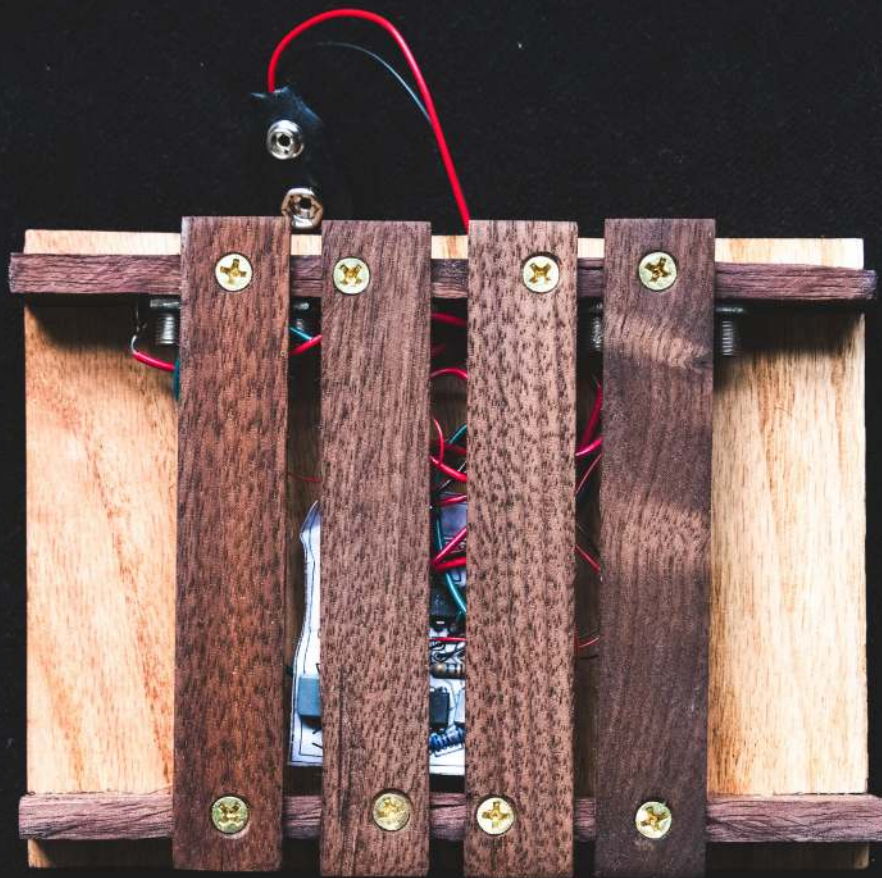
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Chapter 3 ~ Systems



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SYSTEMS

is an album archiving written and sonic explorations of various analog and digital systems that I use during the process of designing sound, as an attempt to demystify some synth esoterica, and a continuation of the story of the data bird, amongst other poems.

Listening Instructions (suggested):

Listen to this album in full or in smaller periods of time, in direct sunlight, or a low lit environment, preferably with headphones, or speakers spread far apart. Sit or lay down in a comfortable place and position. Have your favorite snacks or beverages nearby for occasional consumption. Read the track stories as the corresponding tracks play.

Meditation:

Internet meditation interlude entrance opening introduction cleansing clear cmd delete.

Bath:

A analog bubble bath with warm water and a starburst candy bath bomb, with non mainstream super esoteric ambient music playing, and a fruit loops scented candle lit on the ledge. The water reaches your body temperature, you close your eyes and start to float away on cotton candy clouds. Bubbles begin to sound larger than life. The internet seems far, far away. The concept of dirt is erased from your memory. Too many things are erased from your memory, but you're okay with it, because the only direction is forwards.

digitamblamAh:

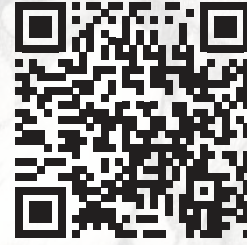
Finally some quiet, a taxi. Steady travel, at night, with a gin and tonic, chauffeured. Take me to a black tie event with normal people, where I can't make out faces. A place where I can ignore important tasks and time doesn't move. Dragged by the hand into an endless hallway. Escaping with someone, anyone. If I could fill all my bags with the items on these walls I would. And fill a room with infinite things. A hoarder's dream, but just to look at. I have a separate room for the things I used. Stumbling, she's walking maybe a bit too fast.

I get too cold drawn some that:

A song in silence: It's so I get it's so I get it's for to go on or not it's so I get it's there you were cold in it call the word hold to the night after as. A thought about the idea of. What do you actually want? Inherently peaceful in its simplicity.

Jazz beat in soil (movement 1 and 2):

The jazz bar on opcode 19287 off of conduit Jester. A quintet for romance, in two movements, with a Paloma this time. Movement two suggests a red, 2021 preferably. And filet mignon. I can afford it, for the both of us.



Back to work, wired. I'm dating the boss's daughter, I gotta be there on time. Little does he know she's cheating on me. What a scandal. With Cathy in HR. I knew she was a lesbian. You can't sneak out an air lock, and she was bad at excuses. Oh your book club, all the way in sector G. I haven't said anything about it yet. This job pays well. And Cathy is 7 feet tall. I'm only 2 feet 4 inches and 45 centimeters. I can't compete. She'll punt me off the space rail. As long as I get my numbers in this quarter. I'll quit. I'll have a cig now. I never thought to go out on the balcony. No one ever does. Probably because we work on the 596th floor. The air is practically non-existent up here. I think I'll go out for a cig now. The whole office won't get sucked out through this door once I open it.. right? [The entire office did indeed implode in on itself through the glass pane door the second it was pulled inward.]

Pleasantly drunk, with wings:

A return to some home. A dinner at someone else's. With a beer, driven in a car with many miles. Those swirly things you see when you get up too fast, haven't eaten all day, or stare at a perfect blue sky, have a sound. An awkward couple, yet charming. Retired.

Swih aybz intersexon:

You find yourself millennia deep in incomprehensible alien data simplex intersections, figures of light speed past and begin to intimidate you. A confrontation, with only words, a new story. With noise and absence of time. A feeling of longing. A nostalgia of the unknown. An afrofuturist retro-future. Dark in headlights. Frozen, melting and falling infinitely. Limbo, traveling.

All of your technology will function properly this mercury retrograde:

Place 10 fruity pebbles on your phone and laptop every morning and night for good luck with technology this mercury retrograde. Something else that might help is suspending a bag of your technology above a large body of water for 5 seconds, or bringing your technology at least 1000 ft above sea level.

Systems Technical Guide:

Drawing by Hannah Rosies



A lot of my **Teletype** work begins with randomized timing between script calls, and the use of voltage or random numbers as trigger data for drum and synth modules. I often use binary operations to derive rhythmic structures. For example, a number like 10 becomes 0101 in binary, which can be interpreted as a simple hi-hat pattern when sequenced linearly. Similarly, 8 becomes 1000, which I might use as a 4 to the floor kick pattern. In practice, I treat each bit as a gate. A 1 triggers a pulse, while a 0 represents a rest or alternate routing. Another approach is to map each bit directly to an output: if a bit is high, it triggers the corresponding output channel.

For example, with the binary number 0110, outputs 2 and 3 would fire because those positions are set to 1.

Binary Trigger Concept (Teletype Logic):

L 1 4: TR.P ? BGET A I I 0

Loop from outputs 1–4: check whether the bit at index I in variable A is true. If it is, trigger a pulse at that output; otherwise do nothing.

In other words: each bit position in a binary number becomes a potential trigger source.

I typically work with numbers between 0 and 65536, which corresponds to 16-bit binary space (a 16-step sequence in my use case). This gives a very large range of possible patterns. Rather than encoding specific rhythmic intentions, I often let random voltages or internal variables generate values, which then become patterns through this binary interpretation.

This approach allows me to create complex generative rhythms while keeping everything tightly synchronized. It also makes it easy to save and recall **patches** for live performance.

The **Teletype** communicates with several modules in my system over I2C, a protocol similar to MIDI but designed for Eurorack data communication. The main modules I use are the ER-301 Sound Computer and the Disting EX. Because this is not limited by physical patch points, I can send multiple channels of triggers, CV, and control data simultaneously.



Monome **teletype**
eurorack module

50

50

50

This allows for dense variation across parameters in both devices. For example, I often modulate wavetable position, filter cutoff, detune, and delay time on the Disting EX, particularly in its polyphonic wavetable mode.

On the ER-301, I use I2C to control granular processing parameters and trigger events.



ER-301 sound computer eurorack module

I also use I2C2MIDI, developed by Attowatt and the Teletype ecosystem, to translate Teletype data into MIDI messages for external hardware.

MIDI Note Output via I2C2MIDI:

I2M.N# X Y Z

X = MIDI channel

Y = MIDI note

Z = velocity

A key feature of I2C2MIDI is MIDI CC slew, which allows continuous interpolation between control values over time. This makes even discrete or random values behave like evolving gestures rather than abrupt changes. It adds a temporal softness that I think should exist in all MIDI CC implementations—it expands the expressive range of otherwise rigid 127-step control.

Disting EX Parameter Control:

EX.P X Y

X = parameter number

Y = value

ER-301 CV Control:

SC.CV X Y

X = CV input number (up to 100)

Y = value

ER-301 Trigger Control:

SC.TR.P X Y

X = trigger number

Y = value

Example Teletype Live Set Script:

#I (*Init Script*)

PARAM.SCALE 400 12000

EX.PRE 49

L 1 4: TR.TIME I 20

LIVE.DASH 1

The init script runs once on startup and sets global system parameters.

PARAM.SCALE 400 12000 Scales the parameter knob between 400 ms and 12000 ms for timing control.

EX.PRE 49 Loads a specific preset on the Disting EX.

TR.TIME sets trigger pulse length for outputs 1–4 to 20 ms.

LIVE.DASH 1 enables the live dashboard view.

#1 (*Timing + Rhythm Engine*)

DEL RRND 20 PRM: \$ \$

Waits a random time between 20 ms and the current parameter value, then re-triggers the script. This creates a self-running loop with variable timing controlled by the knob.

K ? LT LAST 1 200 4 8

If the last trigger time was less than 200 ms, set K = 4. Otherwise set K = 8. This adjusts rhythmic subdivision based on tempo density.

DEL.R K / LAST 1 K: \$ 2; \$ 5

Creates ratcheted delays: triggers scripts 2 and 5 K times, dividing the last timing value accordingly. Faster triggers yield denser subdivisions.

J ? TOSS 12 9; \$ 4; Z RND 8

Coin toss selects between 12 or 9, triggers script 4, and sets Z to a random value between 0–8.

EX.N N + * ? TOSS 5 9 RND 4 J

Generates note data for the Disting EX using layered randomness, bounded by

structured intervals.

DEL.R RND 8 / LAST 1 Z: \$ 3

Another ratcheted trigger system sending events to script 3 with variable subdivision.

#2 (Binary Trigger + CV + MIDI Generation)

A RND 16; B RND 256; \$ 5

Generates two random values:

A controls 4-bit trigger patterns

B controls 8-bit patterns / MIDI mapping

And also (;) Triggers script 5.

L 0 3: TR.P ? BGET A I + 1 I 0

Outputs trigger pulses based on which bits of A are active.

SC.TR.P ? BGET B I + 1 I 0

Sends trigger data to the ER-301 based on binary evaluation of B.

I2M.N# 1 ? BGET B PN 0 I Y

Sends MIDI notes derived from pattern data stored in PN 0.

#3 (Pitch Quantization Layer)

J ? TOSS QT RND -36 36 12 7

Generates quantized pitch offsets or fixed pitch value (7), bounded to a 12-tone scale.

EX.N N + * ? TOSS 5 9 RND 4 J

Sends pitch data to Disting EX with harmonic randomness.

#4 (Random CV Fields)

L 1 16: SC.CV I V RND 10

L 1 16: SC.CV.SLEW I * LAST 1 2

Sends 16 channels of random CV (0–10V) with slew-based interpolation derived from timing of last script execution. This creates evolving modulation fields rather than static CV values.



Expert sleepers
disting ex eurorack
module

#5 (Monitoring + Debug Output)

Y RRND 50 127

PRINT 1 A; PRINT 2 B

PRINT 3 PRM

Y generates velocity values

Prints internal state (A, B, parameter knob) to live dashboard for visual debugging and performance awareness

Pattern Table:

P#

36 0 0 0

37 0 0 0

38 0 0 0

39 0 0 0

40 0 0 0

41 0 0 0

42 0 0 0

43 0 0 0

This pattern table maps MIDI notes and trigger data used by the system, often controlling external devices such as the Octatrack or internal synthesis engines.

The ER-301 runs granular processing, delay, and sample manipulation. The Disting EX handles polyphonic synthesis and multisample playback. Teletype acts as the central generative logic engine, distributing timing, pitch, and modulation across the system.

Granular effects are a big part of a lot of my patches, songs and sound design. Granular for me isn't so much about chopping audio into small grains and overlapping them or scanning through them to create beds of sound and ambient pads but more about using the techniques of granular to mutilate existing, sampled or live samples content and tear them apart limb by limb. I use granular techniques in my eurorack system to stretch drums and create organic rubber, wind and other textures. Granular to me is also more than a "granular synth." Granular can be anything more than one delay pedal. If you have two delay pedals, you're creating two sizes of grains that can be overlapping or interact with each other. I think a lot of the idea of granular is that you need a granular synth or processor to make granular sounds but a lot of it is delay and looper processing, which can be done with delays and loopers, and really anything that holds an audio buffer.



attowatt

This interview took place over the inter-webs on April 19th, 2026.

Attowatt is an experimental electronic music project centered on modular synthesis and generative systems. Working primarily with Eurorack setups and live-coded processes, the project produces self-running, algorithmically driven compositions that evolve over time. Releases such as S C R I P T S are built from one-take recordings of autonomous patches, emphasizing texture, structure, and emergent behavior within electronic sound.

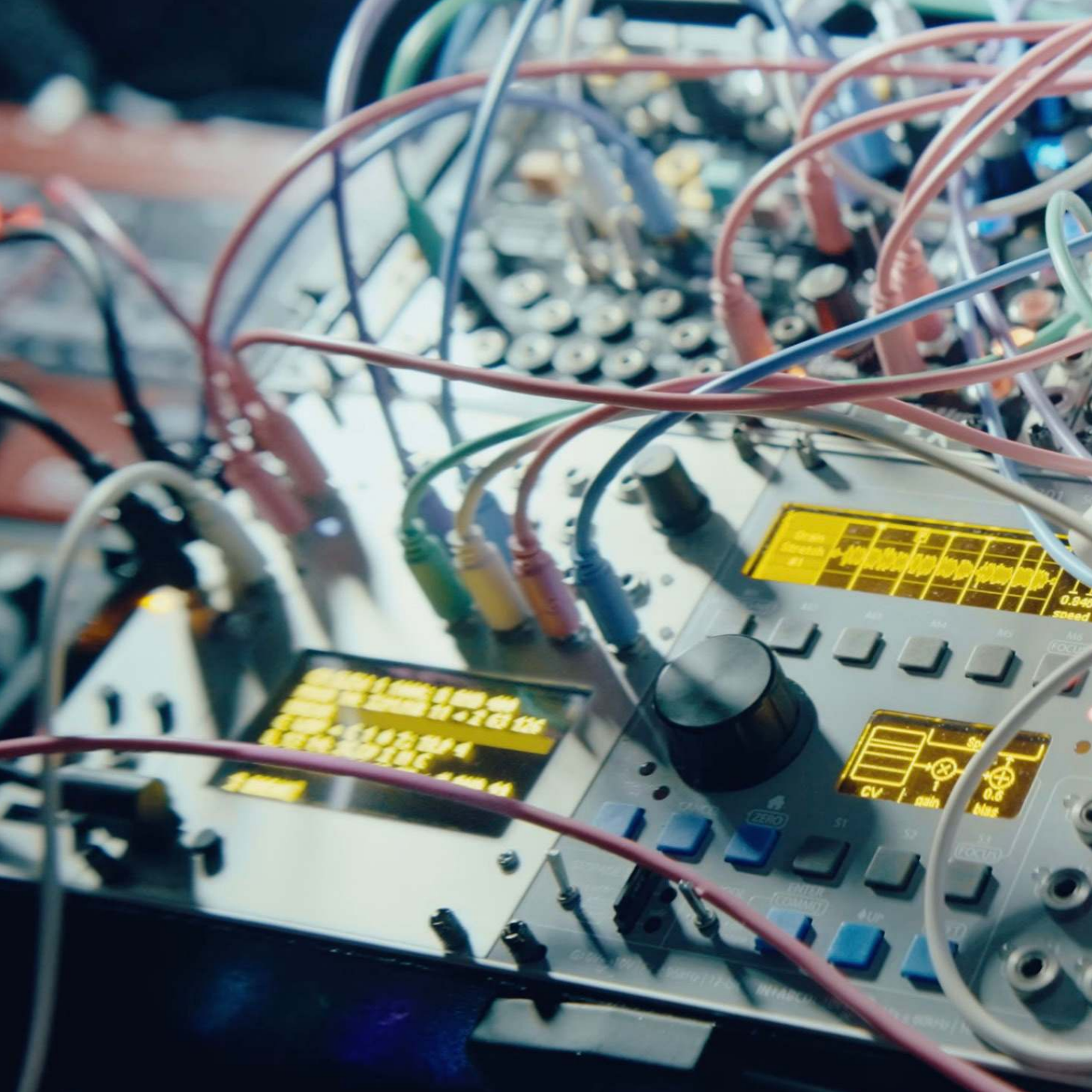
Femi Thesis; Interview Questions

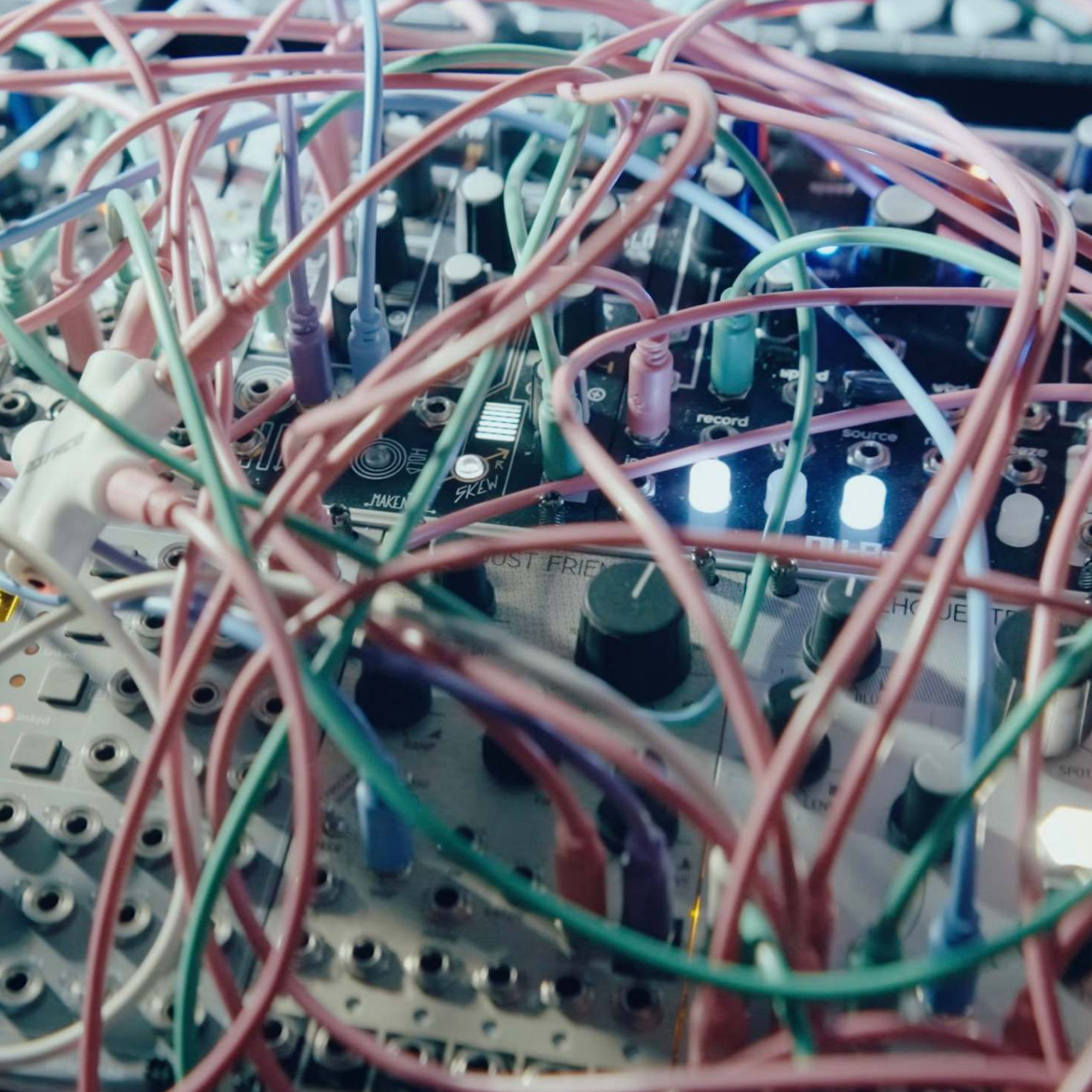
How did you get into modular synthesis? How have you developed your system over time?

I came from using a DAW and hardware synthesizers. In 2018, I saw @mylarmelodies' video about Make Noise's 0-Coast, and I was immediately fascinated by its openness and the possibilities it suggested. It was also the moment I first started to realize that a machine like this could actually play by itself in a "non-grid" manner. So I got one and spent a lot of time experimenting with it.

A couple of months later,

a friend brought me along to a DIY Eurorack workshop in my area. It turned out to be a workshop hosted by Manu and Diego from Befaco, and that's where I built my first module (a Rampage). So I had one envelope generator module – but not even a case for it. I got myself an Erica Synths travel case (which I still use to this day) and started spending a lot of time reading and learning about modules, formats, and techniques. For a while I was not quite sure where this whole endeavor would lead to – until I found out about Teletype by monome. And at that point things clicked, and everything started to make a lot of sense for me.





Since then, my system has grown very slowly. The case is 2 x 104 HP, which I decided early on to treat as a natural, self-imposed limit.

Why is generative music important in your work?

I am obsessed with the idea of a system that plays by itself forever – something that continues to produce music without me for eternity. I feel, it isn't a composition nor a recording in the usual sense. It has no beginning and no end. The actual piece is a set of rules, values and conditions under which the music happens. It's more like a sculpture or installation. Each recording of it is only one (almost arbitrary) outcome of the system at a given time.

Do you have any traditional music training?

Yes, I grew up in a musical family. My grandfather was a concert pianist, and both my parents are professional musicians. I started classical piano lessons at the age of five, and I still

play.

How has Teletype allowed you to break free of or play with traditional music composition in a new way?

Teletype was the aha moment for me in modular. I was chasing the perfect sequencer, and no matter which module I tried, there was always one feature missing. With Teletype I realized I could actually implement all of my ideas myself, and deploy them whenever I needed them.

Teletype allows me to build my own tools in a very effective way (and with that it also cured me of most of my GAS for other modules).

Interestingly, Teletype is at the same time very deliberately limited: a character limit per line, a line limit per script, a script limit per scene. Those constraints force you to think and to find new ways to realize an idea you thought you'd already figured out. I am very inspired by the German writer and poet Jan Wagner, who speaks of "taking long detours through form" to achieve perfection. It's exactly that.

Teletype also sits at a sweet spot for me: I wanted the kind of precise, flexible control that really only a computer gives you, but I didn't want to sit at a screen to make music. Having something that small and stripped-down live directly inside the case was a strange and exciting idea. I use it with a 40% keyboard with a US layout, neither of which I'm used to - so even the typing itself feels unique to **Teletype** rather than like working on a laptop.

In regards to traditional composition, I am very interested in finding ways to formulate rules and algorithms that produce musical results you wouldn't normally associate with electronic music - something that sits in between clearly electronic/machine-made and clearly classical/human-made music. I want the listener to wonder if a melody was actually played by a human or an algorithm. I like to take concepts from music theory (e.g. a descending fifths sequence, or Arvo Pärt's tintinnabuli) and try to translate them into an algorithm, then start changing the parameters around. Once

an algorithm like that is running, changing values can shift the entire character of what's happening, which is a very different relationship to a composition than writing notes on a page.

This idea also led to me creating a **Teletype** expander module (called i2c2midi), which for instance allows you to transform a defined chord through "musical" operations like inversion, rotation, reversal, reflection, stretching, and so on - which can be triggered and modulated in real time from within a **Teletype** script and produce quite unexpected and non-intuitive but very musical results.

How much control do you have over these systems? Where are the human/machine crossover points in your year-long generative **patching** project?

There is a clear process: I build the **patch**, write the script in **Teletype**, and spend hours fine-tuning values and boundaries until the system behaves in a way that feels right. At a certain point I stop, press record, and then don't touch it

anymore. From that moment on everything is up to the self-playing system. So all the human decisions are made up-front. The machine part is everything that happens after record is pressed. There's a clean cut between the two.

Do you feel you've developed a relationship with the system that is almost cyborg or second nature?

No. I've become more fluent with **Teletype** scripting over the years, but I wouldn't describe it as cyborg or second nature. It's a tool I've gotten to know well.

What keeps you drawn to the system?

It keeps surprising me. I'll start with an idea in my head - something specific I want to try - and most of the time end up somewhere completely different by the time the **patch** is built. Then, when the system plays, moments come up that I hadn't anticipated at all; sometimes I'm not even sure how they happened.

What's interesting is that

the surprise happens inside a framework I designed myself. The system never does anything I didn't make possible. But it keeps showing me parts of that framework that I couldn't see when I was building it.

Do you treat **patches** and performances with your system as a ritual or spiritual practice?

I would not call it a ritual. It's a technical and aesthetic practice, and there's discipline in it. The daily **patching** I did for S C R I P T S was essentially a self-imposed rule to kick myself to keep **patching** and practicing. The constraints I've built around the work give it a structure that's both stable and open enough to always come back to.

Do you believe sound has other strengths politically or socially as a medium for conversation outside of music/experimental?

Honestly, I don't think about my work in political or social terms. But I do

believe that music can reach people in a way language cannot.

You have a very detailed and unique use of space and immersive environments in your recordings. Do you view your sound design and patching methods as architectural in any way?

For me it's more about creating texture and atmosphere than about building rooms. What is architectural about it, I think, is less the audible space of the recordings (the reverb or the sense of depth) but more the underlying structure that produces them. Setting up a patch might be a bit like defining the floor plan or the overall structure of a building. I define the rooms, the doors, the paths between them, the rules of the space. Once the system is playing, the music moves through that space the way people move through a building: inhabiting it, making it their own, finding new pathways. I built the structure, but what happens inside it is not under my control anymore.

When deciding to compose for a release, what was your process in collecting and curating sounds for an album?

For S C R I P T S, I had more than 150 recordings of patches. I went through roughly twelve hours of audio in total, which was a total nightmare. I tried several different approaches - and none of them really worked. In the end, I went by gut feeling: which moments and which sections spoke to me spontaneously. After a lot of nerve-wracking sessions, I narrowed it down to the seventeen tracks that made it onto the album.

Outside of music, what's your job? What else occupies your time? Is music an active practice or a way to create other worlds for yourself?

I'm co-founder and CEO of a small Data Science / Design / AI studio in Stuttgart; and I try to spend as much time as possible with my wife and our two-year-old son.

What are your next plans?

I'm still in the process of rearranging and redefining my current system, with the goal of emulating the sonic aesthetics of "contemporary classical" music on a self-playing modular system. Beyond that, I have a handful of old and new ideas for i2c2midi that I'd still like to implement.

questions.md

Displaying questions.md.



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The Rollz section of my Ciat-Lonbarde Rollz-5 is patched to output sputtering, unstable relabi pulse trains into a Meng Qi Wingie 2. The Wingie's output is then fed back into the Rollz-5 Ultrasound Filter section for further band-shaping and nonlinear filtering.

The filtered signal is routed to the left and right inputs of the delay section on the **Cocoquantus**, configured here as a basic dual delay line. A slow, frequency-modulated oscillator from the **Quantussy** is patched to the verso input to control the left delay amplitude, while a phase-inverted copy of the same modulation is sent to the inverso right delay level. This produces panning left and right in the stereo field.

The Rollz-5, exists as a fundamentally unstable drum and drama machine. I came into it through an ongoing obsession with the broader world of Ciat-Lonbarde and Peter Blasser's circuit philosophy. The Rollz system is a collection of Blasser's paper-based circuits, assembled into a modular field of partial instructions. My first build of the Rollz-5 i titled **Gonzo Rollz** and the most recent iteration, the **Xiaohongshu Rollz Gewei**.



D I G I T A M B L A M A H

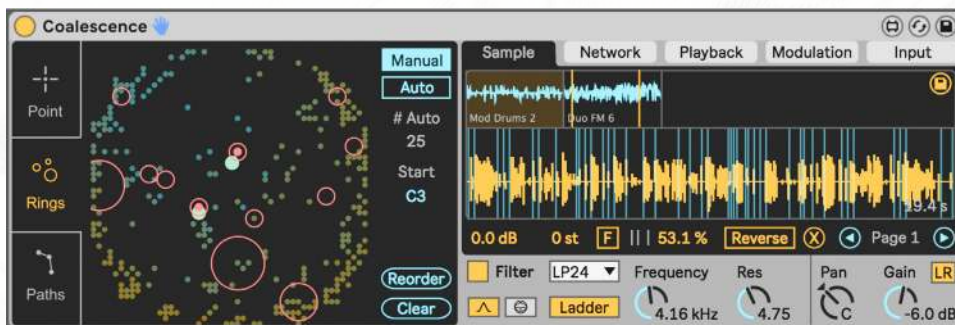
The **Lorre Mille Double Knot** creates binary CMOS sequences triggering left and right oscillators with short decays. The first **shift registers** voltage information is sent to an **fm** input on one of the oscillators on the **Cocoquantus** at audio rate. This oscillator is sent to the left and right delay input as the sound source. The other **shift registers** voltage output is sent to the **CV** input for the left and right delay times. The **Double Knot** goes into the **Wingie 2** before the **Cocoquantus** resulting in some resonating tones throughout the track.

I GET TOO COLD DRAWN SOME THAT

My voice is looped on two tracks of a 6 second tape loop. I sing into the mic of the **Cocoquantus** with each delay time slightly offset. I freeze the recordings of these buffers occasionally and layer vocal notes by punching in, in both long and short durations of time. Sometimes I pitch the recorded buffer/the delay timing upwards.

JAZZ BEAT IN SOIL (MOVEMENT 1 AND 2)

This **patch** is structured around the **Coalescence Max for Live** plugin, which performs real-time slicing, clustering, and timbral sorting of imported audio material. Several **Deadmau5** tracks are loaded into this system, where they are chopped into small samples and reorganized by spectral similarity across an x y circle.



These clusters are mapped to **MIDI** note and cc data. **MIDI** triggers are generated by **Orca**, which sequences event data across a two-dimensional spatial grid, similar to how the sounds are distributed in **Coalescence**.

Orca simultaneously sends midi not infromation to a **Max for Live** implementation of **Mutable Instruments Plaits**, where each incoming **MIDI** event reconfigures synthesis parameters via **Probee** (**M4L**) and expression control modulator that produces a random midi cc value at every midi event received, mappable to any parameter of another plugin or **M4L** effect. I use **Probee** a lot to control parameters of plugins randomly based off of **MIDI** events. Both the drum reconstruction layer and the synthesis layer are heavily processed using **granular** processing, stutter effects and large convolution reverb spaces.

Gainstaging in the mix is achieved through sidechaining: the synth layer is dynamically ducked against the low frequency content of the Coalescence track. I use the Multiband Dynamics plugin in Ableton to separate the bands so that I can place an envelope follower on the bass band more precisely. This envelope is then sent to modulate notch filtering and reverb wet/dry balance on the synth layer.

Orca for me has been another fun puzzle in creating generative systems for note and trigger information. Because orca is on an x, y grid there are a lot of fun patches that happen from trying to fit your code in tight spaces, or bits of code interacting and overlapping with other bits of code. And the grid makes it interesting to block out lines of code, because some things may be only small parts or single operands that you're hashing out or freezing in place, so some techniques I use a lot are hashing out random lines of code across, to get variations in timing and feedback between vertical lines of code. Like drowning my code as it gasps for air. Let me attempt to break down this chunk of code that changes the bpm randomly.

```
.R.....  
.j2Tab.R3.  
.2Xb.2X0..  
.R4..C2.Ra  
D1...02P6.  
*$bpm:065.
```

I'll read this from the bottom up, since the last line defines the actual tempo state.

***\$bpm:065**

the section of code "**\$bpm:**" Has three inlets to the right of it that are the tempo number, and one inlet to the left that is expecting * bang to trigger \$ which is the operand for the script.

The **D** above where **\$** is looking for a bang sends a trigger at a delay of the frame rate, or a division of the bpm. The right inlet for **D** sets the division time, and the left inlet (not in use here) sets the multiplication time. If **D** is set to 1 it will send a bang out of the outlet below **D** on every frame, or every 16th step of your bpm. If it's set to 2 it will bang every other frame, or every 8th step, etc.

Above the right inlet for **D**, where it's expecting a number for a division of the frame right, I've placed **R**. **R** sends a random number between the range of the left and right inlet. The left inlet is left empty to represent 0, and the right inlet is set to 4. Uppercase versions of these operands bang every frame, so **R** will output a random number between 0 and 4 every 16th step. You can use a lowercase **r** and bang the space above the **r** with an operand like **D** if you want it to be active at a band, for instance if you wanted to only choose a random number at a certain frequency.

Now to our **bpm** number. Above the 6 for our bpm number is the operand **P**. **P** writes values for us sequentially eastward, beginning directly underneath the operand. On the left it has two inputs, the first (two spaces left) is the x position **P** is writing in in the key. The second inlet on the left is the length of the key. The inlet on the right is the value that will be written. Above the inlet for the key

Orca is the Bonzai tree, Organic and Hand Re-
fined for Beauty



position I have the operand **C**. **C** is a clock that counts upwards to the number in the right inlet (defaulted at 0-9) at a timing division of the left inlet (defaulted to increment every frame). Because the key length for **P** is set to 2, I set the counter of **C** to 2 so it flips between writing in the 2nd and 3rd number inlet of the bpm operand. Now every frame **P** will write a value to the position where 6 is and then the position where 5 is. Above the left inlet of **P** I have a **R** set to the range of a (or 0-10).

```
.2Xb.2X0..
```

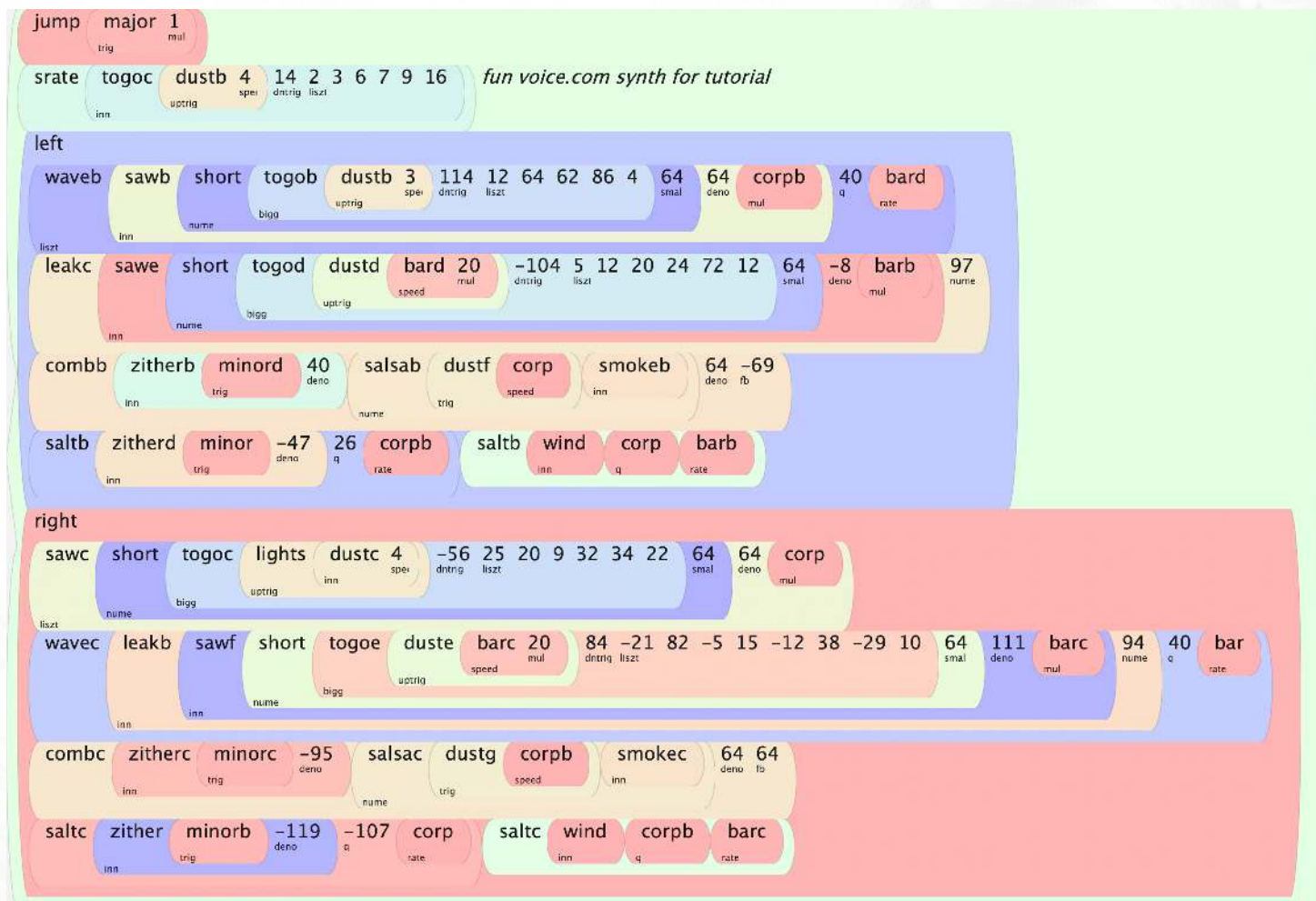
Here's where it gets tricky. I am using the variable **X** to move or teleport a specific value to a different place on the x, y grid, (relative eastward or southward to where **X** is placed). **X** receives two values on the left: the **X** and **Y** coordinates. And one on the right: the value being teleported.

```
.R.....  
.j2Tab.R3.  
.2Xb.2X0..
```

In the left inlet, for the **Y** value, I've input the number 2, because I want to teleport my value two spaces down from the current position under **X**, where the **b** in **bpm** is. Above the inlet for the value of **X** is the operand **T**. **T** is a sequencer, Its two left inlets are the counter for where in the sequence its reading and the length of the sequence. The right inlets are the values for the sequence. In this line of code I set the length to two and the counter to a random number using the **R** operand that will step between the first or second value in my sequence. **bpm** also has another version of itself called **apm**, which animates or interpolates between two values at the frame rate, instead of immediately changing the bpm. I'm using my sequence to change the operand between **bpm** and **apm** randomly by changing the **b** and **a** with the values listen in my **T** sequence.

The second **X** teleports a random value between 0 and 3 two spaces down from the outlet under **X**, to where the first number for the **bpm** is. I set the first number to a random range between 1 and 3 because the maximum bpm range is 300, so the first number only needs to be random between 0 and 3 while the other two numbers can be a random numerical value between 0 and 9.

This chunk of code lets me change the bpm dynamically with control over the

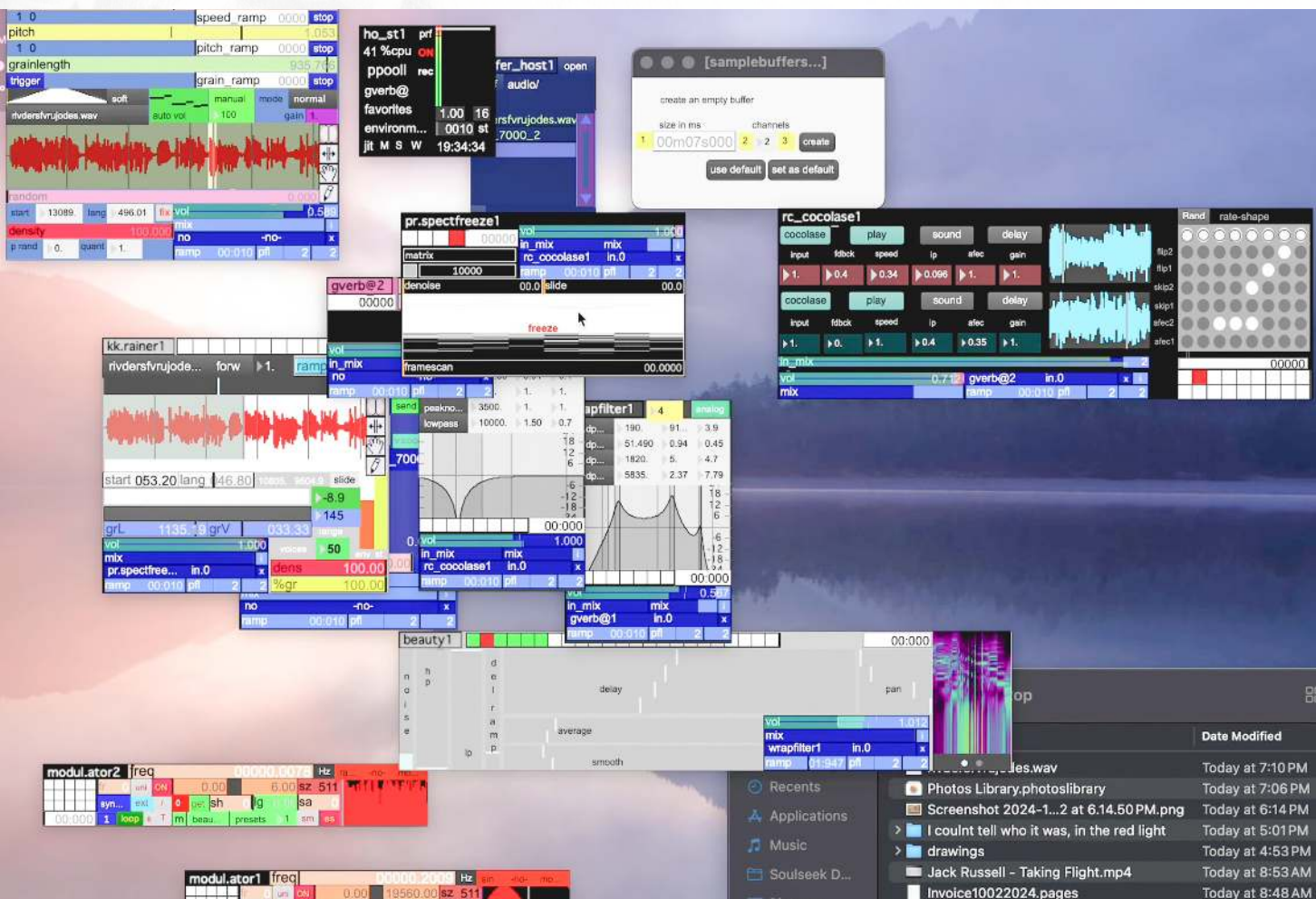


Fish (OSX), Peters's handmade visual coding language for the Shbobo Shnth range and timing of my patch.

P E A R L S :

Orca is the main brain for the sequence, sending MIDI note and random tempo information to the operand plugin in ableton. Operand levels and decay times are modulated randomly at every MIDI note Probee. Reverb dry/wet is modulated randomly using Probee. The kick is being triggered by Orca, and sidechained to the synth.

PLEASANTLY DRUNK, WITH WINGS:



Ppool, an open source visual modular synth environment built in Max MSP. Random pulses and wind from Shbobo Shnth are sent to resonate Wingie, who goes into the Cocoquantus, with different delays for left and right, creating pseudo reverb.

The Shnth is a weird thing. The Shnth is a handheld synth that has touch bars, buttons and two antennas called the corp. You can program these physical points of contact to perform different functions or play different sounds with the coding language fish. Its super fun to interact with and is a whole rabbit hole in terms of synthesis and coding in itself. It also can make sounds on its own without you needing to touch it or interact with the bars or corp, making it super fun to live

code as well. The language is very simple and intuitive, the program uses a graphic interface but you can write, save and load code in text as seen below. I have a few videos on it on my YouTube page if you want to learn more about the code, fish. Here's the code for fish for this patch:

```
{  
(Jump (major 1))
```

The Fish Jumps between Soup

This line of code lets me store multiple fish patches on the shnth and jump between them with major button 1

```
(srate (short (corpb) 44))
```

This line of code allows me to control the sample rate of the audio coming out of fish with the second antenna on the back, short allows me to be more specific (16 bit) with the values i want to control the sample rate with.

```
(leak (left (lights (dust (togo (dustc 5) (dustd 4)  
20 2 4 6 3 60 1 70 18 (wheelb (corp) (wheelb (wheele  
-115 -50) -86) 64)))
```

This chunk of code sends random pulses with random rates out of the left channel of the shnth, the left corp has some influence on the rate of these pulses, but not complete control.

```
(leakb (waveg (pulesec (square (corp) 54) 54) 1  
(corp) 90) (barb))
```

This chunk of code sends a square wave out of the left channel with the cutoff of a low pass filter controlled by the left corp.

```
(leakc (modo (hazeb (duste 12) 2 109 (togoh (dustg  
-61) (dusth -53) 2 4 6 8 10 24 59) 89 64) (corp))  
(barc))) (wheelh 22 85))
```

This chunk of code sends random undulating saw waves out of the left channel with the volume and rate influenced by the left corp and the third bar.

```
(leakb (right (lights (dustb (togob (duste 2) (dustf  
4) 2 8 19 35 2 4 100 1 7) (wheelc (corpb) (wheelc  
(wheeld -9 -1) -32) 64)))  
(leakd (waveh (pulsed (square (corpb) 72) 20) 1
```

70

70


```
(corpb) 90) (corpb)) (leak (modo (hazec (dustf 6) 4
82 (togo (dust 108) (dustb -71) 2 3 5 7 9 12 23 64)
119 64) (corpb)) (corp))) (wheel -104 79))
```

The rest of the code is copied again to come out of the right channel, with changes to certain parameters and using the right corp instead of the left.

```
}
```

SWIH

AYBZ:

In this **ppool** patch a clone of **benjolin** is the main sound source. It's randomly modulated and sent to a reverb. The reverb output is sent to 2 filters both set to notch/band reject and their cutoffs are modulated by two slow moving LFOs. These filters are sent directly to the mixer. The reverb was also sent to a spectral freeze module that froze the reverb and that is being sent to the mixer as well for a frozen drone of a tone from the reverb.

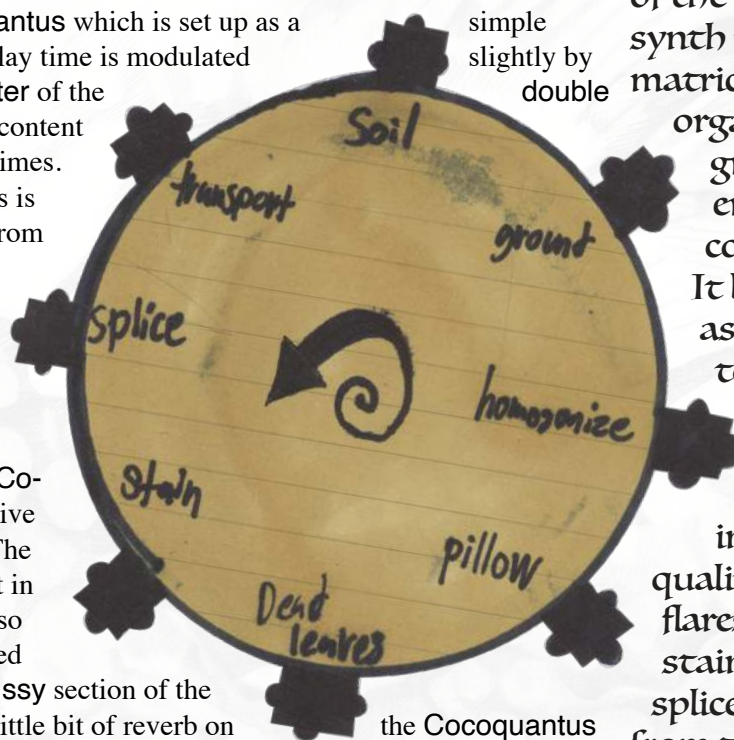
Ppool for me is what I always wanted MAXMSP to be. I dove into max a few times but couldn't, didn't really want to build my own **granular** synths from scratch. It was either too hard or I was too lazy or I didn't really know what I wanted. **Ppool** is a library for max that has a bunch of **granular** synths and delays that people made in max that was exactly what I was looking for out of MAX MSP. That and the option to have as many output channels allowed me to process different **ppool** acts or modules separately in another program like Ableton, or create multichannel audio for spatial audio with 16 channels of **granular**, etc. **Ppool** opened up a whole new world of playability and **patching**. I would often use it with a **midi** controller to control various parameters with physical **midi** sliders. Something I want to try is controlling **ppool granular** acts via **midi** from my modular synth. The **Beauty.act** in **ppool** is also a crazy multitap delay like no other. There is actually a clone of the **cocoquantus** in **ppool** that a user made as well, which I sometimes use. The spectral freeze act is also something unique to **ppool** that I don't use elsewhere, however the guys at **Disting** just developed a spectral freeze algorithm for the **Disting EX**.

ALL OF YOUR TECHNOLOGY WILL FUNCTION PROPERLY THIS MERCURY RETROGRADE:

Double Knot is the main brain of this **patch**. It's set up to be two runglers by using one oscillator to send to the clock of the first **shift register** and the other oscillator to the date in of the **shift register** and the opposite oscillators configured for the second **shift register**. The voltage out of these oscillators are going to

Teletype which is converting the voltage into MIDI notes. One of the on/off binary outs of the first **shift register** is triggering a script on **teletype** that sends that MIDI note to **wingie**. The output of **double knot**, which is a very short decal voltage pulse, as the oscillators are basically LFOs used for timing, is going into **wingie** as an exciter, but we don't hear the pulses themselves until the end of the track. Other pulse outputs from the **double knot** are triggering an envelope for a kick and hi hat. The voltage from the second **shift register** is controlling the decay and timbre of the hi hat. On the ER-301 sound computer there is a dub looper after the hi hat and kick, and a mixer with a grain stretch algorithm that's slightly pitched up. A random voltage from stages controls the speed of the grain stretch, which is pulled from the buffer of the dub looper. Vocals from my laptop are being sent over bluetooth to X1L3 monolith, which also goes into the buffer before the grain stretch.

Wingie goes into **Cocoquantus** which is set up as a left and right delay. The delay time is modulated pulses from the **shift register** of the **knot**, pitching the delayed content upwards with pulses sometimes. The skip input of the delays is modulated by the voltage from the second **shift register**, skipping through the recorded content of the buffer. The flip input of the delays is modulated by an oscillator from the **Quantussy** section of the **Cocoquantus**, reversing the live delay content sometimes. The volume of the left and right in from the **double knot** is also being modulated by a FM-ed oscillator from the **Quantussy** section of the **Cocoquantus**. There is a little bit of reverb on from the ER-301. The **cocoquantus** is also an hardware setup. The two delays and **modulation** sections allow me to create simple delays/reverb but also crazy broken sampled tracks, drunk oscillators and runglers, slurry watery textures, and everything in between. The complete-



Pendant 2 is the **cocoquantussinator** ground earth copper rod spiral machine. Its embedded in rooting the cybernetics of the Grey black synth techno matrices into the organic ever growing generative earth construct. It brings the astral nature to the water and sink-holes. Its as bright in acoustic qualities as solar flares. Its the stain and the splice and spores from timeline trees.

72

72

72

ly organic nature of the circuit design and lofi delay chips used for the sampling sections create such a unique instrument for audio processing that I truly cant find in any other hardware delay processor, nothing sounds like the **coco**. I find it always creates a story of its own out of the content I sample into it. I've always loved simple delay times, and although the **coco** is a type "granular synth" the idea of hard panning sound in the stereo field and the use of oscillators and chaos as the source for delays and timing makes the **coco** unique in the way it converses with the sounds you sample into it. It has a huge spatial quality to it that creates these immersive worlds for me. I use the **cocoquantus** sometimes to create full tracks by sampling a vocal and playing around with the buffer. The Dolby (noise gate/inverso noise gate) switches and envelope follower allow me to insert audio in between the delay effects, or into the delay buffer dry for an interesting effect. Sometimes I also use the oscillators in the **quantussy** to make a bassline or bass notes, or for audio rate modulation of the pitch of the delay buffer or skipping and flipping inlets for the delays.



GLOSSARY

OF

ESOTERIC

TERMS

Ciat Lonbarde Cocoquantus

Benjolin

A chaotic synthesizer featuring two oscillators, a filter, and a feedback system. Its built-in sequencer operates on chaotic principles, producing evolving, unpredictable patterns and distinctive sonic textures.

Chloe

A monophonic Eurorack module combining vacuum tube overdrive, multi-mode filtering, a lofi PT2399 delay with filtering, and a low-pass gate.

Coalescence

A Max for Live instrument that functions as a concatenative multi-sampler. It employs a self-organizing map (SOM) neural network to cluster similar sample slices based on spectral features. Coalescence offers three playback modes, Point, Rings, and Paths, and can use external audio input to modulate playback. Its extensive modulation system allows versatile applications in experimental and traditional musical contexts.

Cocoquantus (*Peter Blasser*)

A Ciat-Lonbarde device consisting of two Coco modules (8-bit digital delays) and a central analog brain called the Quantussy (Nabra).

CV (*Control Voltage*)

A DC voltage used to control parameters in analog circuits. In music, CV modulates synthesizer modules, affecting elements such as ADSR envelopes, VCA gain, and filter parameters. CV can also automate mixing or signal levels over time.

Disting EX

A multi-functional Eurorack module capable of signal processing, synthesis, and utility functions.

Double Knot

The Double Knot v3 is a two-voice generative synthesizer with sequencers. Each voice has a triangle/square oscillator, a shift register sequencer, an envelope, and a VCA. Pre-wired linear paths can be further modulated through up to 20 patch points, producing diverse sounds ranging from rhythmic sequences to complex textures.

ER-301 Sound Computer

A modular, voltage-controllable platform for digital signal processing algorithms. The ER-301 allows musicians to integrate complex digital audio tools into hardware while maintaining expressive flexibility without a computer.

FM (*Frequency Modulation*)

A synthesis and signal-processing technique in which the instantaneous frequency of a carrier wave is varied according to a modulating signal. Widely used in audio synthesis, telecommunications, and computing.

Granular Synthesis

A method of sound synthesis that operates on micro-scale sound fragments, called grains (1–100 ms). Grains can be layered, shifted, or spatialized, allowing manipulation of texture, timbre, and temporal structure beyond conventional sampling or synthesis.

Max for Live

A platform within Ableton Live for creating custom instruments, effects, performance tools, and audio-visual interactions.

Meng Qi Wingie 2

A handheld stereo resonator with built-in microphones for interactive performance and sound design. It allows real-time interaction with instruments, vocals, and environmental sounds.

MIDI (*Musical Instrument Digital Interface*)

A protocol for transmitting musical information such as notes, velocity, and timing between devices. MIDI itself carries no audio; receiving devices generate sound using internal synthesis or samples.

Modulation

The application of an oscillating signal from a source (LFO, VCO, or noise) to control parameters like frequency, filter cutoff, resonance, amplitude, or pulse width. The source of modulation is called the modulator.

Multisample

A collection of audio samples representing a single instrument across multiple pitches and velocities. For example, a piano multisample includes recordings for each key at different dynamic levels.

Orca

A two-dimensional esoteric programming language for creating procedural sequencers. Each alphabet character acts as an operand; lowercase letters operate on “bangs,” uppercase letters operate each frame. Orca can output MIDI, OSC, or UDP to software and hardware, including Ableton Live, Renoise, VCV Rack, or SuperCollider.

Patch

A specific configuration of a modular synthesizer, defining its sound or behavior, usually created by connecting modules with patch cables.

ppool

A modular DSP environment for Max/MSP. It offers tools for audio processing, granular synthesis, ambisonics, live performance, networking, and improvisation.

Probee

A free, MIDI-triggered random value generator. Each note produces six independent random values, useful for algorithmic or generative music.

Quantussy (*Peter Blasser*)

A five-petaled analog device, each petal containing an oscillator. Quantussy generates rhythmic patterns that quantize other oscillators’ outputs. Operates at audio, sub-audio, or “Balcium” frequencies and accepts modulation via FLIP, SKIP, and SP.AF (“Speed Affect”). Its name references the five petals and the quantum physics concept of double quantization.

Rollz5 (*Peter Blasser*)

A device for generating organic rhythms from geometric structures. Rollz5 transforms rigid drum machine timing into fluid, geometrically inspired sequences, ranging from preset switch-boxes to fully modular systems.

Rungler

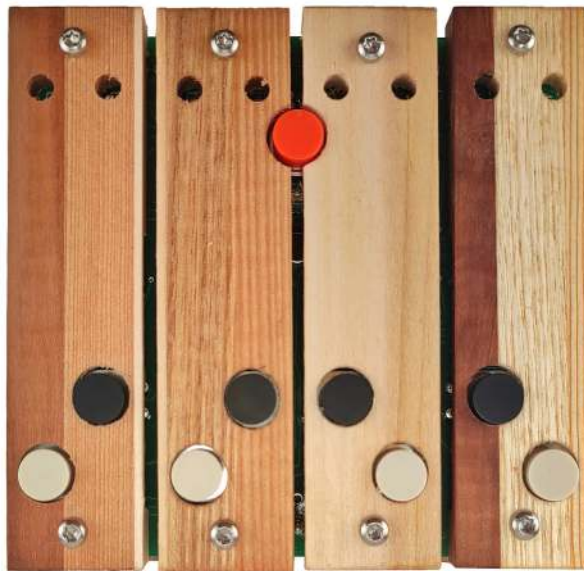
A circuit generating short, stepped patterns with variable speed and length. Functioning between a sample-and-hold and shift-register generator, it uses two frequency sources to create complex interference patterns for modulation.

Shift Register

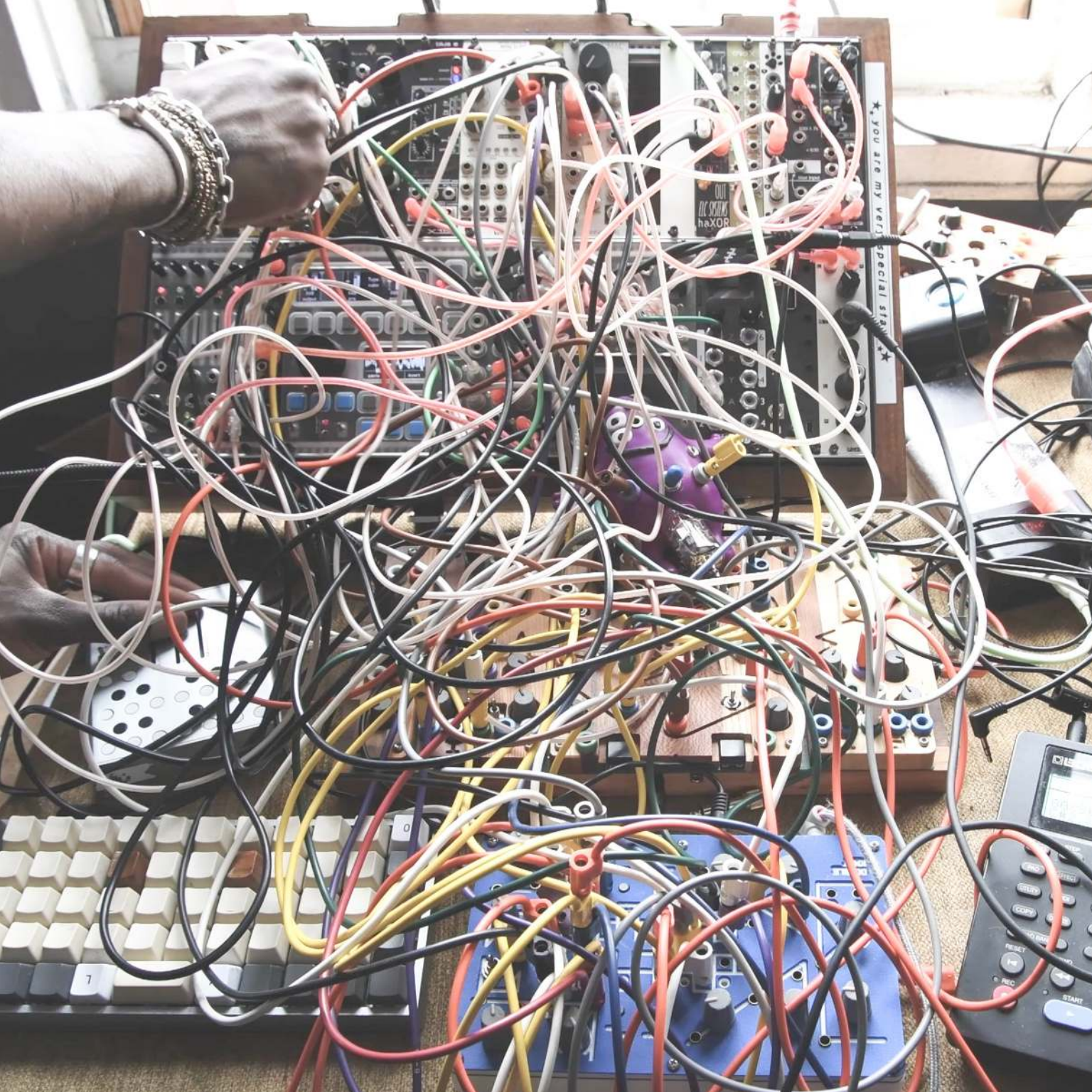
A digital circuit of cascaded flip-flops that sequentially shifts data with each clock pulse, commonly used in sequencers and pseudo-random generators.

Teletype

An algorithmic environment for Eurorack systems enabling dynamic musical event triggering, sequencing, and live performance interaction.



Ciat Lonbarde Shbobo Shnth and Meng Qi Wingie 2





Computation, Technology and Culture

Creative computation became central to my practice when I began searching for ways to gain more control over the generative and probabilistic patches

I was building with my modular synthesizer. At the time, I was fascinated by generative systems and controlled randomness.

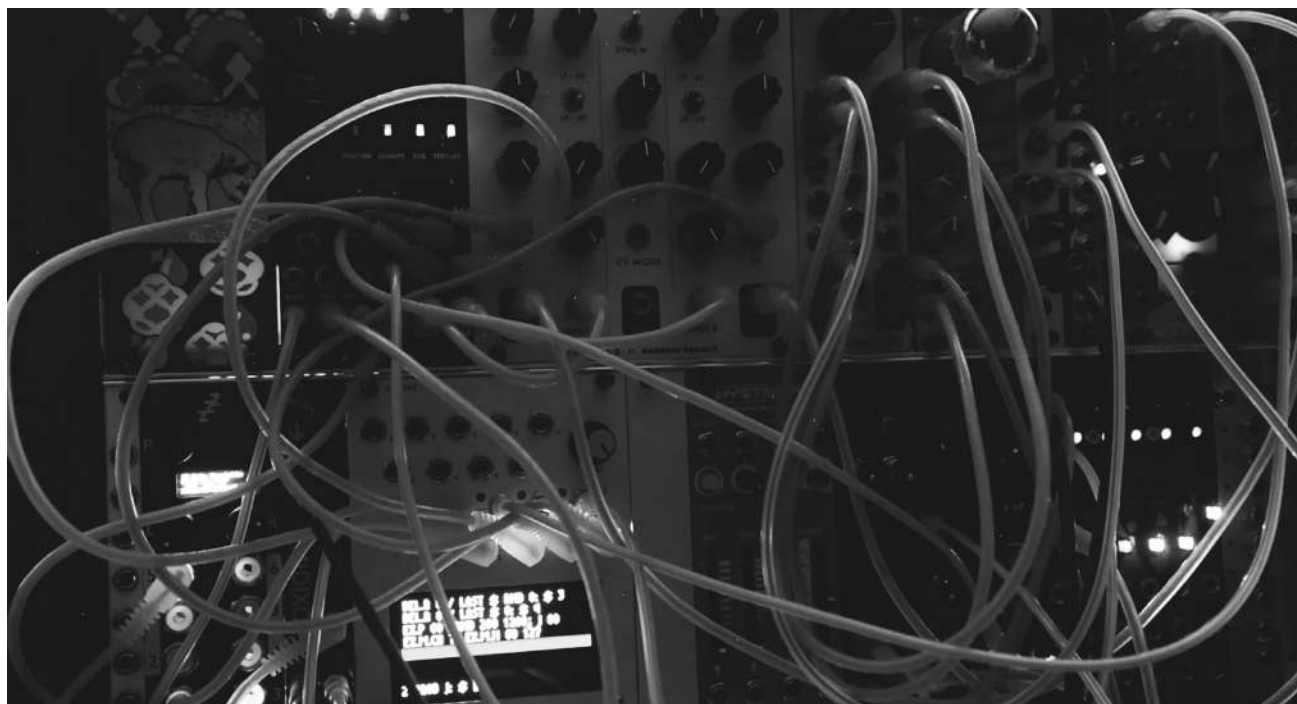
While browsing ModularGrid, I came across the Monome **Teletype**, a Eurorack module that allows the user to write scripts to control voltage, timing, and sequencing within a modular system. At that point, I had no real coding experience, but the idea of learning a programming language inside the Eurorack system felt really exciting in merging the worlds of hardware and software, a unique interface to expand my setup. **Teletype** quickly opened an entirely new world of compositional possibilities. Through stack-based scripting, it became possible to create complex timing structures, algorithmic voltage relationships, and generative sequencing systems that would be impossible to patch manually. Instead of simply connecting modules with cables, I was now composing generative and algorithmic behaviors and relationships between voltages and pulses on a nonlinear timeline. Much of my learning happened through the small but deeply dedicated community surrounding the instrument. I learned a great deal from the engineers and artists at Monome, as well as community

I'm fascinated by generative systems and controlled randomness.

members such as Attowattt, a773, and the tutorial series **Teletype** Talk by EqualTemperament. The extensive forum threads on llllllll.co (Lines Forum) became an invaluable archive of shared experiments, scripts, and technical discussions. Today, **Teletype** remains the brain of my modular system. 95% of my modular patches now begin with a custom script written specifically for that performance or recording.

During Covid, I participated in a series of livestream performances called Flash Crash, in which a small community of artists working with various live coding languages performed improvised sets with their systems on Twitch. Performers would write code from scratch or livecode existing patches in real time over the course of 20–30 minute sets. I performed a couple of these sets using **Teletype** to control my modular synthesizer, and in one instance used **Teletype** to interface with the Serge modular system at RISD.

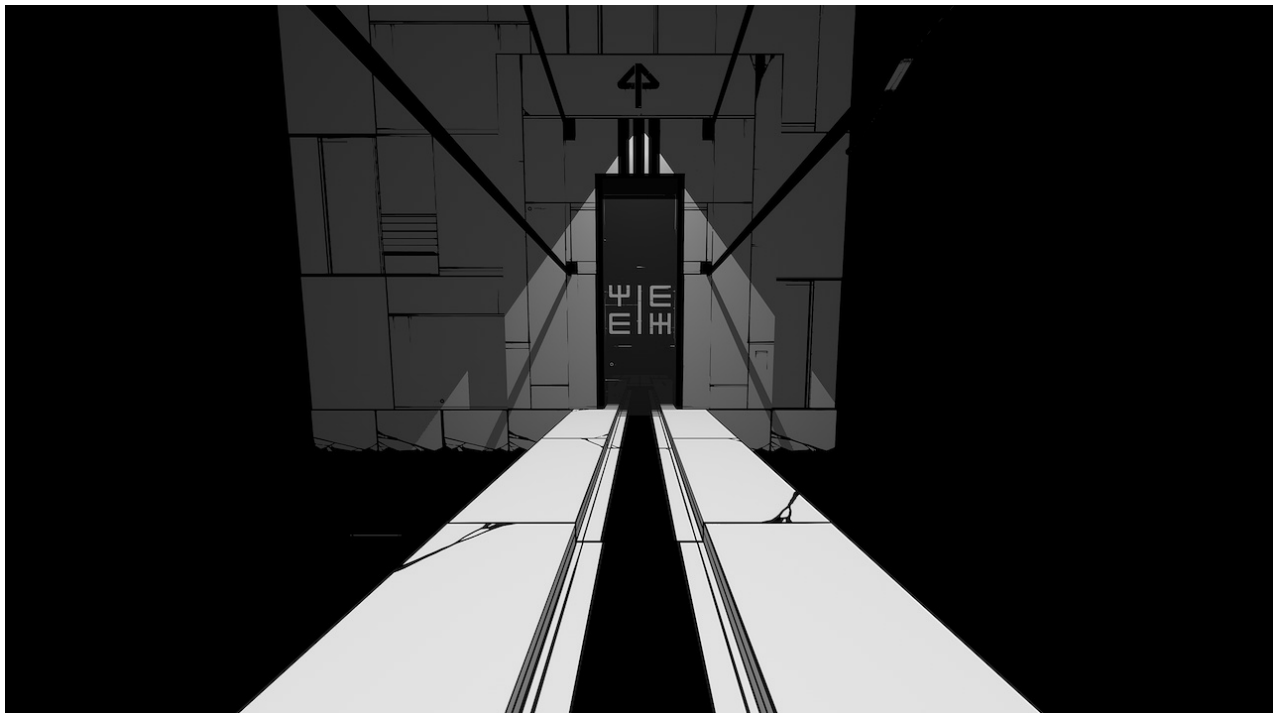
Founded in the throes of the pandemic in 2021, Flash Crash began as a Teletype-only performance showcase. Towards the end of the stream, it was suggested to become a "recursive" event: signups for next time open on stream as the show closes. "To be changed by the world..." was our original call to arms. Soon after we added a mission statement. We have extensive archives of most performances. The final show was on August 6, 2022.



81 These performances exist as documents of live computational improvisation and can be found on my YouTube channel.

Another important entry point into creative computation for me was **Orca**, a live-coding environment developed by the artist duo HundredRabbits (100r.co), composed of Rekka Bell and Devine Lu Linvega. HundredRabbits has fascinated me for years, not only because of their software but because of their unusual way of life. They are artists, programmers, historians, and sailors who live aboard a small sailboat while traveling the world and developing open-source creative tools. Their practice blurs the boundaries between research, art, survival, and software development. It's magical. I first encountered their work long before I could even think of making electronic music or coding. As a teen, I used some of their early iPhone apps, one designed to

practice Japanese Kanji and another called Noircar, an aesthetic, washed-out black-and-white camera filter (my Instagram was full of pics from this app, I miss it dearly). Later in high school, I discovered Hiversaires, a point-and-click puzzle game with an amazing soundtrack. Over time, I became deeply engaged with their online archive XXIVV, an extensive wiki that documents their research, tools, writings, and experimental software projects. Their website functions as a living open-source digital library. Most of my website is inspired and modeled after theirs. Right before I began working with modular synthesizers, when I was primarily working in VCV Rack, I was searching obsessively for unusual or experimental music-making software. At the time, I had accepted that Eurorack modular systems would be too expensive, so I was exploring every alternative, esoteric, weird environment I could find. This was when I discovered **Orca**, their esoteric, grid-based live-coding language built on



100r Hiversaires



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letters of the alphabet as individual operators. **Orca** sends **MIDI** data and is often paired with a simple synthesizer called Pilot. The graphic system of the grid with operators that could fit like puzzle pieces reeled me in. I loved the brain activity of trying to figure out a puzzle or how things worked graphically in relation to each other, but also systematically, while making music at the same time. I became fascinated with how graphical relationships between symbols could produce musical structure. Operators interact spatially and temporally, creating patterns that evolve across the grid. Writing **Orca patches** felt less like programming and more like a living diagram or graphic score. **Orca** anticipated many of the things I would later love about **Teletype**: systems thinking, algorithmic structure, controlled randomness, and the experience of composing behaviors rather than individual notation or

sequencing.

From early on, one of the most important inspirations for my interest in computational music systems has been Autechre. The electronic duo is widely known for their use of Max/MSP, a node-based visual programming environment used for building complex digital audio/visual systems. Autechre uses Max to construct intricate generative structures that produce melodic and rhythmic material through controlled algorithmic processes. Their work demonstrates how computational systems can function as compositional instruments rather than merely production tools. The software becomes a medium through which new forms of musical logic can emerge. A valuable resource for understanding their techniques was Alexander Nicholas Mesker's 2007 dissertation, "Analysis and



Recreation of Key Features in Selected Autechre Tracks from 1998–2005.”

Mesker’s research analyzes how Autechre constructs generative structures inside Max/MSP and attempts to recreate key compositional processes from their work. Studying this dissertation helped me better understand how algorithmic systems could be used to produce structured yet evolving music. Another group of artists who have influenced my interest in computational composition includes Mark Fell, Kindohm, Gábor Lázár, Ryoji Ikeda, Alva Noto, and Aoki Takamasa. These artists explore a particular lineage of electronic music focused on precise digital synthesis, algorithmic rhythm generation, and extremely minimal sonic palettes, often using sine waves, white noise, **FM** and phase **modulation** synthesis, and sharply defined rhythmic and random structures. Mark Fell also frequently uses Max/MSP to generate complex rhythmic systems built from mathematical relationships and algorithmic timing structures.

My own experimentation with Max occurred during the course Sound and Vision, taught by Mark Cecilia. In this class, I used Max to track the movement of my hands and translate that data into control signals for my modular synthesizer. Max allows for these cybernetic interactions of human gesture and the computer. Creative interfaces for this shape people’s unique relationships and developments with their experimental electronics practice, creating something completely cyborg.

Later, in the course According to Chance, I developed an interactive performance using my Eurorack modular system, **Teletype**, and the Monome Grid. The Grid served as a tactile interface for triggering and manipulating algorithmic processes written in **Teletype** scripts.

This performance continued my exploration of controlled randomness and generative structure, but within a live improvisational context. Each performance functioned as a unique, unfolding

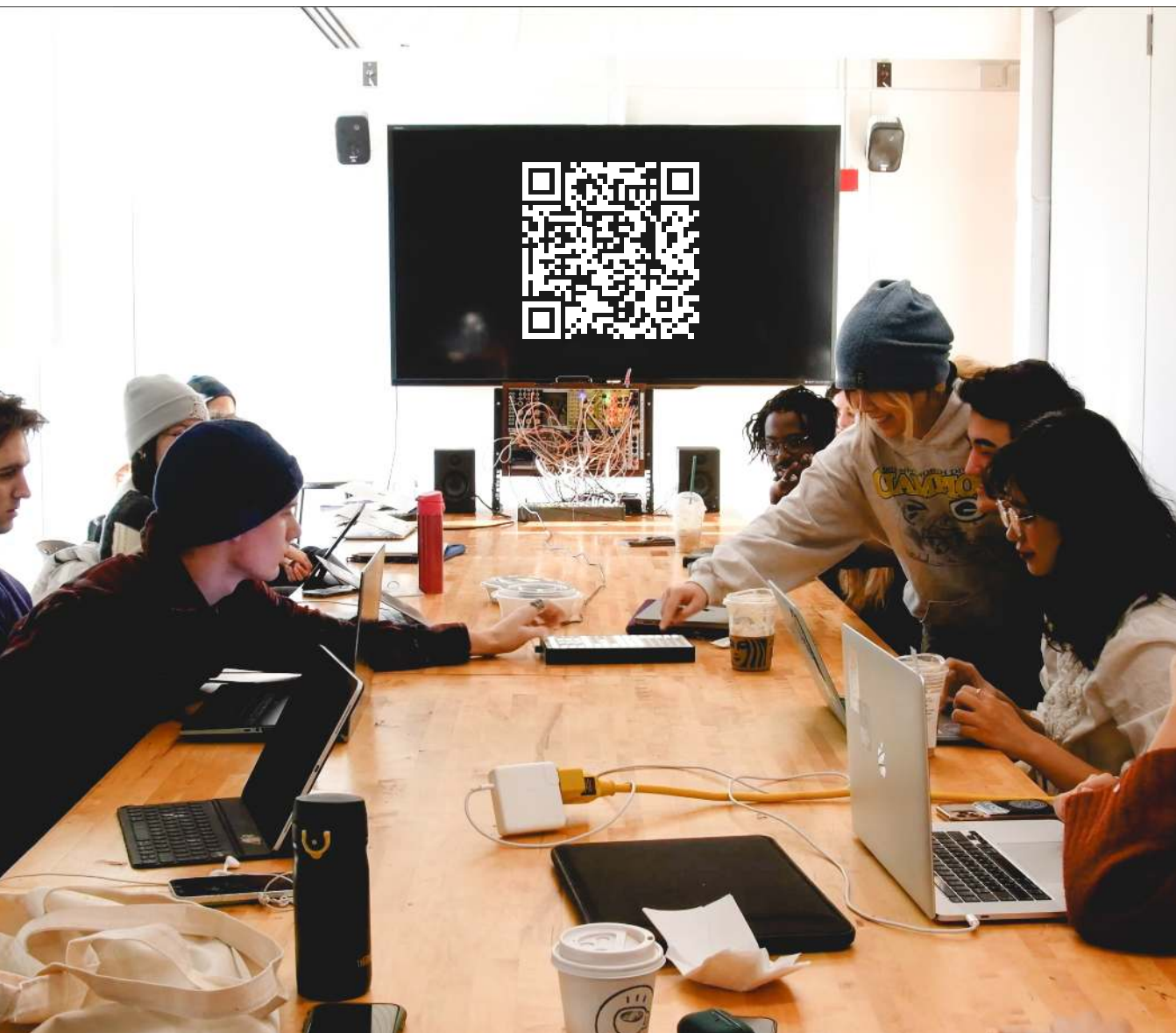
Focussing on Autechre-like material and processes, the practical recorded works use the Max/MSP software environment as a compositional aid to texture musical input (both MIDI events and audio) and to generate musical output. The musical content generated is used to drive synthesis hardware and software, as well as to manipulate and rearrange audio samples. Examples of the programs written in Max/MSP are discussed and their musical output is illustrated throughout the thesis, facilitating discussion of the use of algorithmic processes in musical generation.

This research on Autechre’s creative practices aims to highlight examples of contemporary electronic music practices that expand traditional compositional methods and resist traditional Western musicological methods of discussion and categorisation by focussing on abstracted techniques for musical creation such as meta-level pattern control. As such, a focus on process as compositional aesthetic emerges over and above the discussion of surface-level musical text.

Alexander Nicholas, 2007

system rather than a predetermined composition. In many ways, this approach parallels the broader themes within my artistic practice.

I have been doing a series of Spatial Audio compositions centered around the cybernetics of afrofuturism. For me, these compositions explore an anthology of sound related to the Black experience and abstract them into an imagined futurist Black world through synthesis, sampling, **granular**, and various other sound design and spatialization techniques. Through my performance practice, I explore the cybernetic natures of interacting with electronic controllers to control the systems of music creation as extensions of



the cybernetics of afrofuturism



The Last Angel of History, 1996

the body, and these performances as ritual, echoing the hybrid logic of cybernetic systems. As Kodwo Eshun observes in *The Last Angel of History*, “Afrofuturism is concerned with the alienation of black people in the past and the projection of black people into the future.” This framing resonates closely with the arguments in the *Cyberfeminist Manifesto*, which asserts that technology and code are not neutral, but are tools that can be reimagined and repurposed to challenge structural alienation and reclaim agency within a technological landscape. Just as cyberfeminism calls for the reconfiguration of machines, networks, and bodies as sites of possibility, my work investigates how electronic instruments and spatialized sound can become mechanisms for reimagining futurist Black subjectivities. The performer-system relationship embodies the manifesto’s call to rethink the ways humans, technology, and power intersect, making sound itself a vector for speculative, emancipatory futures.

The layering of historicized sonic fragments of Black music with generative and algorithmic processes produces an ontology of sound that is simultaneously archival and speculative: it references a lineage of diasporic experience while projecting it into imagined, futurist contexts.

This interplay between body, machine, and sound parallels the work of Onyx Ashanti, whose practice redefines gesture as computational expression. Ashanti describes his work as “sonocybernetics,” a complex interplay between sound, electronics, and the body that situates musical performance within a broader cybernetic system in which gestures are informational and are translated into data. In performance, then, the body becomes an instrument of cybernetic negotiation, mediating between the abstract logic of the system and the affective and ritualized experience of sound.

Information Adjustment and the Cybernetics of Afrofuturism by Femi Shonuga-Fleming moves like a river – full of slow eddies and sudden surges – through space and imagined moss floors. The work traces nonlinear histories of Black and Indigenous organic technology, grounding bodies through deep listening as ritual. Drums pulse; jazz loosens into continuous *kaizen*, transcendence accumulating through interruption and return. Field recordings and synthesised tones hold vibration like breath, with the speakers functioning as ritual objects.



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Listening Room Programme 9 : Sonic Acts Biennial 2026





Onyx Ashanti : alpha complexity-sonocybin mixtape(side A) July 10 2017 (ONE mile, detroit)

Berlin-based musician and inventor (and sci-fi fanatic) [Onyx Ashanti](#) has created his own genre of music, which he calls Beatjazz. Describing himself as a cyborg musician, Ashanti states that the music he creates live "cannot be replicated without technology". He also believes that spoken language is a "sort of simplified music", that doesn't engage the full capacity of the human brain.

Ashanti built himself a futuristic musical instrument that wirelessly translates his finger movements, hand gestures and breath patterns into musical data. The first version of the instrument was called the Beatjazz control interface; the most recent version he has christened the exo-voice, which he explains as being a voice from his mind rather his mouth.

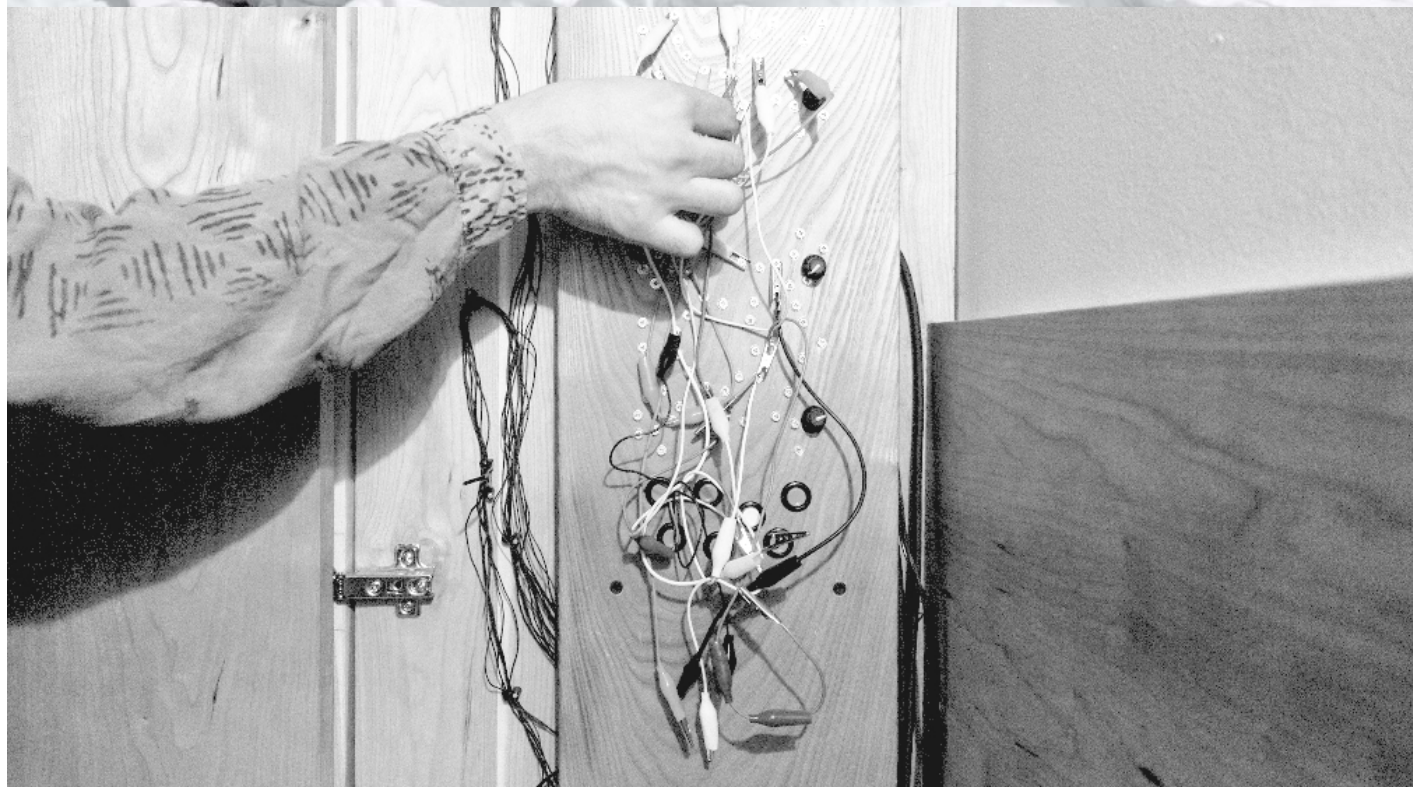
Katie de Klee on Design Indaba

This relationship between bodies, technology, synthesizers, and environments can also be understood through cybernetic frameworks that examine feedback between human systems and technological systems. Works such as Daniel Fishkin's *Bed Piece* explore the body as a communicative interface within social systems of gender and sexuality, foregrounding the feedback loops between the user and the system. Bringing electronics into the intimate world of sex as a control or anti-control interface embedded the body in a new cybernetic ritual, taking the relationship with the system to a very real level. The translator of these sonic bed acts is the piezo. The piezo would never dream of having this important role. This intimate sonification of plurality of the sexual encounter brings the voice of the synth circuits to life during the encounter, while they lie asleep when alone. In this way, the system oscillates between the collective moment of encounter and the silence of solitude, where the circuitry waits dormant until another body reactivates the feedback loop, like the Gamelan players waiting to strike the gong.

*"In 2011, I dreamed of making a circuit that would sonify the discovered plurality of a sexual encounter. The frame for this artwork was thus the bedframe itself, where many of my intimate experiences have occurred. I wanted to make a passive piece, one that would make music when I was with someone, but not require the gestures of an instrument. I didn't want to put music in the background, but rather allow it to be absorbed by the larger, more glacial pace of our everyday movements over many months. But I wasn't in a relationship at the time, it occurred to me that most of my nights were not spent having wild casual sex, but being by myself. I wanted to make a piece that would sound when with a partner, and would be silent when I was alone." (excerpt From *Histories of Bed Piece*, Fishkin <https://dfiction.com/bed-piece/>)*

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Eric Lee

aka easterner

This interview took place on March 24th, 2026 at Conspire, a shared artist studio space in Brooklyn, NY. I've come to know Eric through the LiveCodeNYC group and playing many shows alongside him. On this late night we discussed cybernetics, live code, music and architecture. I met up with them originally to practice for a show I had on the weekend and help them tune their new Danley MEH sound system.

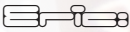


Eric Lee, aka easterner, is an interdisciplinary audiovisual artist/musician from London/Hong Kong, currently based in New York, who explores the cyborg condition: what does it mean to live in interconnected human-machine communities in a precarious world? He experiments with—and glitches—old and new technologies, ubiquitous to obsolete, to explore their poetic potential, as well as to critique their role in society. He is an active performer and organizer in the livecode.nyc collective, and a co-organizer/producer of the Creative Code Art IG community, including its audiovisual event series “& FRIENDS”. He organizes and performs audiovisual shows, and curates exhibitions and workshops. He teaches classes and workshops on livecoding and new media art, including at the School for Poetic Computation (SFPC). He has performed and shown his work at venues ranging from Public Records, Harvestworks, and ZeroSpace in NYC to Gray Area in SF, Dupont Underground in DC, Iklectik in London, and on public screens across Shibuya in Tokyo.

 **Introduce yourself.**

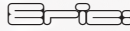
 Hi, I'm Eric. My artist name is Easterner. I guess I make a bunch of different art and music. Often using old and new technology. Often glitching it or trying to push it past its usual parameters. I look for things that are kind of poetic and expressive, maybe critique the role of technology in society. I don't know, that kind of stuff.

 **When did you start performing with live code and what do you like about it?**

 I think in about 2021. I think it came out of doing creative code stuff for a little bit. And that came out of wanting to make visuals for my music. What do I like about it? Generative stuff is fun. Maybe if I focus on a very concrete thing. I played lots of...

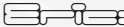
My starting instrument was keyboard. And I did a lot of improvisatory music, particularly jazz and other stuff. And after a while I found that I was really getting locked into different hand shapes or licks or ideas and there's ways to practice through it and out of it but I kinda wanted to make music without a keyboard for some period of time.

 **Yeah, so you have a traditional music background or?**

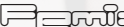
 I guess in that sense yeah, I've learned piano, violin, sang a bit, classical music, then feeling a bit trapped by that and then, you know, jazz, then playing rock, indie rock, a lot of British stuff, and really just lots of playing by ear, after wanting to get away from reading stuff on the page.

 **How has live code and modular allowed**

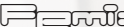
*you to take what you
learned from maybe more of a
traditional background and break
out of it and play with it more?*

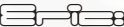
 One is like, sometimes it's complementary and sometimes it's a nice breakout. I think the complementary might be, let's say with live coding in **Orca**, maybe I'm going to store a couple of chords or harmonies, then I can use the live code to flip through it or then play different kind of musical lines through it. So that's one thing. Microtonal is really fun to do in live code and generative music, which is a bit hard to do with regular **MIDI** and a regular DAW. It's a bit of a tangent, but a lot of microtonal implementations are still the 12 notes of the piano plus some weird pitch bend number. So it's not really microtonal. But then breaking out, I think it's just going crazy with the generative stuff and just following where the **patching** leads, if in modular, or following where the code leads. And where it comes back to complementary is, sometimes I feel like on the piano, if it's an instrument that I've played with for a while, or any instrument, I'm usually extending maybe the map, the sort of mental map that I know, and it's like, okay, I can push further in this direction, I know these directions, influences from music which gives me this map. I feel like with live code or technology or generative music you can just teleport

to somewhere else on the map. It's like I would have probably never gotten there. But then I'll take that next time I sit at the keyboard, I'll be like, oh, let me try that. And then that map becomes part of the new map. And I can kind of go from there. So that kind of joins back up, I think.

 *Yeah, it all informs itself*

 Yeah, yeah.

 *Oh, yeah, we talked briefly about this before. I'm really interested in your most recent work with live code and graphic scores for voice using digital software. Could you talk more about that?*

 Yeah, so I've been working on this cyborg choir kind of project where the initial motivation was, because I was always trying to be like, oh, what if I could live code Modular Synth? Or what if I could live code a Game Boy? And it was like, oh, what if I could live code humans? And so there was a technical but artistic kind of journey. There was a technical one, which is, how do I render a scrolling score that a musician of some sort could just interpret? And then the second part was what kind of social, political, cultural stories or tensions can you show with this kind of dramatic or almost theatrical performance of



courtesy of the artist

live-coding humans,
because I didn't want it to be
just a technical demo. I wanted
it to be like, what does it mean for
someone to write an algorithm which
controls, encourages, incentivizes,
pressures, or coerces humans into
performing something, and then
given that you could generate a kind
of unsingable or unplayable score,
could it be on one hand virtuosic,
on another hand inhumane, or how
does it play out? In the world,
companies and entities are

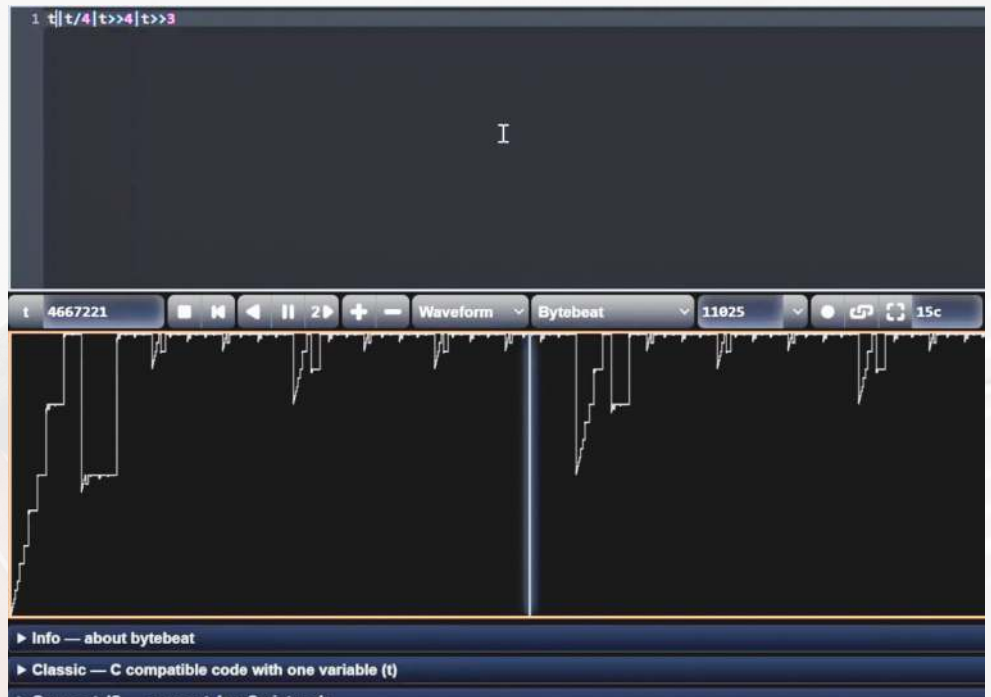
optimizing humans,
workers, with sometimes not
taking into account the human
body. I was thinking a lot about
Amazon warehouses and workers
where they weren't even factoring
in bathroom breaks, for instance, let
alone just worker safety and all of
that. So in this case, it was like, not
just, hey, isn't it cool that we can
send them generative notes and they
can perform it, but also when you
push them hard, what happens?
You need to account for

breath and for the body. And then also, in one performance, there was this idea of actually it's not telegraphed to the audience beforehand but it gets very virtuosic, it gets very difficult, in fact unsingable, until the singers themselves just decide to stop, right, and they stop and walk off the stage. So there's this idea of resistance. And so yeah, being able to kind of perform these kinds of dramas on the stage. One staging detail I forgot to mention is that the scrolling scores are inside of a VR headset, really HDMI goggles that the singers would be wearing. I really liked that visual, the sort of cyberpunk visual of singers wearing headsets with wires feeding into the back of their heads. I want to make these LEDs that transmit in with the notes that are plays, we'll see if that works out.

FWW Hell yeah, that'd be sick, yeah. Where did your interest in the cybernetic connection between the body and the machine come from initially? Like, how did this project come to be? Where did the idea come from?

FWW Yeah, I mean, I think part of it is the role of, you know, cyberpunk stories and media, kind of examples that are both... well, I don't know, sometimes I find it often between cool looking and deeply unsettling in terms of the actual political implications, right?

And I'm always worried of when it's like, you forget that it's troubling and it just looks cool. But on the other hand, yeah, that whole sort of tension. But I think it's also because it was very much a moment where a lot of those trends and tensions flagged by these kinds of stories or literature or media are just coming to roost now in either very prescient ways, especially right now. So I think that gave me this extra urgency to be like, I think this is a real moment to kind of show this or tell these stories. And it's still to me like a canvas to tell different stories, right? It opens up, first of all, you know, the first trial performance was like, can we at least just open up a space to feel like, how should we structure relationships between machines, algorithms, and humans? But then you could tell different stories, right? So I tried to tell one of resistance just in that first one: they'll just take it off and stop because they don't want to sing. Like, who's telling them that they have to sing what's on the screen in front of their face? But another one could be about, well, okay, given the labor of what the singers are doing, maybe there's redistribution. Maybe they swap roles with the live coder. Maybe they swap roles with each other. Or it can be something that involves the audience. So I feel like there's a lot of different dramas that can be told or shown in that kind



Syst3m "Bytebeat - MicroTechno Exploration" on YouTube

of way, beyond just
really enjoying making music
and sound and sight in this way.

*I feel like there's an
interesting connection between
performance art and sound and space.
Do you think of your performances or
your live code as a ritual practice or a
spiritual practice in a way?*

Sometimes yes, sometimes
not no, but sometimes it's just for fun
and just curiosity and play. Arguably,
I could say that I'd like to play more
and I'd like to play regularly in a
kind of way that could be a daily
ritual. But maybe the form and

the spirit and even
maybe a kind of reverence
that can come out of making
this music or making the art or
being present when it's being made,
performed with an audience or not,
it already feels very ritualistic to me,
maybe just because I feel like ritual
to me is already so linked with being
present, present together in different
spatial configurations, sound being
so important to it. For sure. Maybe
the singing part also added a lot to
that for this particular thing. But
even without singers, with electronic
instruments, I think there's so much
aura, that word used in a lot of
different ways these days, as



well as that Walter Benjamin type of aura. What does it represent? Let's say, live-coding a Game Boy. I feel like there's just so much that it embodies that can be unraveled a little bit in those moments. Maybe open a crack a little bit to kind of explore and feel what it traces back to, right? Whether it's just the childhood joy of the sound of when you turn the Game Boy on and it goes, doo-doo, to some of those noise drum sound effects, to using it to make really fast arpeggios, I feel like there's something there.

Ferris *How do you feel like this relates to or informs architecture at all? Do you ever think*

about that? Or even the architecture of the body?

Ferris I feel like I haven't thought enough about these themes even though I've always had this fascination, maybe more from the sidelines or as a layperson with regards to architecture. That said, definitely the sense of structure and being built up from different types of components, materiality, materials used, and then how it shapes and is shaped by the people that are using it, in it, part of it. So I think that really resonates with me. Maybe even just within sound itself, there are so many structures at every level. One type of life-guiding

aspect of this is
byte beats that I really love.
Byte beats or float beats. And
the fun thing about byte beats,
especially the most archetypal form
that emerged, is that it's 8-bit, just
255 values. And there's a modulo
that happens, so when the number
keeps, it's just, at its most basic, it's
a function of time, right? So time just
keeps ticking forward. And then the
level of amplitude of each sample
that you literally just send to the
sound card is that value, but when it
goes above 255 it will wrap back to
zero, right? So that's how you'll get
saw waves or other kinds of things.
But what I love about the structure
of this is it's really fractal. It's all
powers of two, but I love that with
byte beats, the same maths will link
the micro and the macro structure.
So what I mean is the pitch of the
note will be some power of two or be
based on T, that's what will give you
different pitches, notes, melody lines,
bass lines, or whatever. But also the
measures, when the music changes or
when an idea shifts to something else,
is also a power of two. So the tuning
is also related to the length, the tempo
is related to the blocks of structure
of a piece. It's sort of very fractal. I
kind of love that sort of structure that
exists at all these different scales.

 Yeah, that's awesome. Do
you ever think about whether the
acoustics of a space influence

*how you perform in
that space or what kind of
sounds you're playing for that type
of set?*

 Yeah, I think so. Some-
times I feel like I don't focus on one
thing enough, so I kind of love all
these aspects of sound and music.
Maybe it's also starting as a kind of
analog, physical instrumentalist. it's
like, okay, I did that before I thought
about adding digital DSP, digital
reverb to an electronic music set.
So in that sense, I was more used to
being like, oh, when you clap in an
echoey room, you get this sound, or if
you sing or perform in a cathedral you
get that sound. So I guess it already
kind of started out as a thing. But I
love both physical spaces as well as
digital spaces in the sense of reverb
and other things that create a sense of
space.

Actually, one thing about trying to
live-code human singers and human
instrumentalists. I did it with four
singers, and I also did it with a string
quartet, four string players. In next
iterations, I want to do it alongside
digitally mangled voices from the
singers, but also add ambient sound
or glitchy percussion. So having these
real and artificial spaces juxtaposed
is something that I'm actually really
looking forward to doing.

 Yeah, that makes sense
also with the cybernetics of it.

Creating the architectural space for the cyborg also.

☞ Yeah. And of course you have the idea of feedback in a space, right? So having a microphone and an amp, you know, who doesn't love "I Am Sitting in a Room, Alvin Lucier" so there's definitely that part of it that's really enjoyable in terms of feedback from amplification in a room. And then when I work on visual stuff, I had a little bit of an analog CRT TV glitching phase where feedback on a CRT TV and even an analog camera if possible is really fun as well.

☞ Yeah, *feedback is awesome. I feel like feedback is the way a lot of people interact with sound and space too. Maybe their first interaction with it. And there was also the idea you had about doing some sort of spatial audio performance with people's phones and the interaction, the kind of rewiring and reorientation of people's relationships with their phones, but then also through the piece, the physical reorientation of people in space. And I think that's another interesting way of breaking out of maybe the performance of someone being in front and the audience being secondary or watching. I feel like the ritual interaction involving the audience both sonically and spatially is really powerful. What are your next plans? What are you excited about coming up? Or talk about this space also.*

☞ Yeah.

So we're sitting in a shared artist studio, a lost space called Conspire. We're about eight or nine people and we can work on our own works, we can collaborate with studio mates and just artists in community. We try to make it a place where you can host events and workshops. But really I think it was just this idea of it's hard to find spaces to do stuff in New York City and many places. It's probably a reflection of a lot of economic forces that are driving the times and the place, constraints on artists and stuff like that. But then just being able to chip in altogether to kind of be in a space where it just becomes a space for potential. So really what it's going to be is I think part of what's exciting rather than just describing what it happens to be at this moment in time.

☞ Yeah, *and you're already involved in Dweller and having shows and raves and stuff. It's great.*

☞ Yeah, it's so much fun. And now we're building speakers, which is something we're super excited about and I know you're deeply deeply.

☞ Yeah, *hahah.*

☞ What am I excited about? Yeah, I mean, I think continuations of that Cyborg

Choir project, and then also exploring different projects, one of them being about engaging and activating people with their phones in the space or as part of a performance. On one hand, it's like the fact that now many people, most of us, walk around with a tiny, powerful computer that's pretty standardized. It's kind of a new media artist's dream in a sense, like everyone's walking around with that. But it's also dystopian. Whether it's that idea of hating, or not, phones at concerts and gigs, and also I feel like it's such an archetypal image of the time, let's say an agent of the state pointing a gun at someone and that person pointing a phone back at them, filming them as well. So all of these things feel important and being able to tap into that is really interesting. So one of them is live coding everyone's phones to play sound in a space, it's kind of like spatial audio, the people's spatial audio, if you will, because you just have little speakers everywhere. It reminds me of the piece with loads of metronomes, or the piece with loads of sine waves, there are so many reference pieces to refer to. Another one is , oh, that sounds pretty cool --

[We get interrupted by Molly and Shamar testing a DIY plate speaker in the background]

Are we a plate speaker?

*Yes I know!
It's so crazy!*

And even using the screen to make composite visuals from a lot of people's phones. That's really fun. I don't know if I mentioned this bit to you also, but using the phone camera as well. So everyone's phones can be pointed at a performer in the middle

Oh my god this is so dope.

-- a dancer or a singer or something, and to stream all that video to a central server and then to use that as some sort of live visual. One of the initial things I thought was a very David Hockney sort of fragmented view of a single subject, but video and live. And yeah, I would imagine the audience is in a circle, a crowd, all pointing their phones at this performer sort of panopticon-esque or reverse panopticon-esque kind of vibe. So all of that stuff is kind of exciting to me to try out. And actually, I want to try that out with you as well.

Yeah, I want to be a part of that.

I don't know how many phones we can get to do it all at once. But if you're just being a crowd of people. I don't know if you have like 100 people.



Person 1: Yeah, if you have like 150 phones, it'd be so powerful. Probably louder than you'd ever imagine. I guess everyone has individual volume control. Which could also be played with volume-wise. Maybe there's just one graphic score or two that everyone follows. That's

pretty good. Do you know the Ryoji Ikeda piece where he brought a bunch of people with car audio to meet up in one place?

Person 2: Yeah, that's the one I was, Yeah that's one of those references. So good.

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100

100





NASA Space Station Task Force
Innovative Utilization of the Space Station Program
Topic: Programs of Artistic Merit In Space

This questionnaire has been developed to measure interest in the idea of allowing a wide range of artists to use the NASA Space Station, and to determine the advantages, disadvantages and potential of such a program. Omit questions A & B if you wish your response to remain confidential.

- A. What is your name? (Optional) SUN RA (Le Sony'r Ra)
- B. Name of Organization (Optional): SUN RA OMNIVERSE ARKSTAN
- C. What is your position in the organization? COORDINATOR DIRECTOR
TUNE COMPOSER
- D. Type of Organization: Arts MUSIC Scientific SCIENCE Educational SPACE ORIENTATION
Business MUSIC Other(specify) POETRY/LITERATURE
- E. We are interested in specific ideas for artwork if such a program were to exist: please outline your thoughts in the space below, or attach a separate sheet.

WITHOUT THE PROPER TYPE
OF MUSIC YOUR PROGRAM WILL
BE MORE DIFFICULT THAN NEED BE.
YOU KNOW IT IS SAID "MUSIC SOOTHES
THE SAVAGE BEAST" AND WHAT IS CALLED
MAN IS VERY ANARCHY-MINDED AT PRESENT.

- F. What kind of technology, process or facilities do you or your group employ that might have artistic application relevant to an Art in Space program?

MUSIC THAT ENLIGHTENS
AND SPACE ORIENTATE DISCIPLINE
COORDINATE.

- G. Do you think participation in an Art in Space program could potentially benefit your discipline or organization?

Definitely YES
Possibly X
No X
Not Sure X

Please go on to the next page

Pendant 3 is the astral African pendant. It represents the all encompassing compositional compass in its volumeelectricity and amplification. Its the timeline sound mixer matrix cage free and organically grown.

Volume
pollution
noise
abstraction
microsound
field recording
"music"

Pendant 3 is the astral African pendant. It represents the all encompassing compositional compass in its volumeelectricity and amplification. Its the timeline sound mixer matrix cage free and organically grown.

Chapter 5 ~ Interview with Oya Damla

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Oya Damla

Interview by Femi Shonuga-Fleming

This interview happened in a park in Brooklyn near new town radio on October 9th, 2024.

As a sound / performance artist Oya Damla is interested in the process of art and sound making as healing modalities and psychoanalytic inquiry, as well as the sonic experience as a transcendent state. Oya has studied and taught various approaches to

meditation and breath work drawing from her experiences in several meditation / vipassana retreats and trainings. They are passionate about acquiring all forms of knowledge and sharing their experiences with others as a teacher and healer.

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When did you start performing?

My first official public performance was in 2016. It was after an abortion that was caused by me hooking up with another performance artist. Prior to that, I had been more into the experimental music and new music scene when I first came to New York. That took me into many different realms of art and experimental art. I landed in certain spaces where there was also performance art going on alongside new music. I got more and more interested in performance because I was really annoyed with the musicality that was part of being a musician, and I guess I can backtrack.

I did study music and dropped out of college early on, around 2006, 2007. I was really into jazz. I played alto sax, really nerded out on that in my early years. Then when I moved to New York, I was like, oh, the avant-garde is actually still happening. But it wasn't nearly as prevalent as you see now with all these shows happening. It was in very specific venues, and I didn't even know performance was really even happening. Then I met people in those fields and got really inspired because my whole thing with music was that it just didn't give me enough of a medium to express everything I wanted to express. So performance became this sort of playground of concepts and sound. I was really interested in sound as a medium and not as a musical thing. So I started making more noise-adjacent, experimental sound object performance. It was very much inspired by a lineage of performance artists and expressive art and art brut, just very primal, in-the-moment expression. But usually it would be leading up to something.

I wanted to ask you about the idea of "visceral" in performance art. I know you mentioned on your site about expanding on the idea of the visceral nature in performance, whether that be sonic or physical.

There was a point where I'd gone to so many shows and you just watch these musicians, really rigid, sitting at a table or really focused, and they're creating this amazing, beautiful work. But I wanted to see the body also involved. There's this desire that comes out of boredom, which is great for creation. I got bored and thought, how can we make this more engaging for the audience, where there's not such a separation, where the visceral experience of connecting with the humans in the room is part of it. I started thinking about objects. I would go to performances and sometimes there'd be something being used or a visual that would elicit a memory in

me
and bring me
deeper into the moment.
So I started thinking about how
objects, and even spreading out the
set, not having it be so much “this is the
stage, this is the audience”, could create a
more visceral experience. I use my body as
an expressive tool to an extent, but at the time
it was mostly about the disgust I had towards
my body. So it was kind of a shared experience
around why we’re in these weird gelatinous
tubes of flesh. I never got into horror or
mutilation exactly, but I wanted to create
situations where people could feel
something as I was doing things to
my own body, if that makes
sense.

That makes sense; creating a space
for people to feel something physically
that they might not be expecting. I also
wanted to talk about creating a ritual space for
the audience, one that transports them into a
different space through the performance.

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Yeah!

Do
the physical
spaces you
perform in influence
your performance or
how you perform?

Yes.



Oya Damla performing “The Weight of Pleasure”
at Satellite Art Show x Performance is Alive.2021



Yes. Sometimes I don't really know until I get there, but I did go through a period of not having a full idea of how I wanted things set up until I got into the space and then thought about what I could do differently spatially. I've definitely moved things around or set the stage in a different area. The most basic way I've used a space is the floor, that's my biggest thing. Something about being closer to the floor. Acoustically it's a little different too. I definitely haven't had as much experience with how the space responds to my sound because you just show up and use whatever speakers are there. But if I had that opportunity, it would be really fun to explore.

I've made installations in spaces when I arrive, using whatever objects are interesting to me that I find there, either sonically or visually, and incorporated them in the moment. I've definitely used space in different ways other than just being there with my own isolated set. I like to just explode into the space as much as I can. But it's not the biggest part of my process. I have made sound installations using gallery space, and that's its own thing.

That's
awesome.

That's almost similar to a lot of indigenous practices I've been researching. It's interesting that you talk about the ground because a lot of indigenous people do musical performances or rituals that give thanks to the ground and the earth beneath them.

Yeah. That brings up another element of my performance practice, presence and my spiritual practice in yoga. So much of yoga is about getting to be on the floor. One of the first things I realized was that we really don't spend enough time on the floor as adults.

I like the idea of creating a spatial sound, like, picture that you can kinda immerse yourself into.

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And then one of the revelations I had was asking myself why this is so pleasurable, it's because we're rolling around on the floor like we used to as kids. There's something there that feels grounding because you're closer to the ground. That practice also came out of feeling more comfortable with everything spread out and being on the ground. My yoga practice is a big part of how I bring a spiritual, ritualized element to performance, because it's about bringing everyone into the moment, in the way you might as a yoga teacher, which is also what I do.

Its true.

The connection between meditation and performance, it's kind of what I think about with ambiance and noise. By definition they're completely opposite but they have a lot of the same qualities. I never like to say I make ambient or I make noise because they're so intertwined for me. Which is why even a very visceral, interactive performance can also be meditative, either for the person performing or for the audience.

Yeah, I had a similar thing where people would ask what kind of music I make or what I do sonically in the performance. Usually I'd just settle on saying I do soundscapes. I like the idea of creating a spatial sound picture that you can immerse yourself into. Most of my tracks are 30-minute long pieces that have different dimensions. It's not really a form of music per se, but it is, yeah

Yeah. The way it gets composed also has a very architectural nature.

Yeah

Yeah.
One response to one of my performances that I really loved was someone saying, "I felt like I was inside your mind." In some of my soundscapes I'll do self-dialogue coming in and out, and the mania aspect of my performance is where it feels like induced disorientation. But it does feel like a spatial thing too, like your brain is hearing everything I've been thinking about for the last three months. I'm going to bring you all into it, as if we're inside a bubble together. It's very spatially interesting in that alternate-dimension-of-architecture sense. Architecture of the psyche, architecture of

With any experimental practice or performing sound as a ritual practice, you get to create a composition as a conversation with the audience rather than presenting something for them. You're interacting with yourself and the space around you, so there's so much more of a spatial quality to the piece.

connection with people, and how even language itself is so structural. A lot of my objects are also industrial building block stuff , I'll use cinder blocks and drills and chainsaws. The idea of building something and then destroying it at the end is something I've done a lot in my narrative arc of performance. People will notice that I keep bringing back certain objects that play different roles. But yeah, there is an element of: let's build this thing together, and then let's see how abstract and broken it becomes by the end , even if the physical is destroyed, the structure becomes something more.

That's something I find in architectural design too, which is hard to do because you can't really improvise designing a building , which is kind of my goal for my thesis, finding ways of making buildings that respond to a neighborhood or what people might want or need. Or building a neighborhood space that can be multipurpose.

Yeah.

Or things that can shape shift and or have different functions or the ability to be moved and used in different ways. Or, yeah, this, like, temporal nature, like, that can kind of have a purpose and then not haha, Do you see any inflatable things? Like Yeah. And how they're so many different types of things we could use to build structures with, but we somehow always end up using the same few things.

Right?

Which is like concrete, wood, and metal.

But we could be, you know, growing mushroom buildings and, like, all kinds of stuff

with the technology we have.

That's the thing actually is, like, yeah, the destruction of bio matter that creates more food for other, like, organisms to grow and that whole process of, like Yeah. Well, building stuff that supports the things that will keep it alive. Right. Yeah.

There's also, like, material quality seems to be, like, important thing to do in your practice too. You were just talking about using different materials.

Yeah. Or things that can shape shift and or have different functions or the ability to be moved and used in different ways.

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There's also, like, material quality seems to be, like, important thing to do in your practice too. You were just talking about using different materials.

Material quality seems to be an important part of your practice too. I've only seen you once, at The Living Gallery show. There were donuts involved?

(We both laugh)
I love how you used the space and interacted with the audience. People were get-

ting scared but others seemed so engaged, it was one of those performances where everyone seemed to have a very different reaction, and that's a good sign.



A 4th of July themed leaf blower in the shape of a penis blows air loudly as oya drinks milk directly in front of it. The Living Gallery Dec 19th, 2023

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That's good to hear. I'm so glad you saw that. That was actually the last time I did that piece, I think. I mean, I usually never repeat a performance. You could say I do the same thing over and over, but it's always a different experience. That one was very specific to what was happening with the genocide early last fall, and being really emotionally affected by how everything was playing out, not really knowing how to make art in a time of such painful, tumultuous existence. It was that, and a combination of other things I hadn't really dealt with. But I'm glad you saw that one. And it's interesting because my brother was at that performance. It's been a new thing for me to have family in the audience, because I feel like they'd be seeing an aspect of myself they never really see.

Oh, have they seen you perform before then?

He did come to a Chaos Computer performance I did with the chainsaw in the books. But that one was a little more tame, not to say any of my performances are tame. But there is always some erotic element happening. It's not necessarily sexual, but sometimes it's hard for me to get into that eroticism without thinking, oh, my brother's in the audience. But it's not meant to be any form of sexual arousal, that's never been my intention. The intention is more like: uncomfortably aroused without realizing it.



Like a
form of transparency
with the body.

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Yeah. Weirdly erotic in a way that doesn't quite make sense. (Laughter) The leaf blower was a great, fun thing to play with. I'd been wanting to use it in some way, but I didn't know how until it just clicked, I know exactly how this is going to work as a symbol for the United States and blowing money in everyone's face, literally. And the ladder too, another potent symbol. I don't know any artist who hasn't thought of the ladder as a potent symbolic object.

I think for me it was about a deep psychological need to be seen in a way that's not expected, especially as a woman, as a Turkish woman, as an othered body. It wasn't just about art. It was also a deeply decisive action of being like, I have to do this to get over this fear of being perceived. I think everyone has their own needs when it comes to any kind of expression that you come across over time. I use a lot of my dreams as guides in that way.

I've
been trying to
do that too because my
dreams are crazy.

Dreams are super potent. Those libidinal subconscious desires and fantasies, parts of our brain that we don't really allow to speak up or have presence in our day to day. I see performance as a space for that to also come up in other people's minds. I like to make a space where anything can happen. So I have a score, but I leave space for potentialities to occur within the time. I think that's the nature of what play and dream are, not having everything figured out and controlled and structured. In the same way that so much new music and noise and improvisation has done over the past hundred years. But every day it's getting more and more nuanced. Our collective psyche always has something else to explore. Or it's the same thing and there are just infinite possibilities.

How
have you seen the
experimental/noise scene
change since you've been
performing?



I find
it really
difficult to translate
performance online.

There are a lot of amazing
artists doing trans-media work
and intersection of technology. My
performance does get into that to an
extent, I use very visceral objects in
line with Ableton. But in terms of how
it's consumed online versus being in the
room with the artist, for me it just really
flattens and takes away all of that other magic
in the air that you feel when things get really
deep and interesting. But this has been going
on for a long time, and artists are always trying
to immortalize these very hard to make tangible
ideas and feelings. It's an age-old struggle.

I don't think the scene is changing per se, but I
am noticing that the collective zeitgeist right now
seems to be much more curious about perfor-
mance art than it was when I first moved to
New York in 2011, where performance art was
, what is that? The general young person, the
general artist, even musicians, a lot of my
friends went to The New School, and there
was performance happening there, but
very insularly. All of the other perfor-
mance spaces felt very insular too.
Now I feel like the general person
knows what performance art is. If
you say "I am a performance
artist," they're not going
to be like, so are you
a musician? A
dancer?

Do you
do burlesque?

Is it circus? There
wasn't as much collective
awareness of the history and
presence of conceptual perfor-
mance art as there is now. That's
probably related to Instagram, social
media, and more celebrities obviously
incorporating performance acts into their
lexicon. It feels different in that way. And
it kind of gives me, and a lot of people, I'm
sure, a sense of validation for what they've
been trying to make come across for years.

Even new musicians I've known coming out of
school and gigging are just now getting recogni-
tion after 10, 15 years on the scene. There really
is a bigger awareness of experimental forms than
there was. Not just in the art world, with the
average person too.

Another thing about noise and the noise scene
, I feel like it's this great mechanism for up
and coming new artists. There's just so much
libidinal energy they want to get out of their
system, and noise is such a great starting
point for that. There's just an inherent kind
of performative nature to it, but I wouldn't
say that it's performance art. That was
kind of what I was trying to bridge in
my work: sound art, performance
art, and noise. I feel like there's a
trend now of people primarily
making music and noise
who want it to be even
more dimension-
al, so

they're getting interested in performance art, but I don't know if that's exactly what they're doing. And I don't think anyone really knows what they're doing. I feel lost every second of the day. But I did feel like there was this moment where people started trying to make their sets more fun by putting in performative actions, without necessarily adding to the conceptual part of it. It makes it fun, and that's part of the whole experience. The theatricality of all performance is just that we want the audience to have an elicited response.

Sometimes you can't tell when it's a really long form piece and everyone's just sitting quietly how it's affecting them. But that's the nuance of all different forms of art. You can stand in front of a painting for an hour and have a full-on vision quest, but it doesn't have to reach out and grab you. I think the spectacle aspect of performance art is what I was getting at, are you trying to make a spectacle? What are you doing it for? Is it for the Instagram post? I think that's what everyone thinks about too: am I doing this? What am I doing this for?

Do you feel like you've seen things that have made their way into your own work?

I get inspired by other people's actions and work them into what I'm doing, and I think that's beautiful. I don't think anyone owns or has authority over these actions. A couple years ago I did a performance where I used a certain action, and a friend of mine said, "that's mine. I did that." And I was really mortified, because that's my worst nightmare, copying a peer I work with. But you realize it's like: I had no intention of doing it, but sometimes it's subconscious. Sometimes it's just in the collective consciousness, and eventually everything is going to come up again. Like the eternal return. But it did affect me. It made me feel like I needed to be more careful about what I was doing and why. I didn't go to art school, I didn't study performance art, so I'm sure there've been things I've done that have been done before. But it gets tricky. You do want to respect other people's ingenuity and give them credit for coming up with things no one's ever come up with. Not to say that particular action was theirs. But yeah, it's a crazy, weird world of people's egos, and we all want to own our things. I'm just not a savvy person when it comes to marketing myself. There are career artists who are very much about that, and Instagram is huge for them. I use Instagram more as: here's a

show, here are
all the friends I
know who'd come,
and here are all my
manic obsessions.
I'm supposed to be
getting more serious
about my online

presence. But it is
a really tricky thing.
You're in school,
and everyone has
to eventually use it
as a tool. It's all a
spectacle.

"I get inspired by other people's actions and I think that's beautiful. I don't think anyone owns or has authority over these actions."
"I get inspired by other people's actions and I think that's beautiful. I don't think anyone owns or has authority over these actions."
"I get inspired by other people's actions and I think that's beautiful. I don't think anyone owns or has authority over these actions."

I wasn't really surrounded by a scene, so Instagram kind of made my network. It's also strange, not a real place at all.

Yes. The architecture of different spaces, the social Instagram. The hierarchy, who's at the top, how people are defined. But if we didn't have this numerical quality, maybe it would feel more network-like and less competitive and capitalist, which obviously is a big part of why Instagram is so messed up. There are platforms that seem to decentralize, but they still don't have the gloss and glitz of Instagram, or maybe it's just that Instagram came first and is now wired into everyone's brains.

I've been trying to think of it more like what the goal of the early internet was like. Instagram for me is more of a web ring where everyone is connected cyclically, but not a higher-level form.

It's a new paradigm, feeling all these eyes on you. And even if they're temporary and they just like and move on, there's this feeling like there's no private sphere. But if you're curating it and there's a separation of "this is my online avatar, and this is me," that's the only way I feel comfortable with it. I like stories because it's storytelling, you're just saying what's on your mind.

What would be your ideal perfect space to perform?



Most recently, I felt like I would love to have an outdoor space with nature involved and use the sound of what's happening in nature as well as technological things that could be integrated. Sure, there's a lot of spaces like that already, but I guess if it had to be a building, I just wanted a grove of trees and, a way to have people swinging from them and audience members can just be, like, touching the trees somehow, and the trees are also part of the audience. The trees are watching?

Yeah. The trees are watching and listening. I've done little projects here and there, like, using tree branches and correlating, like, the human body with the tree as a structure, but, I don't know. That's it. I might have to really think

about that in terms of my ultimate ideal because every performance is a different situation, so I kind of work with what the universe has just given me.

I like the idea of space where it could be, like, everyone can be anywhere as an audience member, but still see what's happening.

That's my least favorite thing if performance has happened. It's actually happened in LA at Ron Athey had a performance, it was set up so terribly that, like, the whole crowd was crowded around this one table where he was on and no one else outside the perimeter of the table could see and I'm like, this is not - so, ultimately, I guess.



Everything
should just be an
atheon.

Exactly. Like, the emphasis. Yeah.
Amphitheater, the elevation. And I like
the idea of the audience actually being higher
up and, like, looking down. There's something
weird, I think, about, like, stages elevating the thing
so much, depending on what you're doing, though. Like,
there's so many different elements that would go into it.
And, of course, it would just depend on what the situation
and the performance is gonna be. And yeah. It'd be cool
if there were, like, moving walls. Like, if you just had,
like, a wheel you know how they have, like, panels,
like, building a set, and you could decide or
maybe circular would be fun.

In
relation to the
whole architecture
of the space you
perform in.

And also, acoustically, I think
the domes are really fun to have for
sound. The silica type structures and natural
light, like Yeah. Is so great.

I actually performed in a boiler actual boiler room inside of
a slop sink and had everyone, like, peering in through 2 more,
like, doors. So there's, like, stuff like that where it's like I've
seen performances where you can't see it. You have to, like, go
outside and look in through the bathroom window, and there's
this element of voyeurism happening. That's really interesting,
actually. So, like, a giant dollhouse that you have like, the
audience has to, like scale and, like, sneak around
to see what's happening kind of. I don't know.
There's a lot of fun things.

Well,
we have, like,
one of those, like, the
McDonald's playhouses, like,
performing in one of those
tubes.

Yeah. Oh, that would
be so, that's a great idea.
Yeah. Making a bunch
of tubes. That would be
crazy.

This conversation with Oya Damla illuminates many of the threads central to my own research and practice, particularly the interplay between sound, space, and ritual. Oya's reflections on the visceral and spatial dimensions of performance echo my investigations into how sound can shape architecture and how bodies move through, inhabit, and respond to space. Their emphasis on improvisation, the temporality of experience, and the integration of found objects resonates with my goal of designing environments that are flexible, participatory, and deeply attuned to the human and non-human elements of a site. The discussion of grounding, presence, and meditative engagement reinforces my understanding of performance as a conduit for relational and environmental awareness, while the experimentation with symbolic objects and ephemeral structures parallels my architectural explorations of temporary, responsive, and multipurpose spaces. By placing sound and ritual at the center, Oya's work exemplifies a model in which architecture, performance, and sonic practice intersect, offering a conceptual framework that bridges experiential art with the spatial, temporal, and social concerns of my thesis.

Chapter 6 ~ Above and Beneath: Acoustmatics in Architecture

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We acknowledge that Bushwick, Brooklyn stands on the ancestral and unceded homeland of the Lenape people. For thousands of years, the Lenape stewarded this land, its waterways, and ecosystems with deep care and reciprocal responsibility. We honor the Lenape as the original caretakers of this place and recognize the enduring presence, culture, and sovereignty of Lenape communities today. May this acknowledgment remind us of our responsibility to respect the land and care for the ground beneath our feet.



There were 3 advanced studio courses that shaped the trajectory of my thesis: Spaces for Mediation, States of Exception, and Urban Metabolism. In these courses, I developed my research by applying my design skills in reference with my sound practice. These classes allowed me to explore the conversations between sound and space, root it in experiential and cultural contexts, and design interventions accordingly. These are the bare roots of my thesis. Alongside these, I also made a short film titled “Thanks to the ground beneath my feet,” exploring questions and themes of the thesis. In this chapter, I sort through these projects in detail, along the timeline of the world of my thesis exploration, in all its design and poetics.

Spaces for Mediation



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from The First Water Is the Body by Natalie Diaz

"I must preserve the river in my body"

Jacques Derrida says, Every text remains in mourning until it is translated. When Mojaves say the word for tears, we return to our word for river, as if our river were flowing from our eyes. A great weeping is how you might translate it. Or a river of grief. But who is this translation for and will they come to my language's four-night funeral to grieve what has been lost in my efforts at translation? When they have drunk dry my river will they join the mourning procession across our bleached desert? The word for drought is different across many languages and lands. The ache of thirst, though, translates to all bodies along the same paths—the tongue, the throat, the kidneys. No matter what language you speak, no matter the color of your skin. ◀ We carry the river, its body of water, in our body.

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In the same way that water flows through our bodies, sound is something we all experience, a universal medium. The practice of listening itself is a translation beyond words, on an architectural scale. There is this focus to preserve language in culture. In my practice, the lost information in that translation presents itself as part of the conversation of sound. Sound has no history or future; it exists in the moment. In my search for sound and performance as a way to give homage to certain cultures, this misinformation and conversations around translation present themselves in the grains between words. The sound is the river that physically connects us all; it has no words at its base.

This was a mostly research-based course. Over the course of the semester, I researched Lenape people, specifically their use of the drum as an instrument for ceremonies and rituals. The Lenape people use the drum to celebrate the land as a spiritual practice. The drum represents the heartbeat of the earth. In itself, these drum circles, the communal gathering and social nature of them, is the ritual that brings them together. There is a clear connection between the ritual of the drum circle and dance music and club culture on the same land today: the collection of bodies in a space, listening to the same heartbeat rhythm. There is power in this translation over hundreds of years later. Through the collection of indigenous music and alongside my existing performance practice, I wanted to make a speculative futurist land acknowledgment with the elements of my research. At this time, I was writing my systems manual and thinking about systems of modular synthesis and different audio manipulation techniques. I wanted to bridge the traditional vocal and drum rhythms of the Lenape people with experimental electronic music

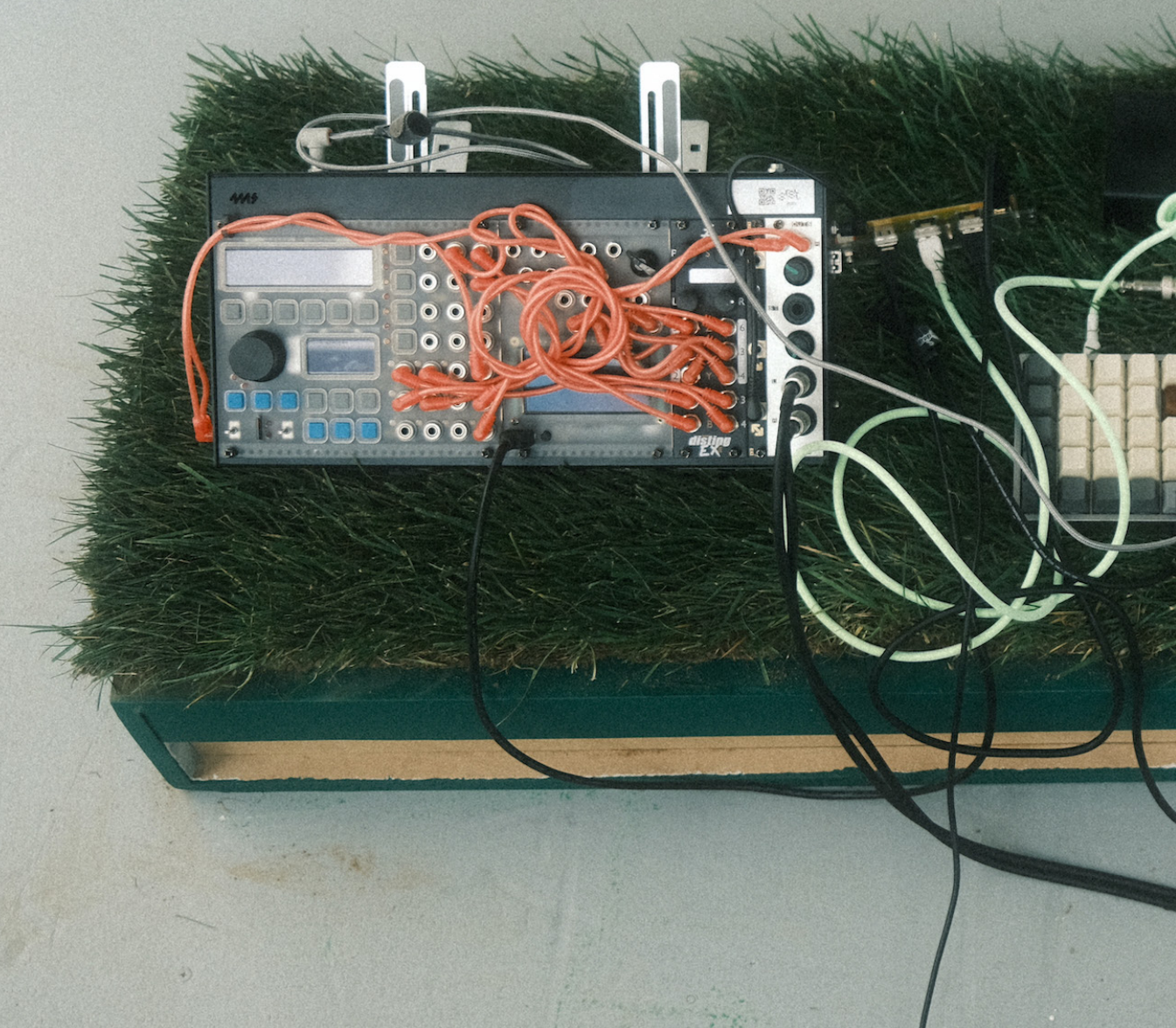


to emphasize the nuances of these connections between the two. This took place in the form of a performance piece at the end of the course, including tape loops of field recordings of water taken from sites in Bushwick, where the Lenape tribe would have been. Water was a grounding symbol, an element that has stayed the same from then until now, yet is always fluid and organic. The tape loop also included a Lenape song. These loops were then sampled and processed by my modular synth with granular synthesis.

The audio mixer and all of the electronics were coupled to the ground or their surfaces by a sheet of grass. I treat this grass, a completely organic material, as the grounding element (poetically with ground in electronics terms). The layer in-between gives the electronics life in their utilitarian nature, as if they bloomed from the dirt. This performance was not only a presentation of my land acknowledgment and research but a ritual practice in itself and a representation of the history of music culture.









Granular synthesis:

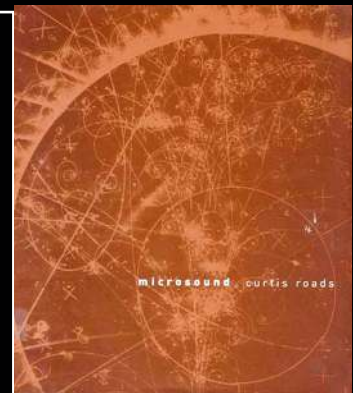
Granular synthesis is a sound synthesis method that operates on the microsound time scale.

A piece of music composed with fast and slow granular synthesis.

It is based on the same principle as sampling. However, the samples are split into small pieces of around 1 to 100 ms in duration. These small pieces are called grains.

Multiple grains may be layered on top of each other, and may play at different speeds, phases, volume, and frequency, among other parameters.

At low speeds of playback, the result is a kind of soundscape, often described as a cloud, that is manipulatable in a manner unlike that for natural sound sampling or other synthesis techniques. At high speeds, the result is heard as a note or notes of a novel timbre. By varying the waveform, envelope, duration, spatial position, and density of the grains, many different sounds can be produced.



Curtis roads : Mircosound

From Curtis Roads: Microsound p.3

Above the level of an individual piece are the cultural time spans defining the oeuvre of a composer or a stylistic period. Beneath the level of the note lies another multilayered stratum, the microsonic hierarchy. Like the quantum world of quarks, leptons, gluons, and bosons, the microsonic hierarchy was long invisible. Modern tools let us view and manipulate the microsonic layers from which all acoustic phenomena emerge. Beyond these physical time scales, mathematics defines two ideal temporal boundaries—the infinite and the infinitesimal—which appear in the theory of musical signal processing.

From Curtis Roads: Microsound p.328 ~ On the Aesthetics of Composing with Microsound

The aesthetic of organized sound places great emphasis on the initial stage of composition—the construction and selection of sound materials. This may involve synthesis, which often begins with microsounds, furnishing the elementary components used in the assembly of higher-level sound objects. Just as the molecular properties of wood, thatch, mud, steel, and plastic determine the architectural structures one can construct with them, so sonic microstructure inevitably shapes the higher layers of musical structure. The middle layers of musical structure—mesostructure—arise through interaction with the material.

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An example of granular synthesis. Note how the tiny snippets of sound (the grains) are initially distinct, but then blend together, generating a completely new timbre.

Both have been used for musical purposes: as sound effects, raw material for further processing by other synthesis or digital signal processing effects, or as complete musical works in their own right. Conventional effects that can be achieved include amplitude modulation and time stretching. More experimentally, stereo or multichannel scattering, random reordering, disintegration, and morphing are possible.

Why granular synthesis?

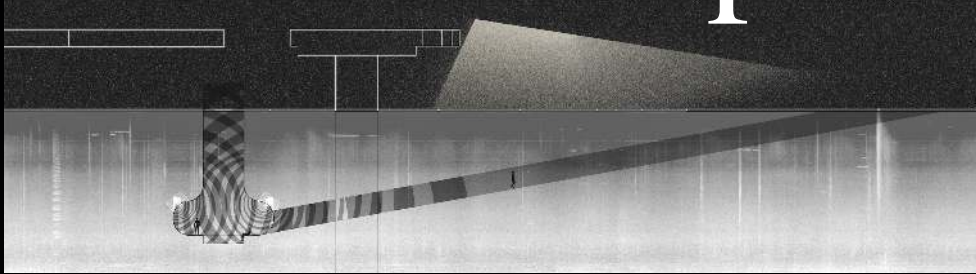
I'm drawn to this form of experimenting with audio in this project in particular because, as a concept, it is related to nature, generation and generativeness, an initial state of being, and evolution over time.

Granular synthesis reminds me of grains of sand. The wind blows grains of sand in the wind to create a new portrait in the ground. Recorded audio is a trim and cut/sample of that moment in time, representing sound visually, sand and dust in relation to minimalism and minimalistic moves within composition. Granular synthesis reminds me of evolution. You start with a set of genes, that is your audio, your initial state, first generation, and as you stretch that state, that initial audio over time, the longer the audio is stretched, the audio adapts to itself and has to inevitably evolve into a new form of being. Granular synthesis reminds me of raindrops in a storm.

Microsound in repetition as time stretches is essentially a ritual practice, as the longer the audio is stretched, the more the repetition of elements of the audio and the longer the ritual practice.

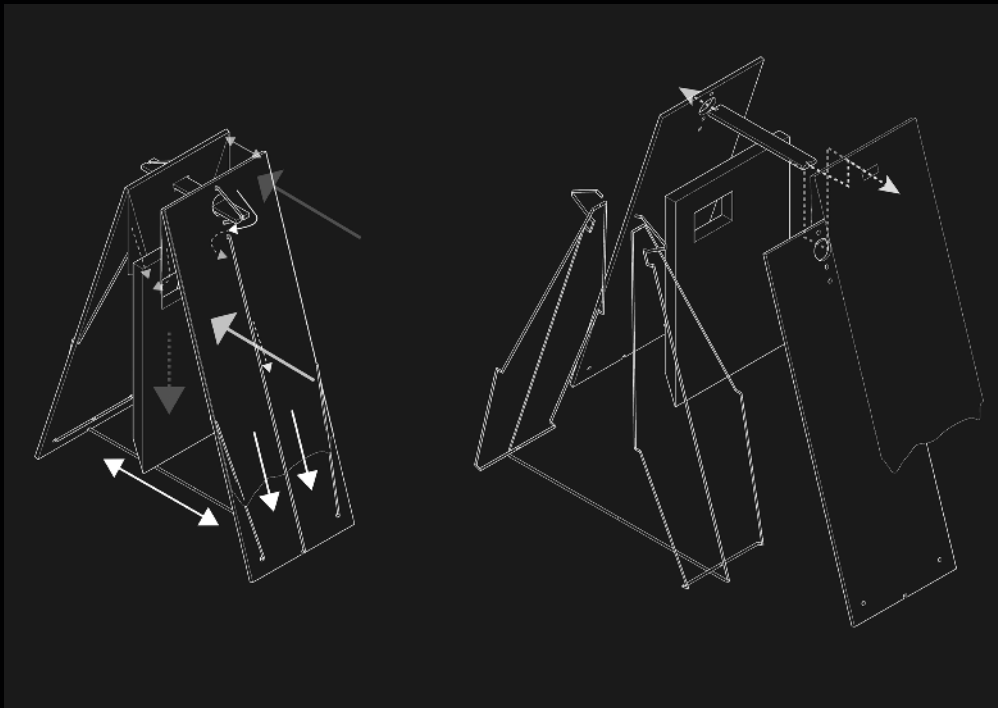
The formal qualities directly relate to musical and architectural composition and lenses for me to compose music for architecture, spaces for sound, and the ritual of composing and performing experimental music.

States of Exception



In this course, I explore the sacred and the profane in relation to sound culture and architecture. Within a predominant monoculture, the depictions of the sacred and the profane are weaponized to control and erase the imagery of counter-cultural movements, thereby further marginalizing their members. The sacred is elevated as an untouchable realm associated with established values, while the profane is cast as deviant and rebellious. Counter-cultural movements, seeking safety, work to unlearn narratives and reclaim symbolism to represent their journeys, create new spaces, and build community. Building on research on

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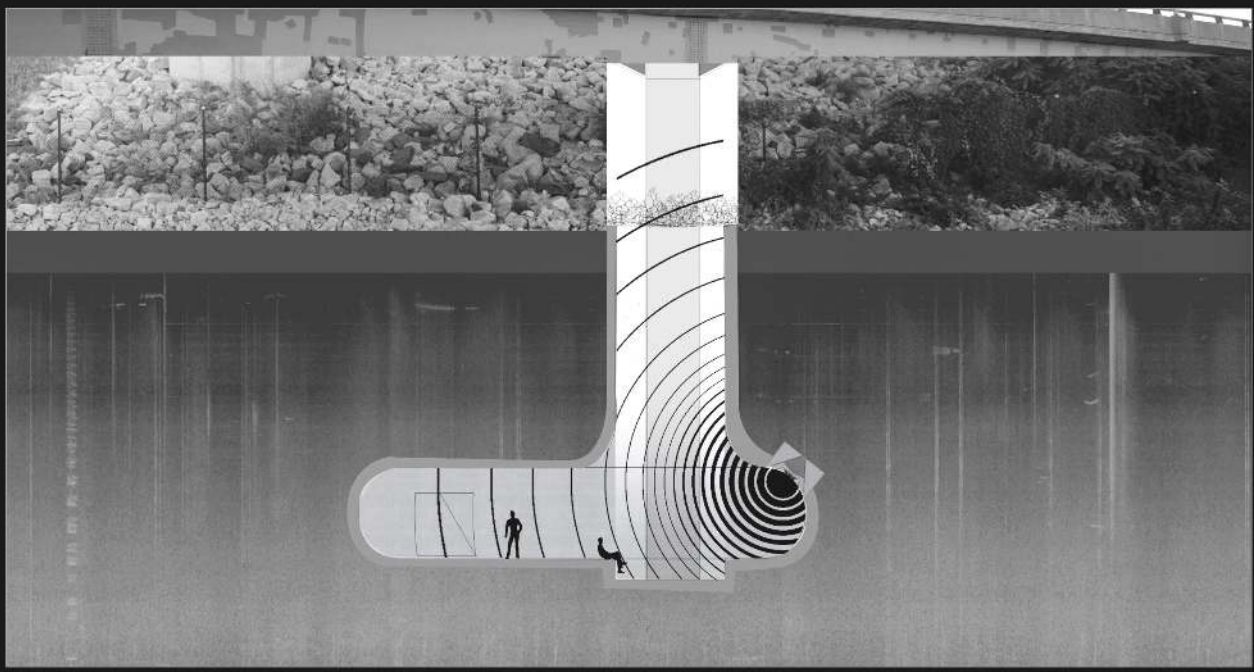


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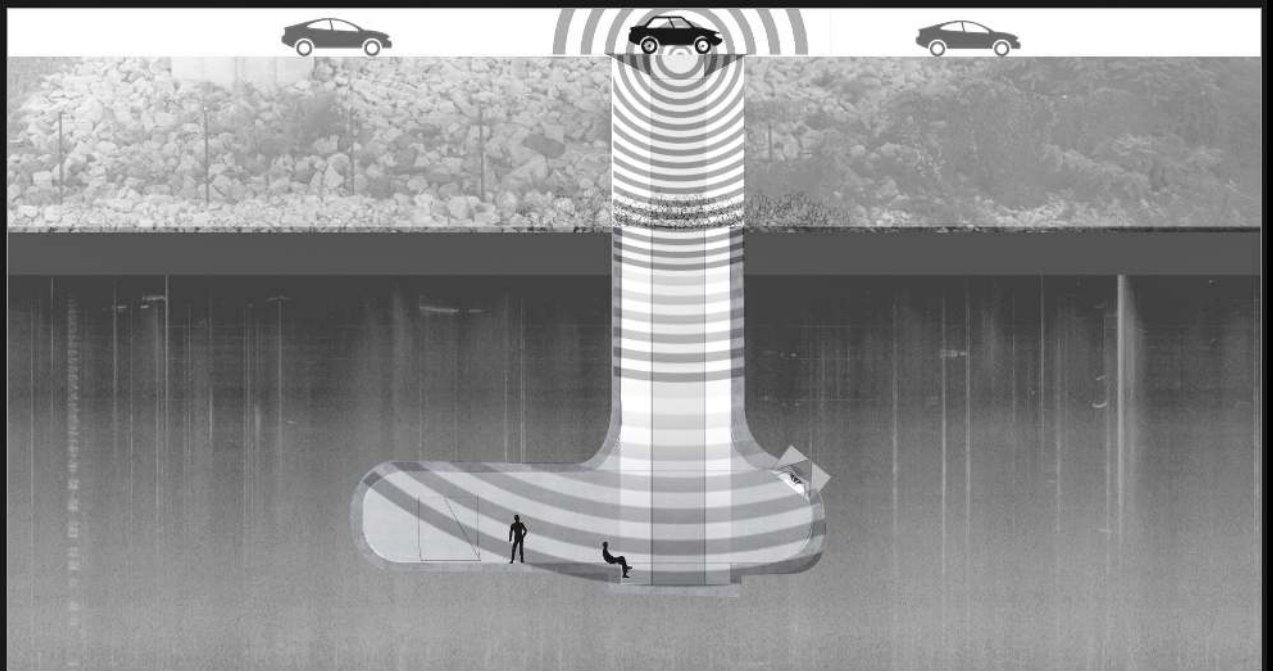
the idea of sacred and profane, this ritual object is a representation of indigenous drum circles and adjacent customs and ritual practices. The materiality is a direct symbolism of the body (wood) and skin (leather). The shape is a shrine, a spiritual/holy space, a form of archiving, a vessel, a body, a temple. The preservation and acknowledgment of concrete is a symbol of the dichotomies between ritual practice and modern-day sound system/club culture, with particular homage to warehouse raves and the use and abstraction of existing concrete structures as ritual, as collective dance is a ritual practice. Communities hold themselves together with simple bindings/shared experience; material properties of leather, they are malleable, natural, and ever-changing shapes.

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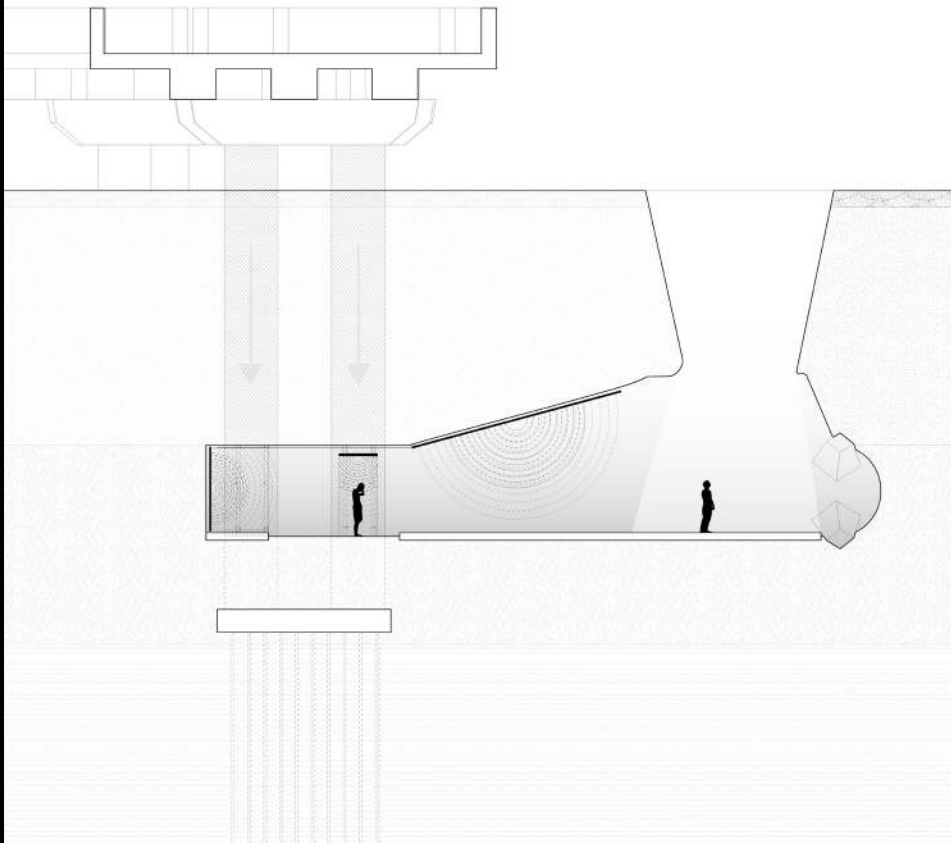




"Eat This Bread Drink This Wine" February 3, 2019

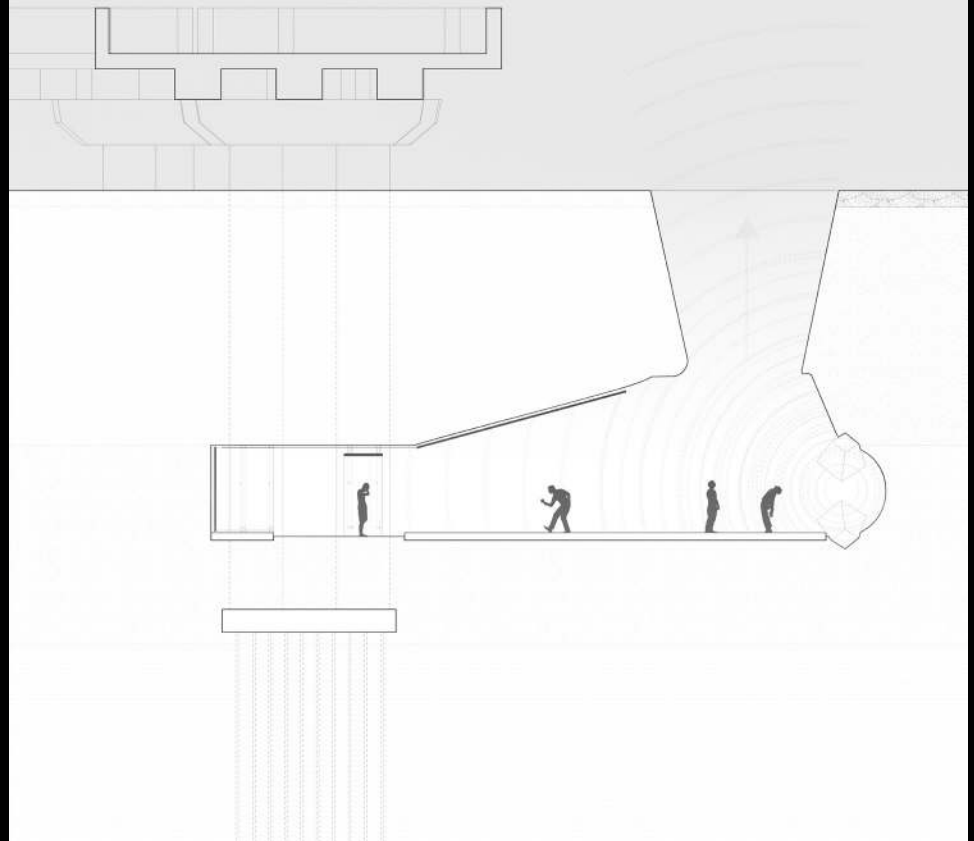


Furacão 2000, Brazil 2000

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This space addresses the remnant between the circadian, a threshold condition that hosts ritual sonic practices. It transforms the perceived profanity of surrounding highway infrastructure into a sacred environment through the manipulation and orientation of sound. Vibrations from the highway resonate within the excavated cavity, producing a meditative field that engages the intersection of infrastructure and an otherwise invisible spatial void through the lens of the sacred and the profane.

In Act 1, Jay and I explored these themes through the symbolic and ritual intersections of club culture, church, and religion. In Act 2, my focus shifted toward ritual practices grounded in sound and meditation, particularly the Lenape



water drum and the spatial logic of meditation circles as frameworks for collective gathering through the body and sound. The closed loop, both symbolic and structural, became a central concept informing the artifact.

The artifact explores skin, body, and preservation through material studies using leather, wood, and concrete. Leather operates as a metaphor for skin, malleable, organic, and responsive, while wood suggests the body as structure. Concrete, in contrast, is treated as a preserved condition: a material index of modernity, infrastructure, and the built residue of underground culture. Together, these materials embody the tension between sacred ritual and profane space, forming an object that preserves both meditation practices and the histories of counter-cultural sound.

Site selection emerged through sonic observation. A residual plot of grass enclosed by highway infrastructure became the chosen ground, an overlooked yet acoustically active space. Its perceived insignificance situates it within the profane, yet its persistence marks it as a site of latent potential. Through field recordings and sonographic analysis, vibration became a primary design driver. Distinct transmission behaviors were observed: high frequencies traveling through steel, mid-range resonance through concrete, and low frequencies through soil.

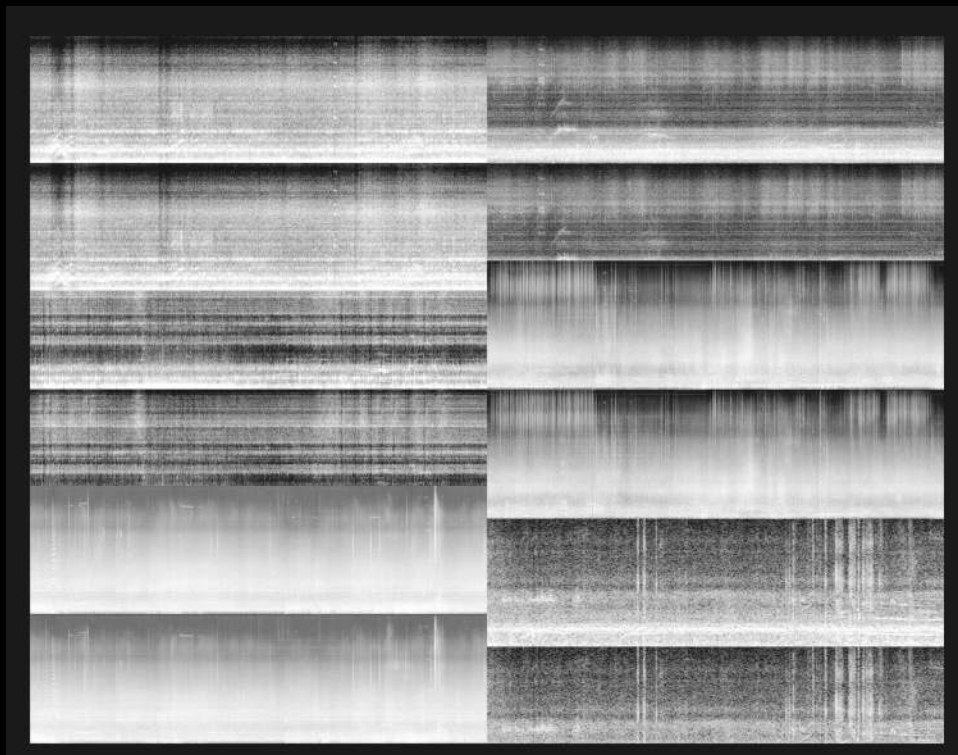
These findings informed a series of material and spatial experiments. Small-scale models were constructed in which recorded vibrations were reintroduced through corresponding materials, testing how sound could be oriented and transformed. Excavation became a key gesture, submerging the site into the ground to heighten its acoustic sensitivity. Existing highway columns penetrate the space,



acting as conduits that transmit vibration inward, while a large aperture projects sound outward. This establishes a cyclical condition: listening and performance, reception and transmission, meditation and amplification.

Material differentiation organizes the program. Each surface and volume is tuned to emphasize particular frequency ranges, with the central chamber translating a full-spectrum resonance of the highway. During the day, the space operates as a site for meditation. Passing vehicles unknowingly contribute to a continuous sonic ritual, their vibrations re-framed as ambient composition. The space becomes a threshold, an interface between unconscious participation and intentional listening.

At night, the site shifts toward active use. Integrated, soffit-mounted speakers extend the acoustic logic of the space, enabling human-produced sound to be amplified and projected upward into the surrounding environment. The



underground becomes a source, and the overground becomes the listening field. Passersby, now positioned as audience, are drawn into the ritual through directional sound projection.

The interplay between above and below ground conditions establishes a dynamic relationship between sacred and profane. Over time, the space is designed to evolve. Natural material degradation and continuous vibration will alter its acoustic properties, ensuring that no two experiences are identical. Each encounter becomes contingent, temporal, and personal. The space resists preservation in a conventional sense, it is not to be repaired. Instead, it is allowed to shift, decay, and eventually dissolve back into the conditions from which it emerged, completing its cycle as both sacred construct and profane residue.



Section A

Section C

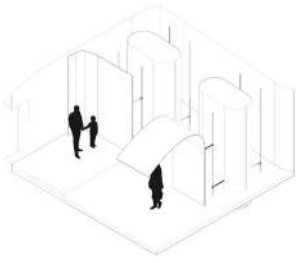
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Section B

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Section B

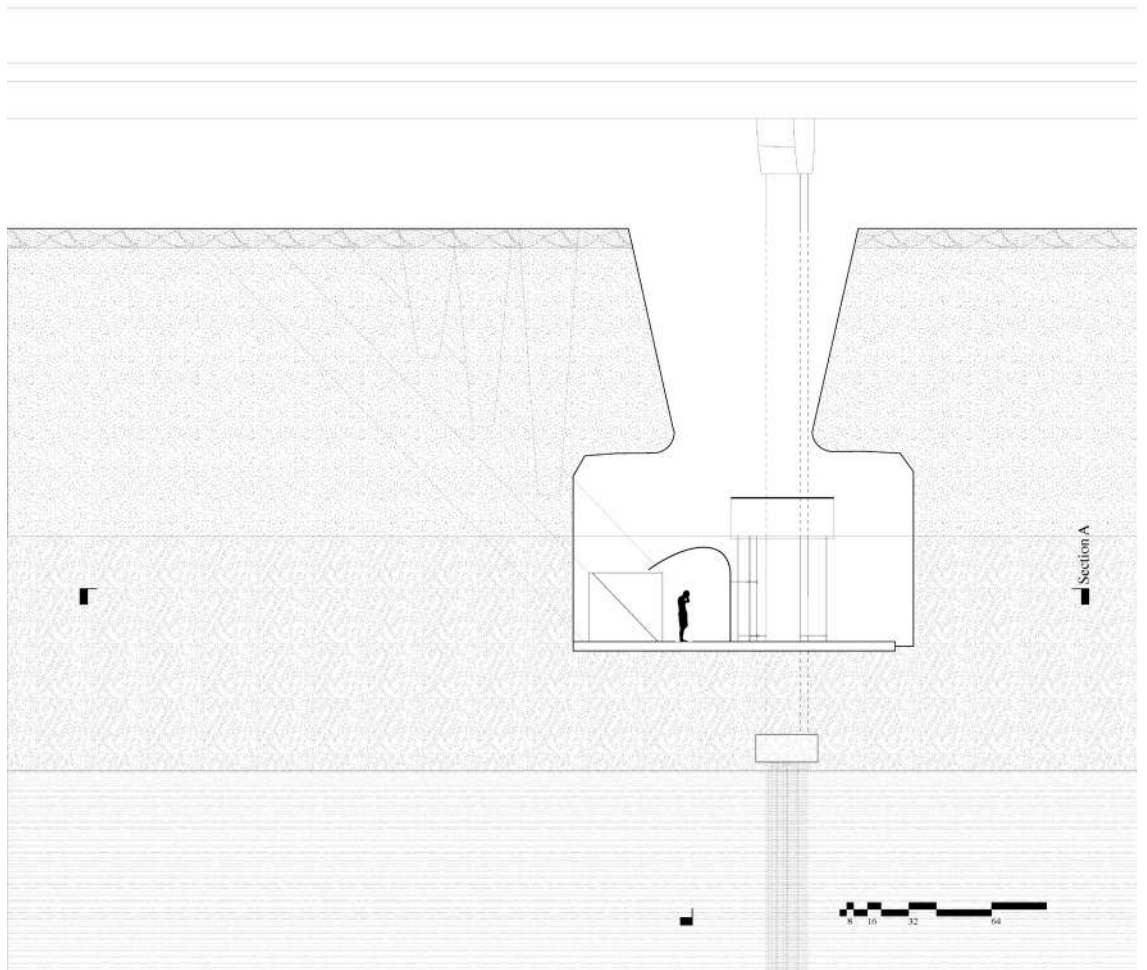
Section C

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Section A

Urban Metabolism



The beginnings of this research emerged through repeated journeys along the river, where I investigated and documented its conditions through video, audio, photography, and field notes. My focus was on sound, its levels, its dispersal, and its absences, tracing zones of noise pollution alongside moments of quiet. Field recordings became a primary tool, accompanied by mapping studies that tracked the flow and direction of water along the spillway. These mappings attempted to translate sonic and kinetic phenomena into spatial diagrams, capturing the relationship between water, sound, and surrounding infrastructure.

The methods of documentation were intentionally tactile and temporal. Recording on VHS and writing field notes on a typewriter grounded the process in physical interfaces, reflecting the material and ephemeral qualities of water itself. Like magnetic tape, water is in constant motion, never fixed, always unfolding. This parallel informed an interest in representing water not as a static object, but as a shifting topology. Hydrophone recordings extended this investigation beneath the surface, revealing submerged acoustic environments and multiple sonic scales. Spectrograms were then used as visual translations of

field notes 2025-02-16
all saints drain
build by the work projects administration from 1935-1940

cold
low water level
full of snow, ice, leaves twigs
channel build with bricks
sun glistens along the narrow strip of ice, with unfrozen pockets underneath thin
sheets, and apertures of light inbetween
surrounded by trees, reaching together over
the scoop
~~pawtucket-meaning~~
pawtucket, meaning "at the falls in the river" or "river falls"

much of it has lasted, but not all of it
guarding the gate, a metal grate, there are concrete parts, repairs

the water flows out of the drain, not into the
drain
one end is muddy swamp, the other is a river.
to walk in drains, two strides on the left, and two on the right
like a sine wave

---The--hot-tub-pa--

The Dumpster Hot Tub Party
shifting the program of the dumpster, a part of the infrastructure of waste and sewage
, into a ritual experience, a community gathering and interaction with water, a
public demonstration of the physics of water flow
the water not being that hot presented it sort of as an endurance test, the more
people that decided to make the plunge at once the more- warmer the water got
reminding me of collective effort and ingenious ritual practices
a ritual that gives thanks to the land, through water flow and the body
abstracting the architecture of the 30ft dumpster
the flow of water, in terms of where it ends up also
Water gives its life everywhere

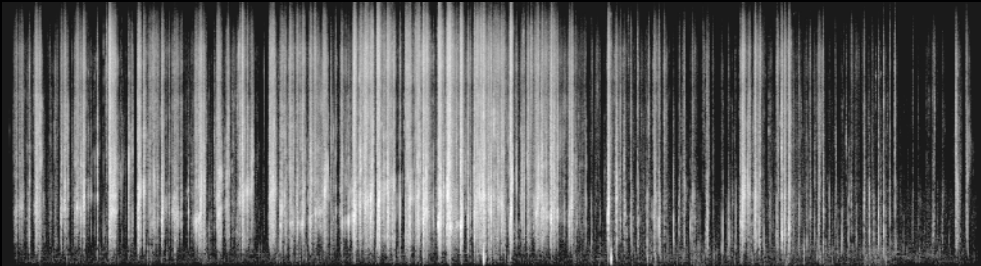
The acoustics of the tunnel
as the drain tunnel elongates the path for water in one direction to flow
it does the same with sound, impulses elongate and echo and reverberate, transporting
them further than they would have been otherwise
the sound is also transformed by the end of its path, but the water is not/
a metal pipe hit at one end of the tunnel will be loud and full
but maybe by the other end, only certain resonant frequencies are heard
or the quality of the sound is washed, not so sharp, less attack
is this the way to transform infrastructure into a ritual
noise into ambiance

The "moshassuck river"

Zoning laws for site

these recordings, offering another layer of interpretation between sound and form.

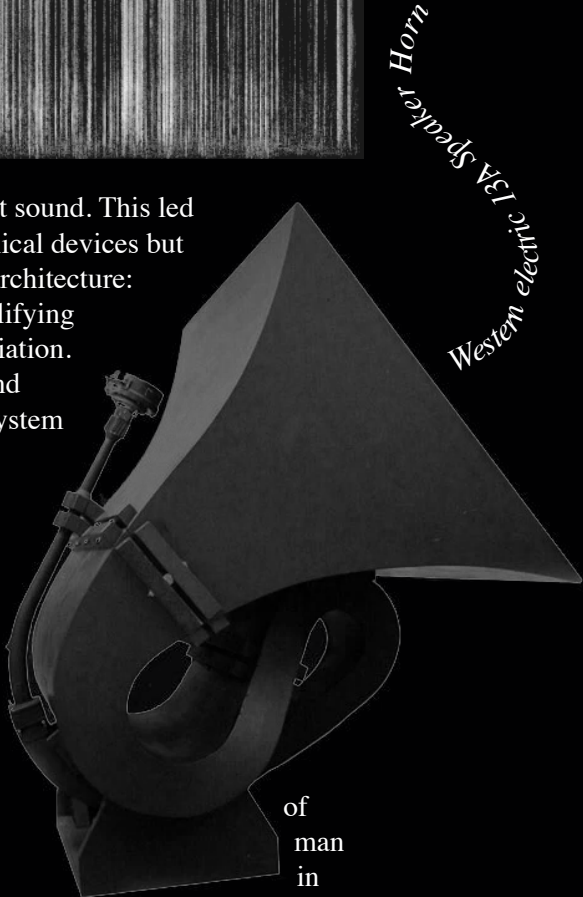
These explorations led to questions of amplification, both acoustic and architectural. Conventional amplification relies on powered systems, but I became



interested in how form alone could shape and project sound. This led to research into horn loudspeakers, not only as technical devices but as spatial constructs. The horn became a model for architecture: a geometry capable of capturing, directing, and amplifying sound without necessarily relying on electronic mediation. Precedents such as the early Western Electric 13A and 15A horns, originally developed for the Vitaphone system in 1920s theaters, offered insight into how complex curvature could compress large acoustic pathways into compact forms. Their hidden placement behind screens further emphasized the paradox of powerful acoustic architecture rendered invisible. I was also interested in Japanese HiFi listening rooms and ways in which the speaker horn becomes a part of the architecture of the room, embedded in the walls or protruding out from them.

Material studies became central to this line of inquiry. Experiments revealed that within the hearing range, wood and steel each amplify sound distinct ways, wood offering warmth and diffusion, producing sharper, more reflective resonances. These findings informed a broader interest in how material choice shapes acoustic experience.

At the same time, this work is grounded in an understanding of sound as a social and cultural force. Research into sound system culture in Kingston,



Western electric 13A Speaker Horn

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of
man
in
steel

“Deep listening is listening in every possible way to every thing possible to hear no matter what you are doing. Such intense listening includes the sounds of daily life, of nature, of one’s own thoughts as well as musical sounds. Deep listening is my life practice.”

transforming public space into sites of gathering, performance, and ritual. These systems operate as architectures in their own right, defined not by walls but by vibration, bass, and shared experience.

The work of Pauline Oliveros, particularly her practice of Deep Listening,

further shaped this approach. Deep Listening frames sound as an immersive and intentional act, encouraging an awareness of all sonic activity, foreground and background, human and environmental. This expanded notion of listening positions it as both a meditative and communal practice. A speculative moment, a dream of a floating buoy that amplifies underwater sound into the air, became a conceptual bridge, linking hydrophone recordings to architectural amplification.

These lines of inquiry culminated in a proposal for a series of acoustic interventions along the Moshassuck River. At its center is a horn-loaded pavilion that passively amplifies the sound of the water, allowing the river itself to define the acoustic character





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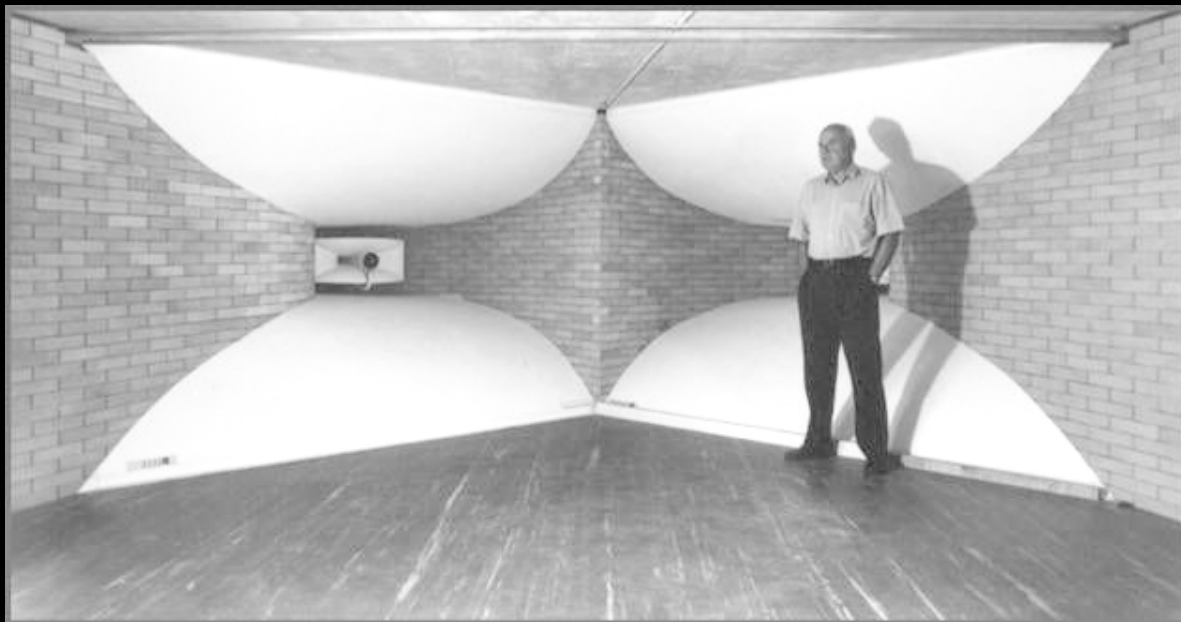
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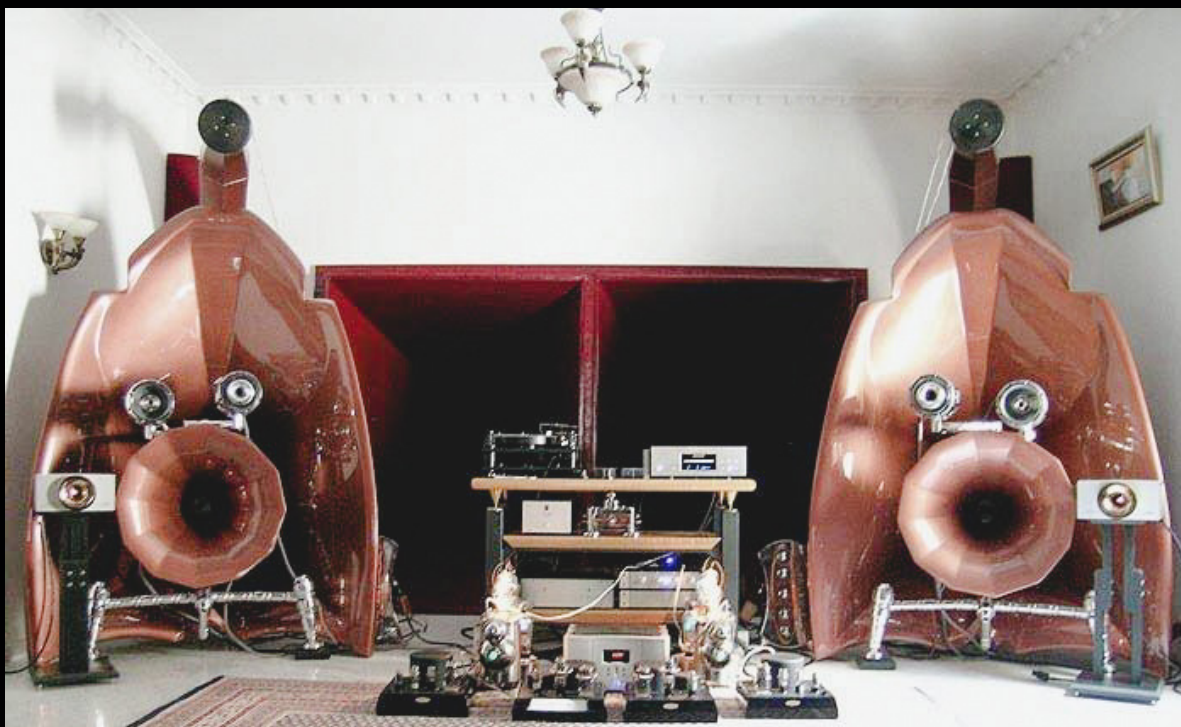


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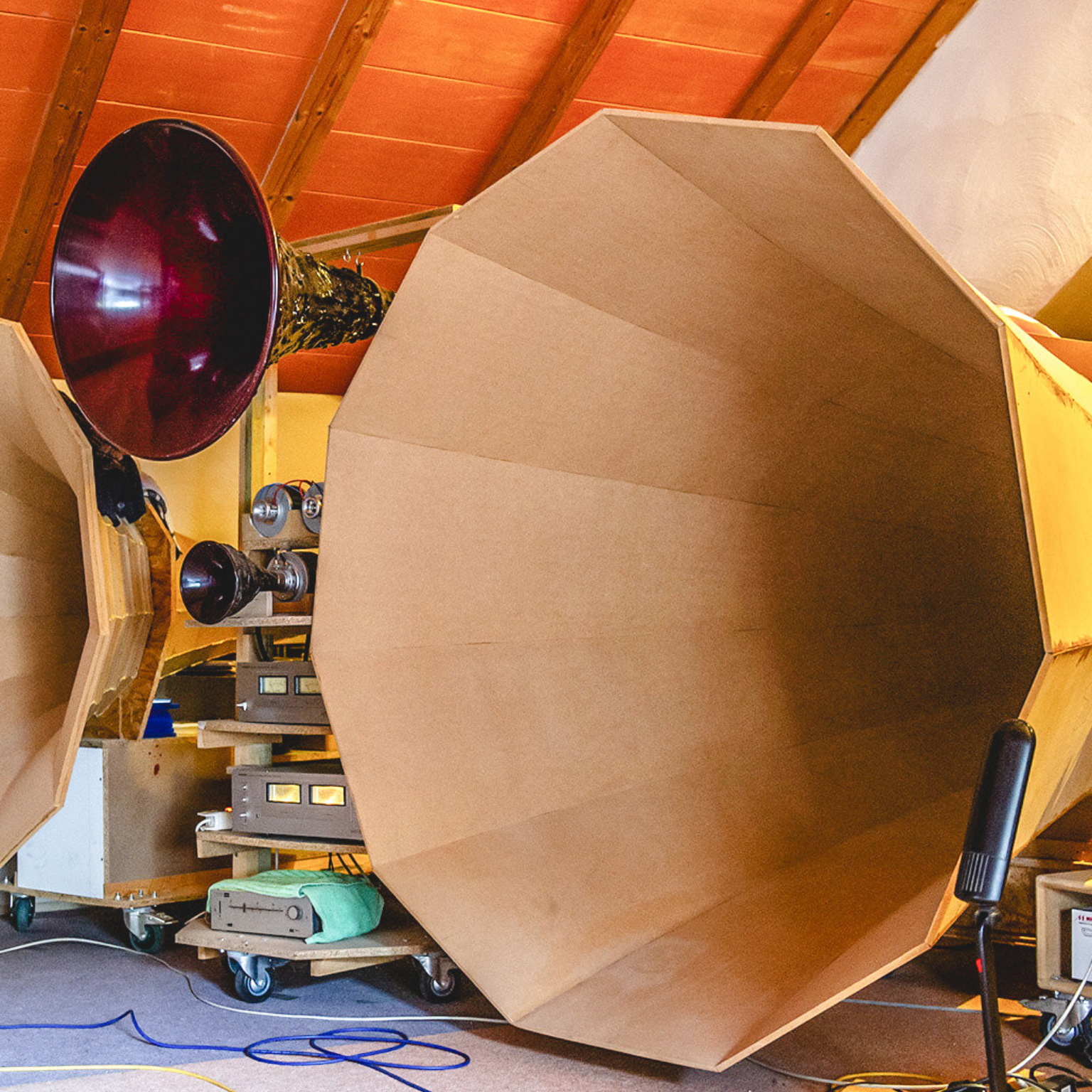
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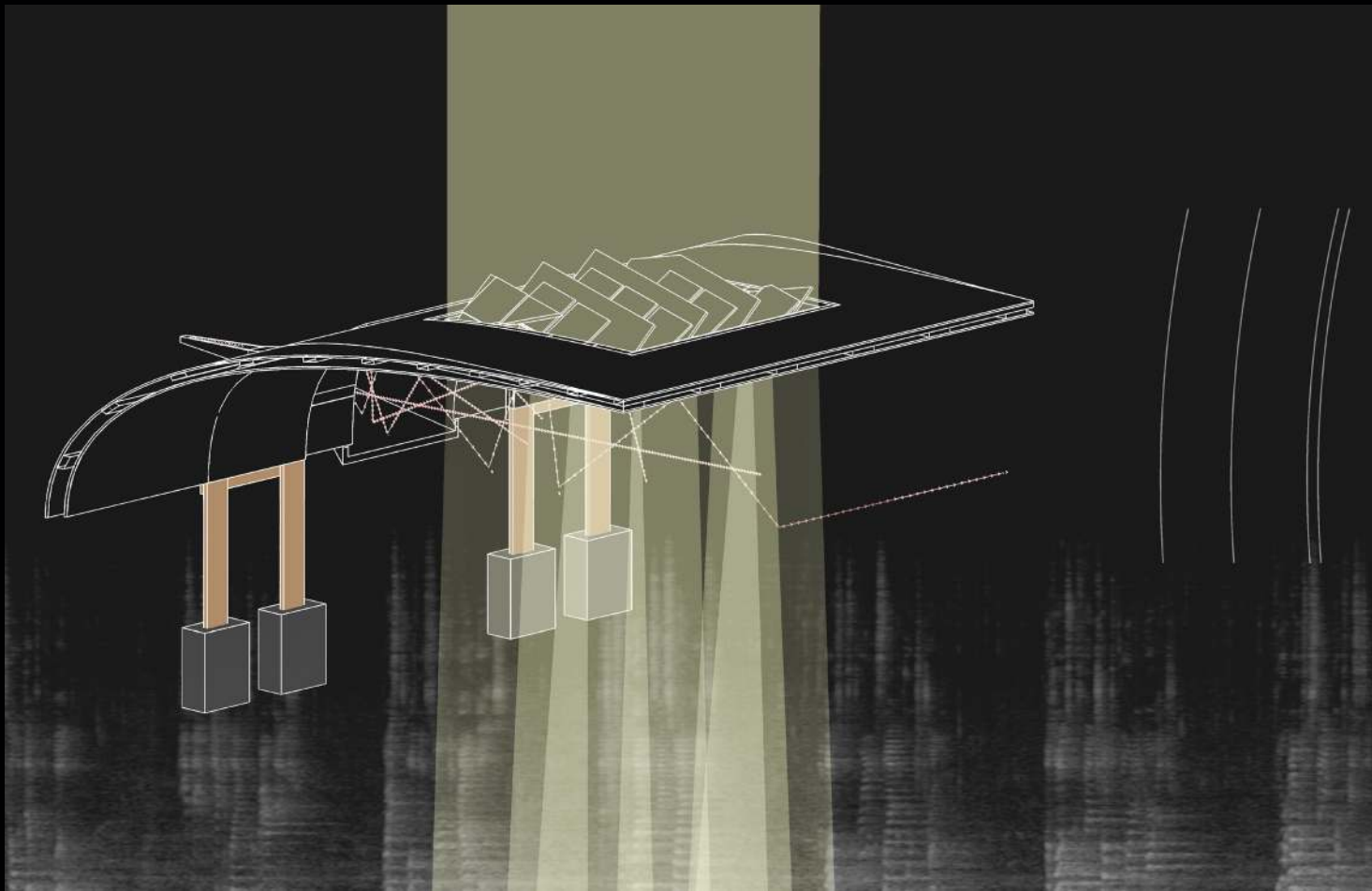




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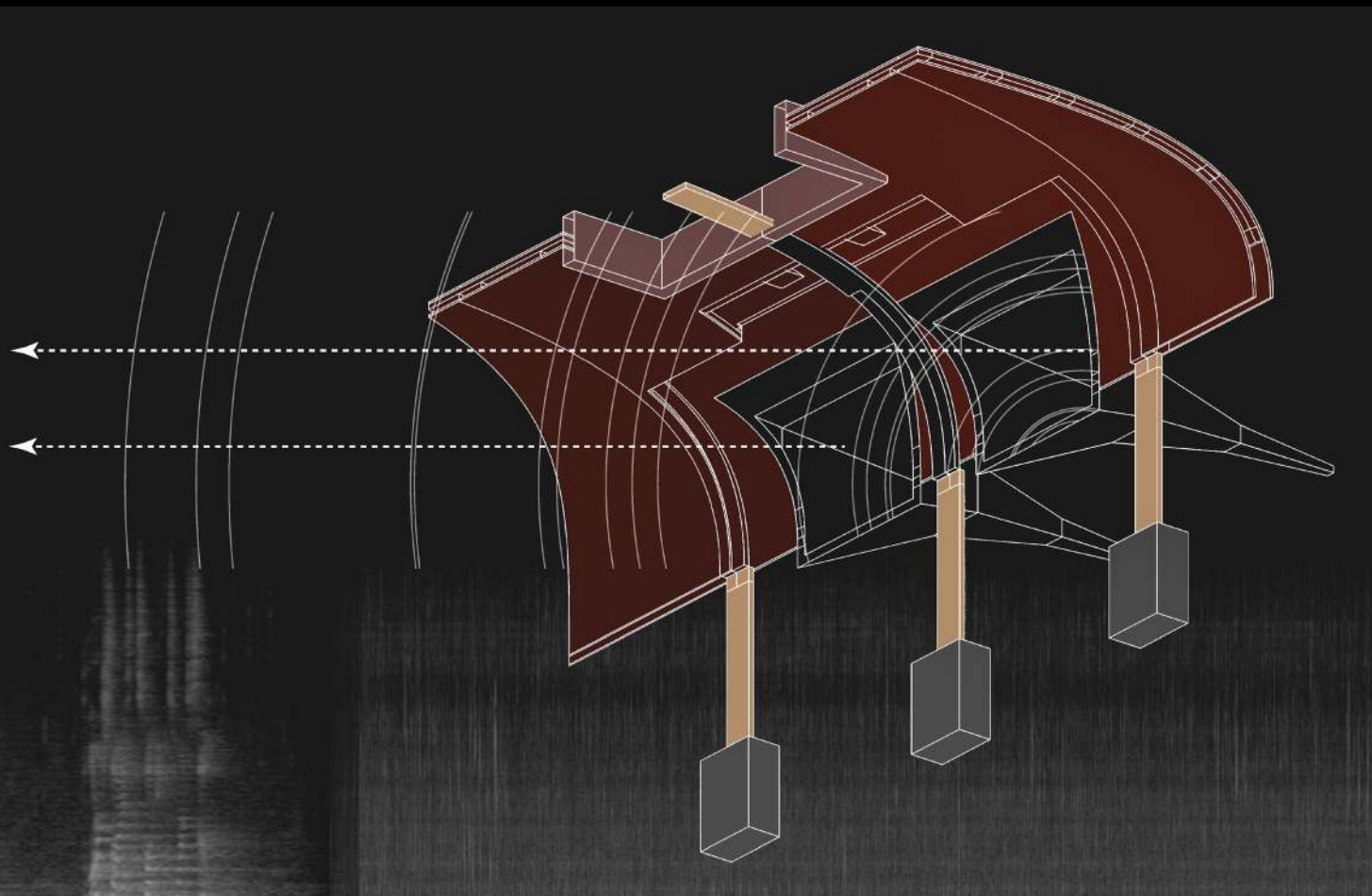
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of the space. Program emerges from this condition, supporting activities such as meditation, performance, gathering, and research.

The project unfolds through four primary interventions. The first consists of small, directional speakers mounted on flagpole-like structures, projecting live river audio, captured via hydrophones, toward nearby industrial and studio spaces. Powered by solar energy, these elements act as sonic beacons, introducing unfamiliar sounds into familiar contexts.

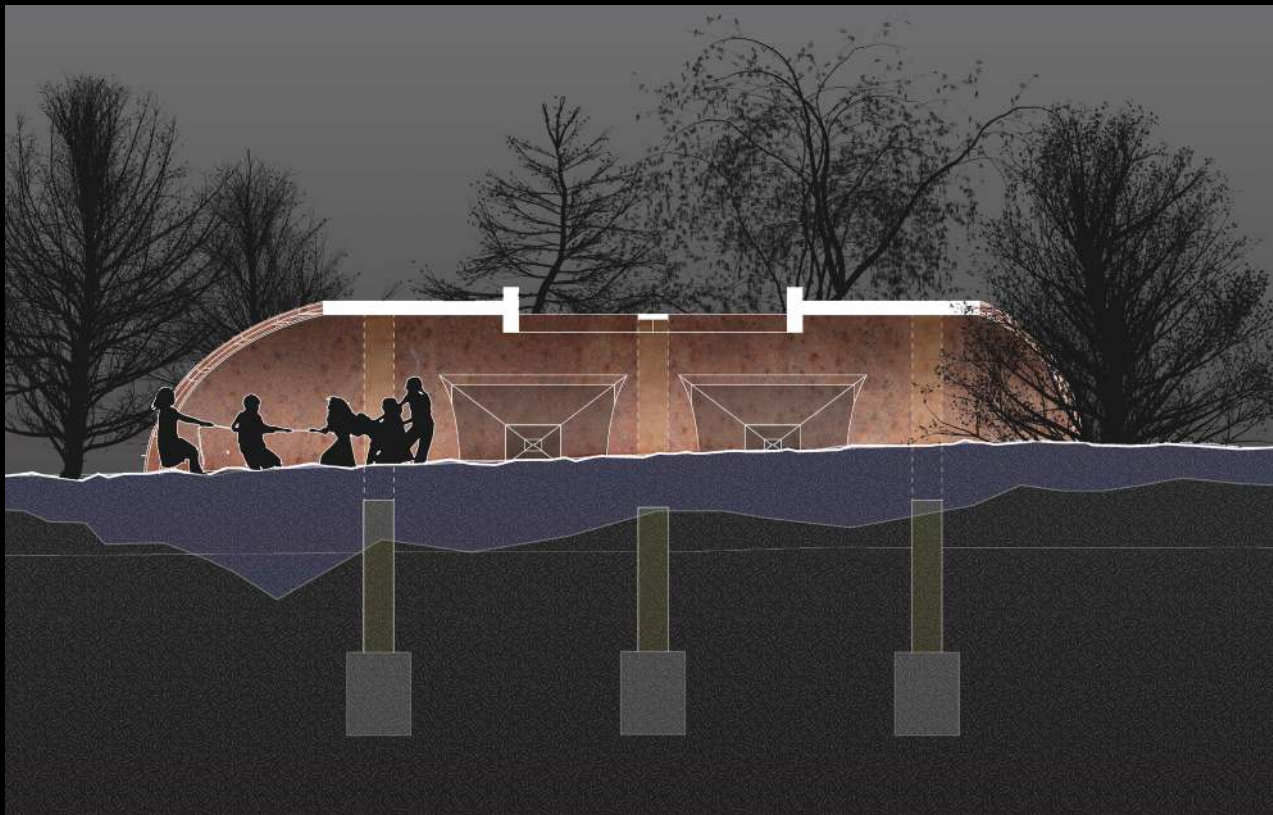
The second intervention is an active horn pavilion constructed from recycled lumber, using mass timber framing and bent lamination to achieve its curved geometry. Solar-powered amplification drives a system that likely operates



as a multi-entry horn, combining multiple drivers across frequency ranges into a single acoustic form. This structure functions as both instrument and architecture, amplifying sound into a shared spatial experience.

The third space is a hybrid condition, pairing an active speaker with a passive metal horn. Here, steel is used deliberately for its reflective and resonant properties, producing a sharper acoustic environment. This intervention extends the material research into a more experimental register, contrasting the warmer qualities of wood with the brightness of metal.

The final intervention consists of small, conical wooden horns designed for one or two occupants. These intimate structures encourage deep listening, creating spaces for focused, personal engagement with the surrounding environment.



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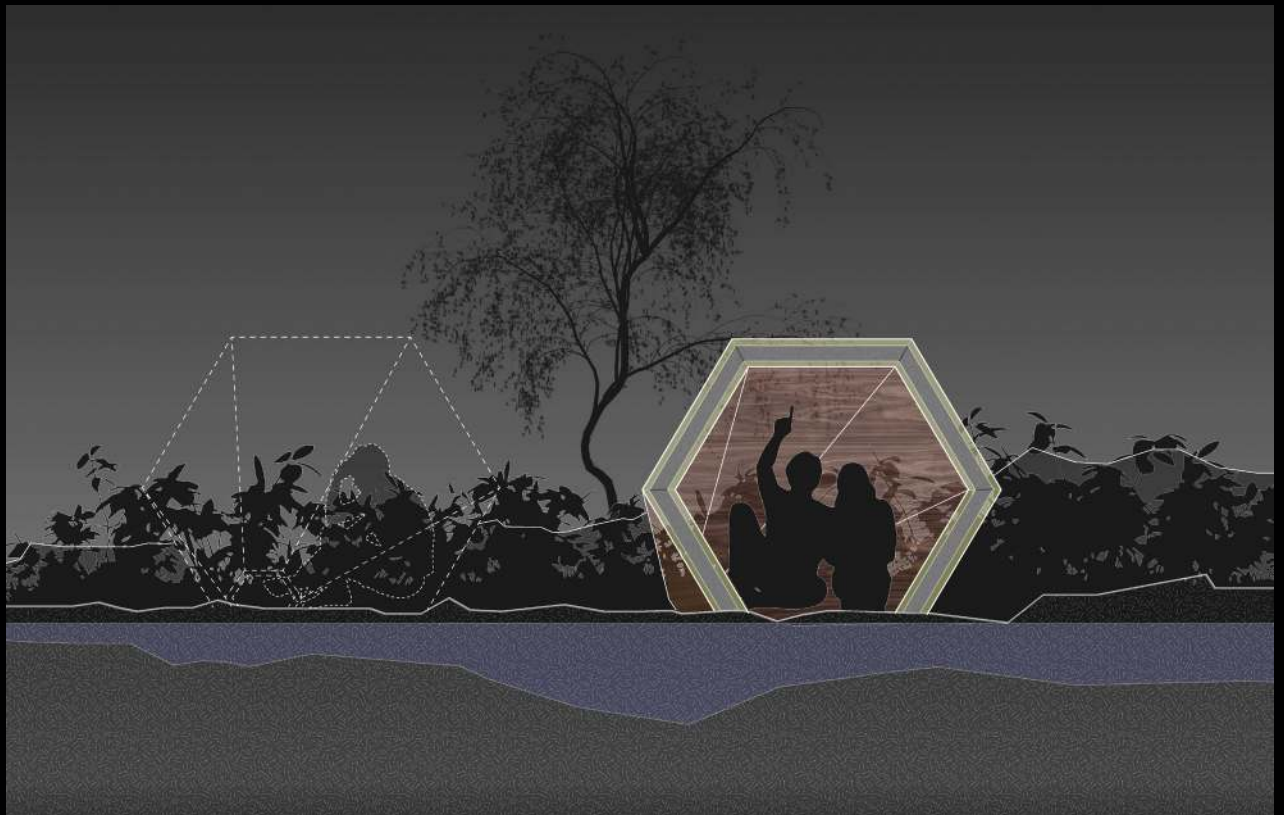
Across all interventions, the project embraces temporality and decay. The structures are intended to weather, to be overgrown, and to gradually integrate back into the landscape. This process foregrounds a cybernetic relationship between architecture and environment, where sound, material, and time continuously reshape one another.

The physical model developed for this course, a midrange exponential horn constructed from plasma-cut steel with Enid Corcoran, served as a material and acoustic test. Built from reclaimed components, it revealed the complex resonant behavior of steel: rich and expressive, though less suited for high-fidelity reproduction. This prototype points toward a future iteration, potentially installed above a river with a hydrophone and solar-powered amplification system, further extending the dialogue between water, sound, and form.

Ultimately, this project brings together field research, sonic experimentation, and architectural design to propose listening as a mode of



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environmental engagement. Sound is understood not simply as something that occupies space, but as something that constructs it, shaping perception, fostering community, and transforming the overlooked into sites of shared ritual experience.



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field notes
2025-03-03

-femi-shonuga-fleming-
femi shonuga-fleming
urban metabolism

Act 1

Moshassuck (All Saints Drain) River

The spillway is located locally on smithfield ave near leigon drive, inbetween a baseball field and a ~~xxxxxxx~~ graveyard. During my visits, the water in the spillway was low, but always flowing. At the grate of the tunnel you can hear the reverberation from the cars passing over the manhole nearby. The snow surrounding the spillway and the ice along the cobblestone path made it difficult to navigate. There were a few waterfalls, from random paths, and new drains that connected. the spillway became quieter as i ducked under fallen trees. the ice coated the low skinny water path, in a thin layer, making a wonderful sploshy crunch sound as i walked along. The end of the spillway widened and shallowed, and was full with icy, dark water, before leading to mush, and eventually rejoining with the rest of the river. the air was cold and it was partly cloudy. it had not rained recently.

medium:

book - walnut, cherry, paper, acetate, ~~receipt~~ receipt, tracing paper
video - VHS tape, CRT TV, VHS Camera (panasonic), F Type cable
audio - field recordings, Tascam portable recorder, Stereo bluetooth speakers (ikea)

guide:

The book is a collection of field notes, photos, drawings, experiments and diagrams. The first section of the book documents my experience during my first two visits to the spillway, and experiments with the acoustics of the tunnel at the base of the spillway. the second section of the book documents images ~~xxxxxxx~~ taken along the path along with their respective descriptions.

The third part of the book diagrams existing conditions of the site, pollution from local surrounding infrastructures and how they directionally pollute the river, the river path and direction of water flow, and a map of where i took field recordings along the path.

The last section of both books is a collection of initial drawings and experiments.

materiality:

I chose to use the typewriter because of its disconnection from the use of electronics and its organic nature. words flow on this page like the water in the spillway, if mistakes are made, the water flows right over, and fills empty space. the typewriter beakons me randomly, like the rain forecast.

water is not current, water has history
I chose to record video as vhs because it is an object, that can be moved physically. The tape on the vhs is the water running through the spillway, the length of the magnetic tape is the river that runs through pawtucket.

I chose to write on receipts because the water leaves a receipt of its history behind, eroding the cobblestone with its mark, slowly overtime.

I chose to use wood and leather because of its connections to early and indigenous forms of documentation and archiving with natural, local and raw material. the wood and leather encase documents that have been synthesized, the copy paper is processed, the acetate is plastic, the receipt is toxic, but the leather and wood encloses them in natural material. the spillway is the opposite, the cobblestone path was man made, to reorient the ~~natural waterxxxxxxxleavingxxxxxxxpollutionxxxxxxxthe other elements.~~

water makes its own
path

field notes
2025-02-13

today i went to the end of the spillway, where it merges into the river, near the highway. the spillway was a lot quieter near the highway than i had anticipated which is perfect for an acoustic or ambient intervention. the zoning in that area is marked as an industrial development zone, ~~xxxxxxx~~ prioritized for industrial infrastructural projects and warehouse/factories.

i walked through the parking lot next to the small bridge, next to the mills, the lot was filled with abandoned RVs and trailers. where it met the abandoned forestry land there was a gate, and what seemed like a pathway that led to no where. the path led down to the spillway end and the river. i found out the river flows in the other direction upon further inspection.

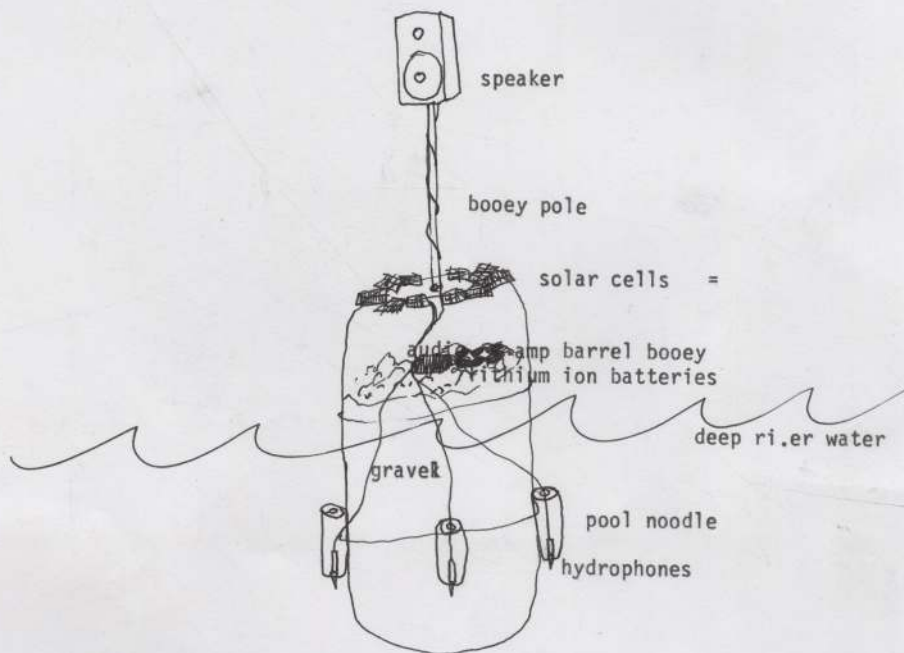
i took a couple of field recordings along the path, one at the bridge and one walking along the path, and another at the end of the spillway.

in one of the abandoned rvs there was a small panasonic crt tv that i want.

i took some more footage on the vhs camera

there was a small garden along the path of the river, that looked like it had not been tended too in a long time. there was a small plateau near the river, but when it rains or the river is full, that plateau most likely is flooded. this made me think of spaces for an architectural "intervention"

PO



field notes
2025-02-06

instrumentation

this is the first time im pleasantly surprized and excited about real instrumentation!!
anarchestra has presented to me my entire ethos on experimental instruments . -

i have been looking for a reeded instrument to play as part of the entire experimental anarchist instrument for milenia. the reeded pipe saxophone flute hybrid made by the guy who made all the weird instruments at anarchestra has found me and has imbedded its mystical magical fantasy non-lenian unquantized magic into my world and i am a absolutely obsessed.

urban metabolism:

i think my intervention will be very simple. i do not want a buikad architecture.
i want to build boeys. a boey that sits on the water, free floating, its powered by the sun and the flow of the water. there is a speaker that is posted, on a long pole flying in the wind, rocking back and forth, but never touching the water
the speaker on the post, floating endlessly in the river, on the beach, or far out to sea connected to an amplifier, and a piezo probe connected to the bottom of the boey, the purpose is to amplify the sounds of the water and the wildlife,, its path and its journey
the piezo probe amplifier is powered by the solar panel on the boey.
this free standing self sustaining everlasting sound installation object free floats, as free as the water, endlessly, locally, traveling, history.
maybe the sound is
there is no wifi

the sound is broadcasted on a shortwave radio frequency so you can tune in to the sound when it is local to your nearby environment or city

shortwave radio solar powered water amplifier boey system.

for the anarchist post apocalyptic providence.

what is the architectural intervention for the boey?

an acoustic space that amplifies the boey stop points. along the river.

a concrete wall or acoustically treated minimal move system or design that

creates an open air/-semi enclosed space for deep listening and ambiance

what is the space that is furthest from infrastructural sound/the quietest space

what is the space that is interacting with both the wildlife and the humans

and their desired path

along the path of the humans and along the path of the wildlife,

and along the path of the water, that makes its own path

how might i design this architecturally along the construction site of where the site is, locally,
code

avoid

and

the abstract reorientation of water, or even the intentional disorientation in the ethos of annikas project

the sign

to reorient

as water flows,

it reorients itself, it makes

the desired

paths as we make desire paths, it eodes without hesitation, it makes a history

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I Longed for this maintnesnte
i longed for this Capital M Musical Maintnence
i need to rosin my bow
i need to change my reeds, i need to suck on the reed, i need the right reeds, i
need to rehair my bow, i need to rosin my bow, i need the right lengthe for my bow.
i wqanted this
and to have it in the anarchist form
is the best blessing, only i wish i invented it myslef
buy you can only go so far with invention

s
are locally located
amid the great derangement
locally

in the pit of what
add the dumpster hot tup
the clack click from the typewriter is beginnig to make my ears hurt, as all
experiences in documentation whould be physical in therir most organic form.

1. Impulse Responses at Base of Tunnel

41.865321, -71.411240



2. Harvard Word List Tunnel Reverberation

41.865321, -71.411240

3. Spillway Waterflow at Path Base

41.865321, -71.411240

4. Spillway Waterflow at Bend

41.866954, -71.409469

5. Walking along the spillway

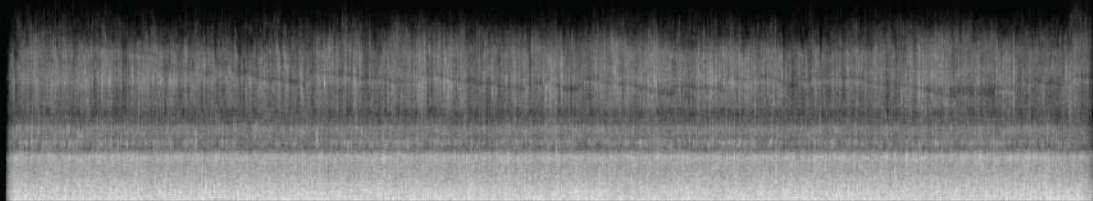
41.867168, -71.408617

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6. Woonasquatucket River Bikeway Fish Ladder

41.818691, -71.448964



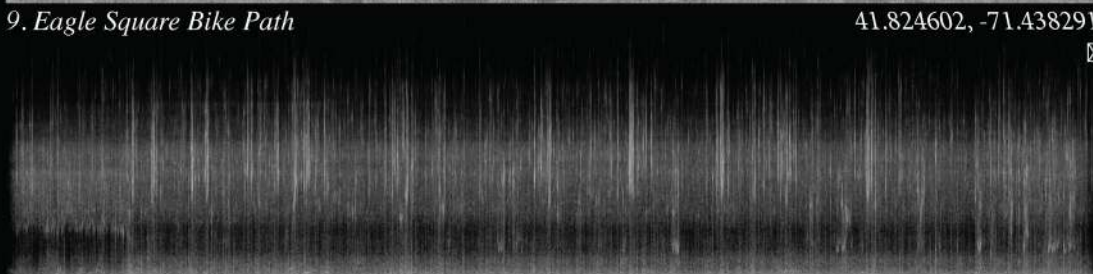
7. Fuller Speed Shop, Recording 2

41.817504, -71.446474



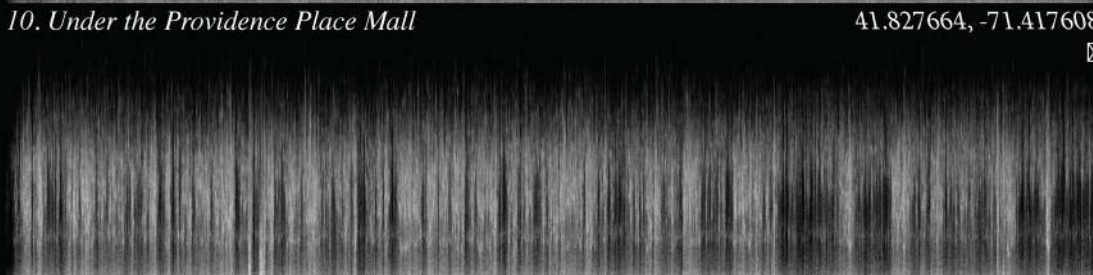
9. Eagle Square Bike Path

41.824602, -71.438291



10. Under the Providence Place Mall

41.827664, -71.417608



11. Michael S. Van Leesten Memorial Bridge

41.820216, -71.405015



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femi shonuga - femi-shonuga-flemé-
urban metabolism

3928

water makes its own

The only real threat to the river seemed to be the potential runoff from the graveyard, people visiting and leaving things behind, may run into the river. we ran into some fake flowers, and little things like

is an outfall a tributary,
water flows out ~~into~~ of the drain
and into the river. The drain turns
into a river.

Parabolic Forms Sound, Architecture, and Spatial Composition

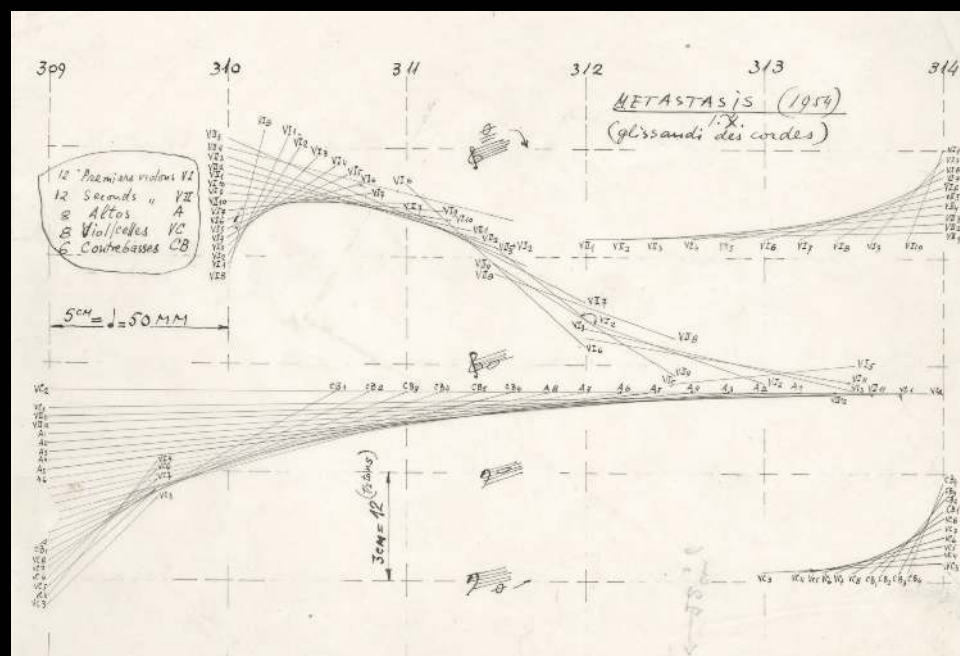
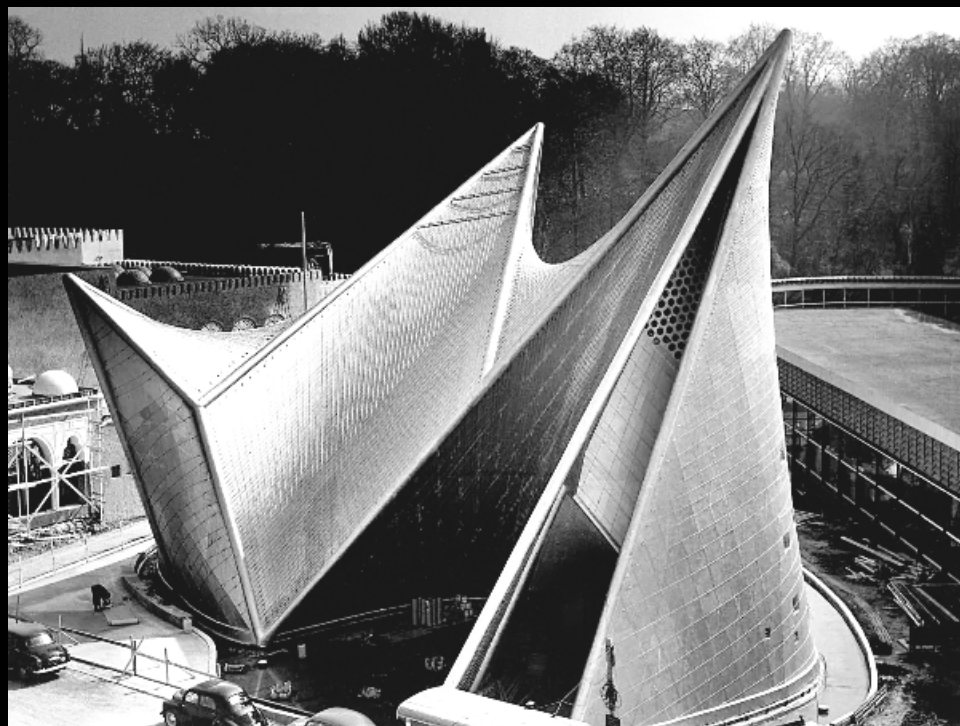


Parabolic geometry occupies a unique intersection between mathematics, architecture, and acoustics. At its most reduced, a parabola is a simple curve; yet it possesses the capacity to direct and organize energy. In optics, parabolic mirrors focus light toward a single focal point. In acoustics, this same geometry can concentrate or disperse sound, enabling both precise listening and expansive projection. Because of this dual capacity, parabolic forms have become powerful instruments across acoustic engineering, spatial design, and sonic experimentation.

I first encountered parabolic geometry through the work of Iannis Xenakis, particularly in his composition *Metastaseis*. The piece emerged from his memory of warfare, where individual sonic events, such as a single gunshot, dissolve into a larger perceptual field of “gunfire” as a mass. What becomes legible is not the discrete event, but the sonic cloud: density, motion, and accumulation over time.

“lines of
sound
moving in
complex
paths from
point to
point in
space, like
needles
darting
from ev-
erywhere.”

- from the vinyl record cover
of Xenakis' *Electro-Acoustic
Music* 1970



Xenakis' work shifts attention away from linear sequencing toward the morphology of sound itself, its swelling, its turbulence, its continuous transformation.

This approach extends into his graphic scores, where sound is visualized as trajectories and curves, often resembling parabolic or hyperbolic forms. These drawings were not merely representations but generative tools, bridging mathematics, composition, and space. This translation from sound to form found architectural expression in the Philips Pavilion, designed in collaboration with Le Corbusier. The pavilion's structure, composed of hyperbolic paraboloids, embodied the same dynamic forces present in Xenakis' music. Inside, hundreds of embedded loudspeakers diffused sound throughout the space, dissolving the boundary between architecture and composition.

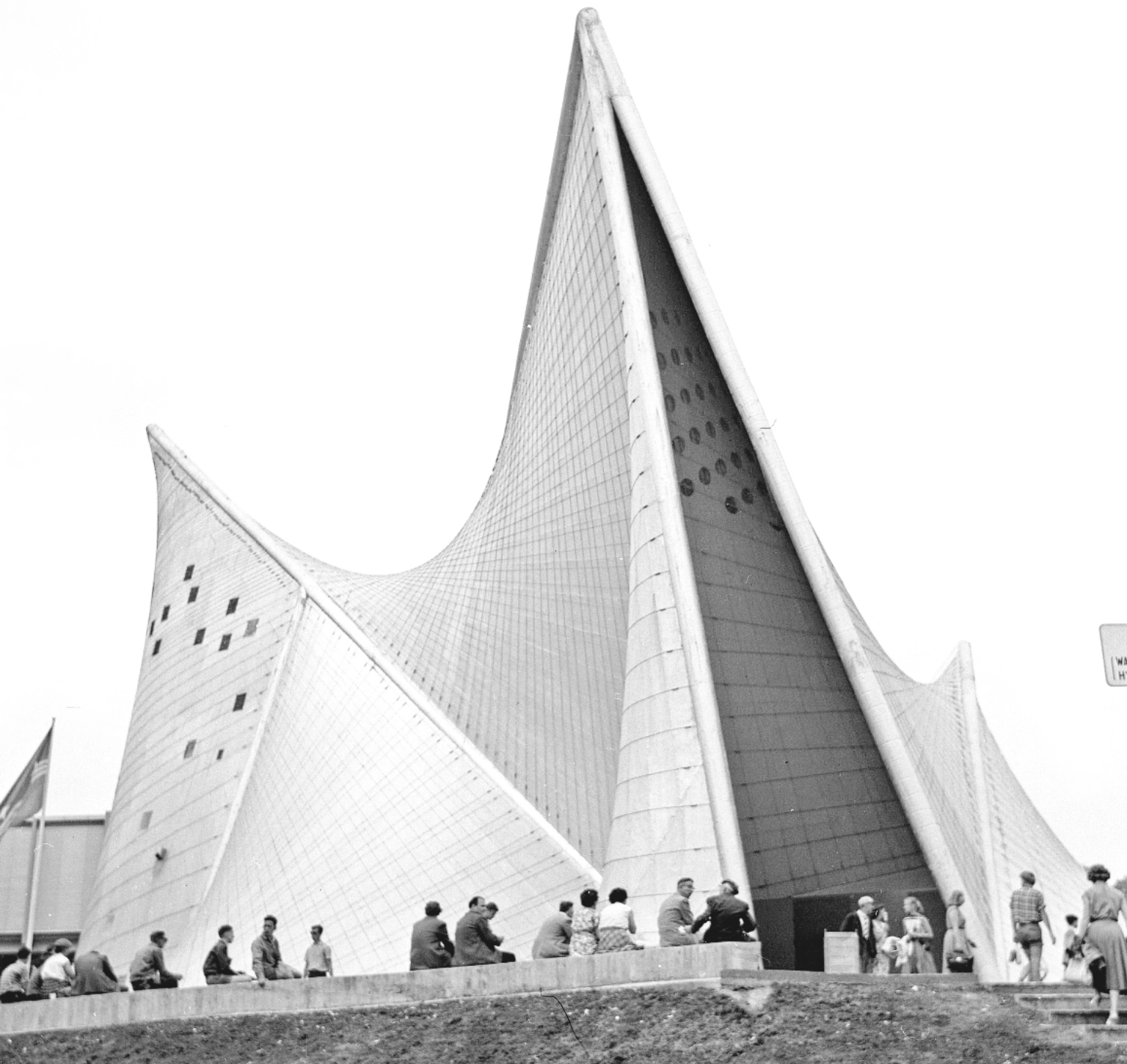
Within this environment, Xenakis' Concrete PH was performed, a work constructed from the manipulated sound of burning charcoal. Using techniques such as **granular synthesis**, overdubbing, and transposition, he transformed microscopic sonic events into dense, evolving fields. The result is a spatialized cloud of sound, spiraling, expanding, and collapsing, mirroring the geometric logic of the pavilion itself. Here, parabolic and hyperbolic geometries are not only structural but acoustic, shaping how sound moves, accumulates, and is perceived.

Xenakis' work is foundational to this thesis. His systems-based approach, attention to sonic density, and rejection of traditional Western musical hierarchies open up a framework where sound is understood as physical matter, **granular**, architectural, and immersive. His compositions suggest that sound can be built, sculpted, and inhabited. In this sense, there is a conceptual alignment between *concrète* (as in *musique concrète*) and concrete (as material): both are concerned with the shaping of raw matter into form.

A parallel line of inquiry emerges in the sculptural work of Anish Kapoor, particularly in *Dismemberment, Site 1*. This large-scale installation stretches a red membrane between two steel rings, forming an elongated tubular volume. While not explicitly designed as an acoustic device, its form suggests the spatial logic of a horn, an architecture of directionality, compression, and expansion. It operates simultaneously as tunnel, vessel, and body, evoking both infrastructural and biological associations.

Kapoor's work introduces a performative dimension to scale and perception. The transformation of a minimal, almost diagrammatic curve into an





My Scores

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Four Bit Modulo Phase Triplex for Violin, Piano and Cello, 2023

Binary

Violin: 16th notes, staccato
Cello: 100 0 notes on 1 4 8 bars
Piano: 4 8 bars

Phase

Violin: 16th notes, staccato
Cello: 100 0 notes on 1 4 8 bars
Piano: 4 8 bars

Modulo

Violin: 16 notes
Cello: 100 0 notes on 1 4 8 bars
Piano: 4 8 bars

Annotations: 16th notes, staccato, 100 0 notes on 1 4 8 bars, 4 8 bars, 16th notes, staccato, 100 0 notes on 1 4 8 bars, 4 8 bars, 16 notes, 100 0 notes on 1 4 8 bars, 4 8 bars.

Source Material:

This work is derived from binary data generated by randomly sampling noise from a field recording captured under a highway underpass at 41.814011, -71.406527 (Providence, RI). Each “1” in the score corresponds to the performance of a 16th note or chord, predetermined at the start of the movement. Each “0” represents a rest.

Movement I

Notation and Looping:

The opening 4 bars represent a direct transcription of the binary pattern: “1” = note/chord, “0” = rest.

Violin, piano, and cello subsequently enter into instrument-specific loops of differing lengths:

Violin: 4-bar loop, repeated 24 times (notated as 8 sets of 3 loops).

Piano: 4¼-bar loop, repeated 24 times (4 sets of 6 loops).

Cello: 4½-bar loop, repeated 24 times (6 sections of 4 loops).

Loops may phase against one another due to differing loop lengths; all instruments maintain 16th-note

subdivisions at 120 BPM.

Dynamics:

A grey envelope overlay represents dynamic contour.

Violin loop: First 12 iterations: ff -> pp; next 12 iterations: fff -> ppp.

Same rules apply to piano and cello.

Articulation:

All sounding notes (“1”) are staccato.

Violin and cello may execute snap pizzicato randomly, preferably at the loop’s onset when the instrument is at a higher dynamic.

Movement II

Tempo: 120 BPM; 16th-note rhythms now performed as triplets. Piano may later deviate in tempo.

Notation:

New preset pitch material is indicated at the start of each instrument’s loop.

Snap pizzicatos are now fixed, with spacing considerations to avoid excessive clustering (omit redundant notes if necessary).

The first note of each loop for violin and cello is marked sfz, serving as a temporal cue for the piano.

Phasing and Temporal Manipulation:

First ~10 bars (~1 minute): all instruments in strict tempo.

From ~1:00 onwards, piano gradually phases out: individual notes separate in time, volume decrescendos.

Approaching the final ~20 seconds, piano phase and tempo reintegrate; crescendo to fff, and all instruments synchronize.

Violin and cello: continuous crescendo from mf -> fff over the course of the 3-minute movement.

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Movement III

Tempo: 130 BPM; all notes performed as 16th notes.

Structural Outline:

Initial section: instruments in strict tempo.

Subsequent sections: gradual deviations in tempo, pitch (octave displacement), and dynamics, producing aleatoric textures.

Single cello note at loop onset is sfz.

Looping Scheme:

Loops vary in length (beats): 3 -> 7 -> 8 -> 4 ... etc.

Entire loop sequence is repeated:

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3 iterations in strict tempo.

3 iterations with tempo deviations.

3 iterations with deviations in tempo, dynamic, and octave; violin and cello incorporate random pizzicati.

Final section: disintegration / collapse, allowing rhythmic, pitch, and textural dissolution.

General Performance Notes:

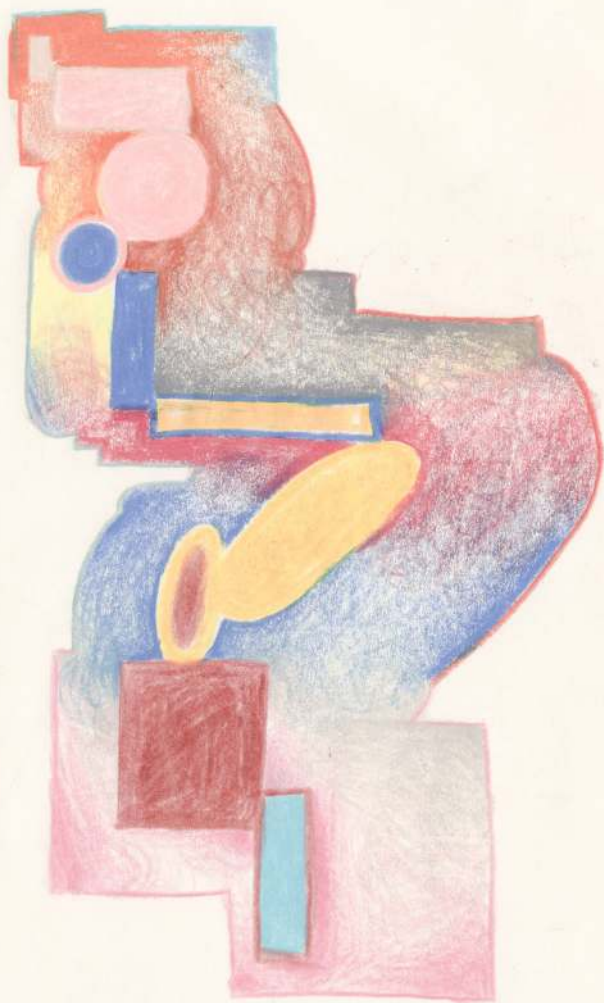
All instruments adhere to 16th-note subdivisions unless specified.

Phasing is intrinsic; performers must maintain awareness of loop length and dynamic contour.

Snap pizzicato, sfz, and staccato articulations are integral for both texture and temporal referencing.

Dynamics, articulation, and pitch deviations are intentionally flexible in movements II and III to create evolving, spatialized textures.

This piece is accompanied by a graphic score illustrating the phasing, timing and loop relationships between violin, cello, and piano.



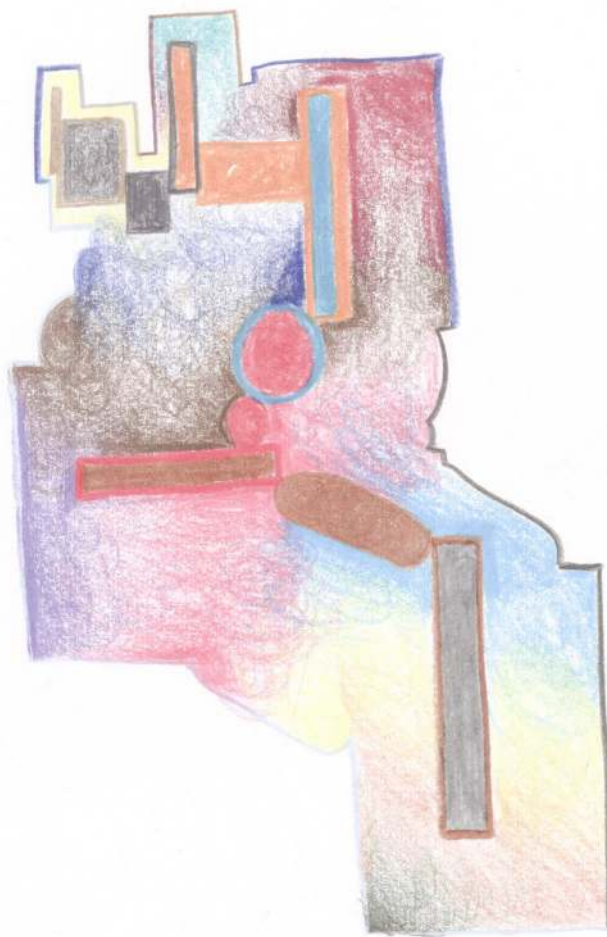
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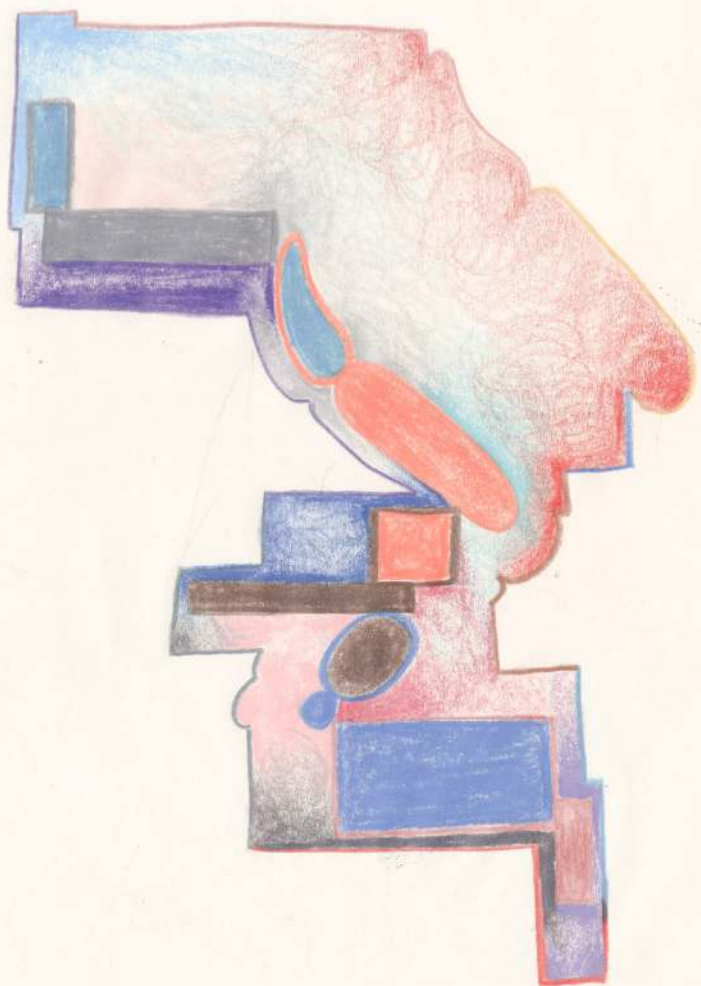
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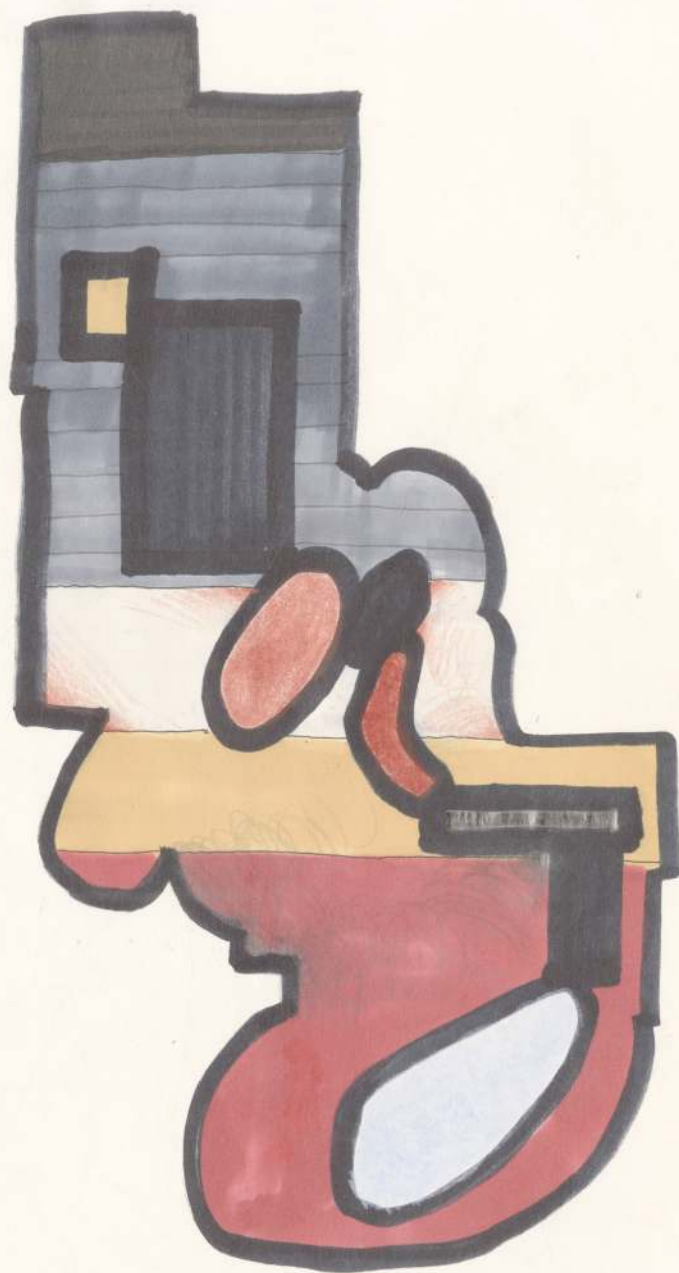
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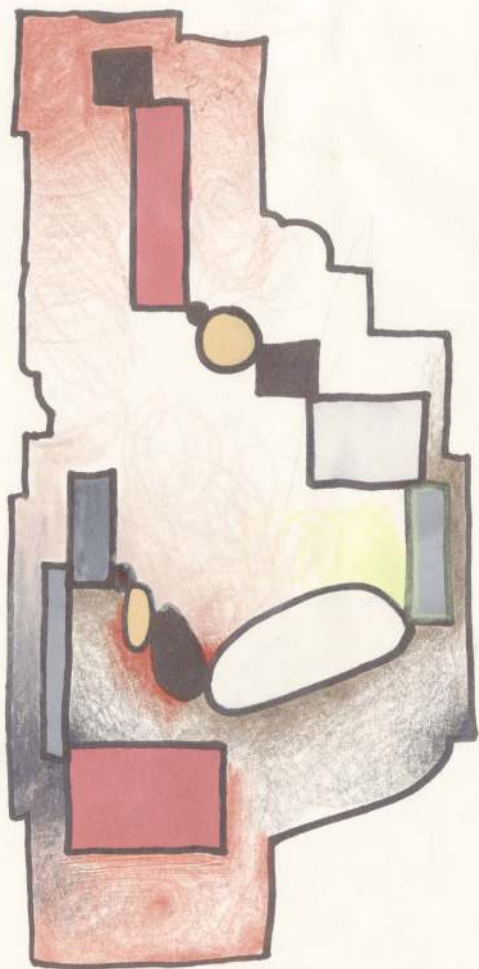
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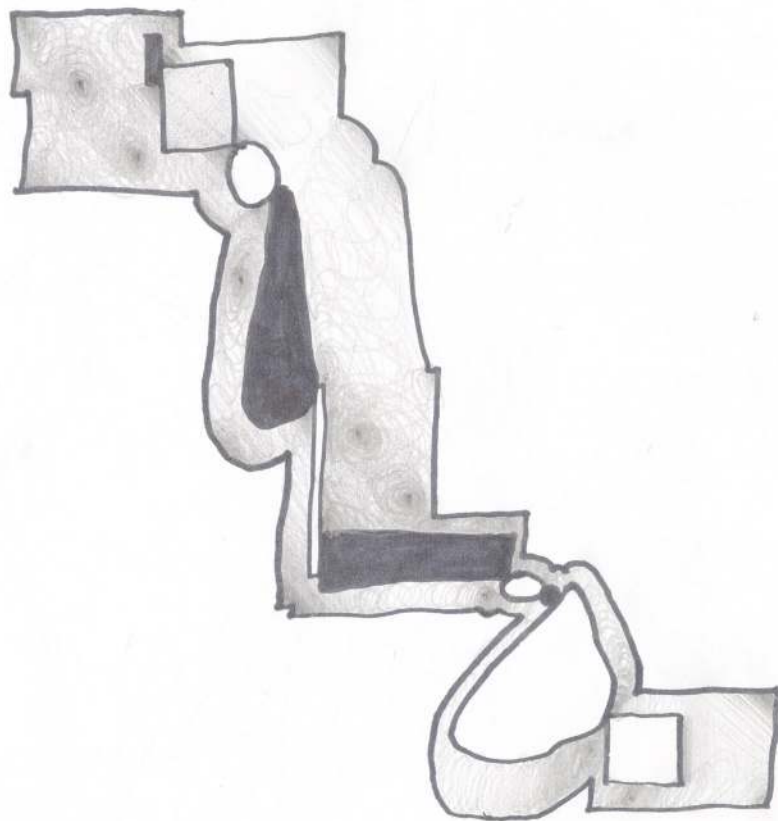
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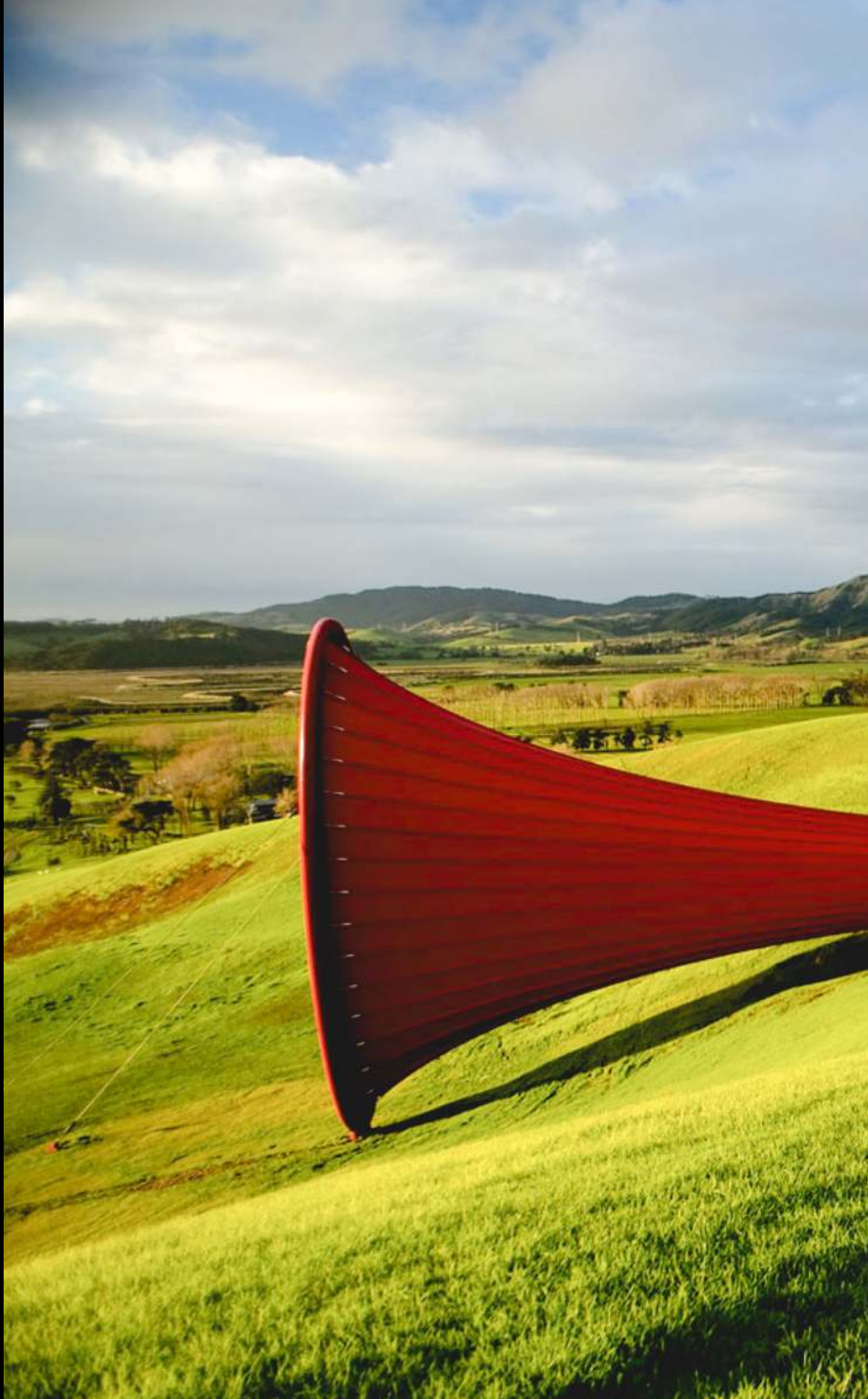
tunnel matrices

inhabitable form becomes a kind of ritual gesture. When read acoustically, such a structure has the potential to shape sound in ways that blur boundaries between environment, object, and listener. The parabolic or tubular form becomes a mediator, channeling energy, framing experience, and constructing relationships between bodies and space.

Parabolic geometries are ubiquitous in both natural and constructed environments. Their recurrence suggests an inherent efficiency in organizing flows, of light, sound, air, and movement. When deployed architecturally within a landscape, these forms do more than occupy space; they actively reconfigure it. They gather and project, focus and disperse, creating zones of heightened acoustic awareness.

In this context, the parabolic form becomes a site of techno-ecological convergence. Placed within natural topographies, it enters into dialogue with existing forces, wind, water, vibration, amplifying and reshaping them. The result is not an imposition but a symbiosis: an environment where geometry, sound, and landscape co-produce experience.

Ultimately, the parabolic object operates as both instrument and architecture,



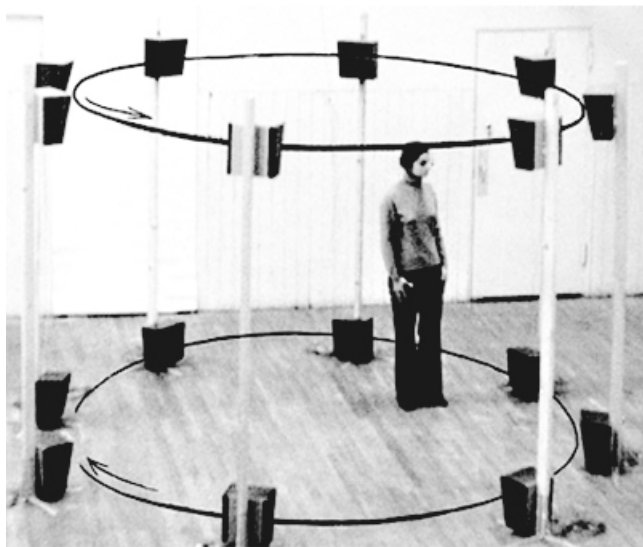
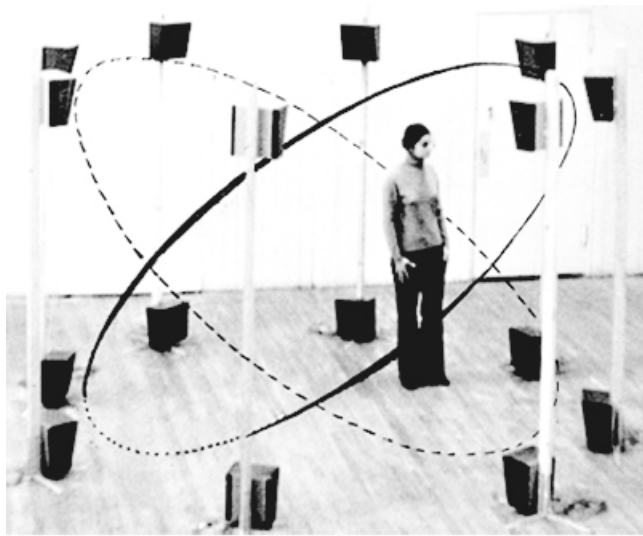
a conduit between the microscopic and the monumental, the ephemeral and the constructed. It is a tunnel not only through space, but through perception: a structure that frames listening as an act of movement, attention, and transformation.



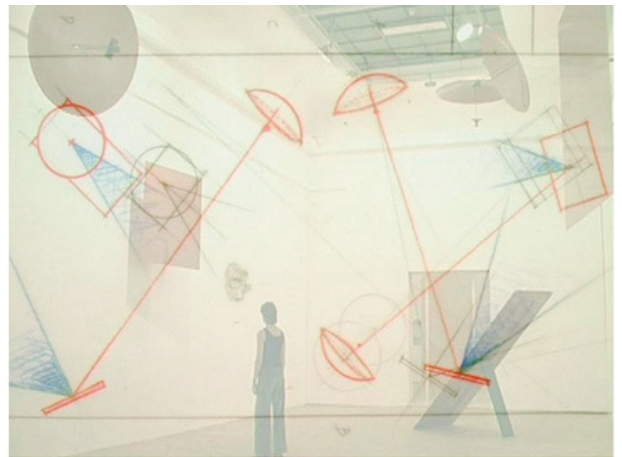
Like Xenakis, Bernhard Leitner draws trajectories of projected sound in space. Also studying architecture, his work uses custom panning circuits, found objects, loudspeaker drivers, sculpted frames, and complex sound synthesis to create sonic environments that move through spaces along attentively designed paths. The work shapes the way users experience sound through a space, bringing it from the mono or stereo field of music listening into a new futurist experimental architecture of sonic experience. He was interested more in the directionality and beaming of sound rather than recorded content or musical compositions. His drawings demonstrate trajectories and movement of sound in his installation work. They are amazing diagrams for the visualization of sound and acoustics and could even be interpreted as graphic scores. These installations act as acoustic experiments and investigations in sound projection and Spatial Audio. Leitner learned and iterated from these experiments to curate intentional interventions as interactive sonic environments for deep listening. Leitner's drawings are a huge inspiration on visual representations and documentation in sound.

“I have created sound spaces , for conscious listening. Subconsciously, how-ever, we are always acoustically immersed in spaces , and not only through our ears, but with our entire bodies. I sense with my entire body, with my skin, whether or not I can easily speak in a room. That's an acoustic subconscious that everyone has. That's why I think that sound can reach dimensions in the depths where hidden or sunken treasures lie. And raising some of these treasures again is part of my work.”

- Excerpt from Bernhard Leitner, SOUND AS BUILDING MATERIAL,



1



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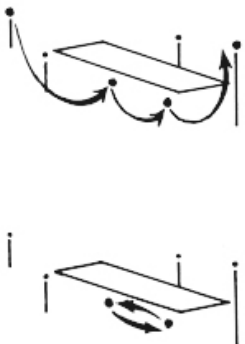
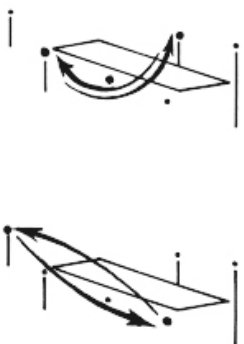
1 "Cylinder Space" (1974)
2. "Parabolic Dishes Beaming" (2002)

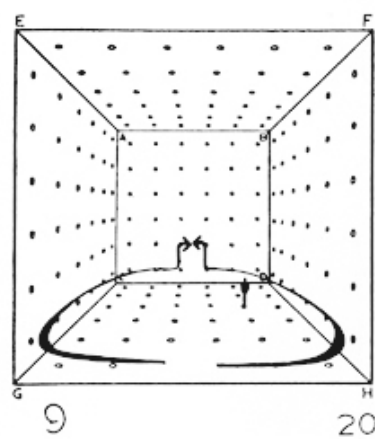
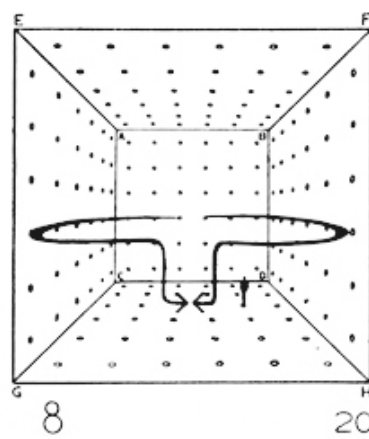
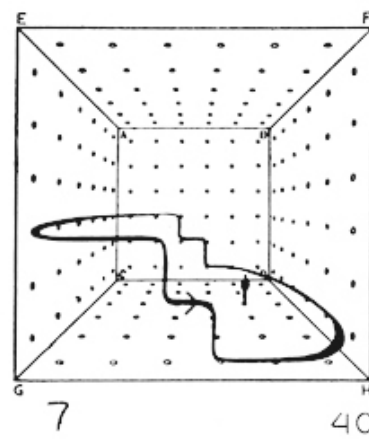
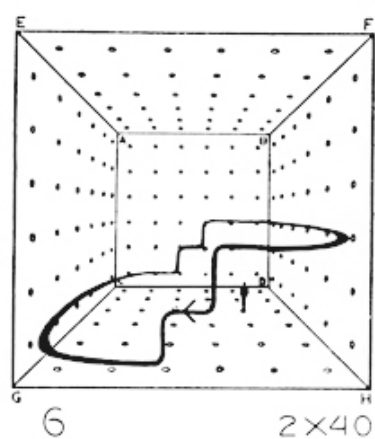
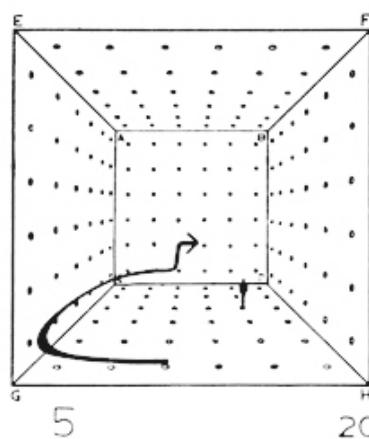
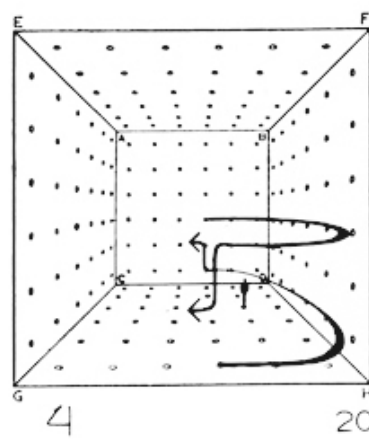
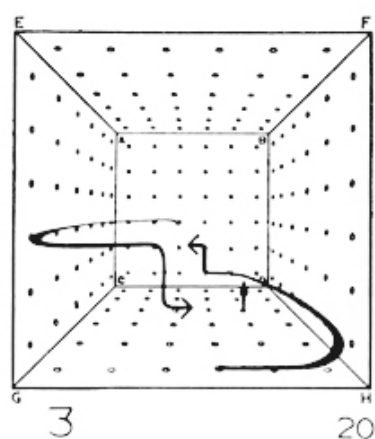
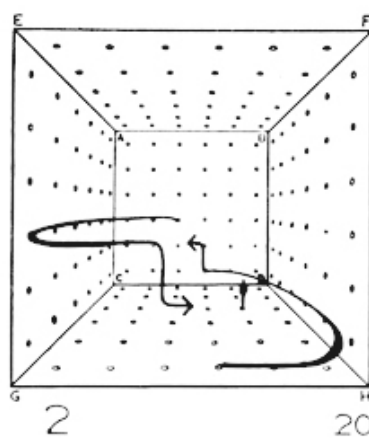
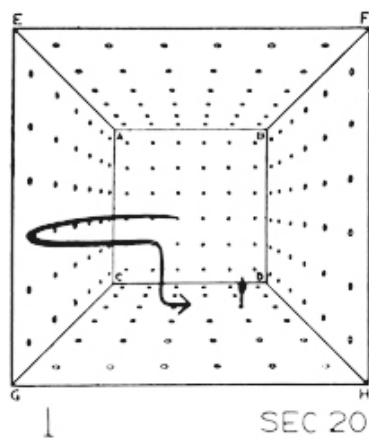
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“For me sound is a building material, so I can use sound today; like wood, like stone, like glass, to build spaces, and this is a totally new world”





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Parabolic acoustic mirrors are passive structures, usually made from concrete, that reflect and concentrate sound waves toward a focal point, allowing distant or faint sounds to be amplified without electronics. This principle is used in devices like parabolic microphones, which capture audio from long distances, as well as in directional speakers that focus sound to a specific point or beam sound in a specific direction with active amplification.

Historically, parabolic sound mirrors were explored as tools of surveillance and environmental listening. Between WWI and WWII, they were developed as early-warning systems to detect incoming aircraft by focusing the sound of engines. Along the southern coast of England, large concrete acoustic mirrors were constructed as part of this defense network, though the project was ultimately abandoned with the advent of radar technology during World War II. Within an architectural and acoustic context, these mirrors demonstrate how parabolic geometry can spatially organize sound, transforming diffused waves into directed, intensified auditory experiences.

Ryoji Ikeda uses parabolic speakers in his work “A” to create position-specific sonic experiences of the layering of sound in a room. Because the speakers are



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Meyer SB-1s (super-directional speakers)

directional, depending on where you stand in the exhibition, the sound changes and moves. These changes don't happen in the sound itself, but rather in your spatial perception of the sounds.

“The project title A stands for the standard concert pitch 440Hz, so-called ‘La.’ This concert pitch, however, has varied over the past few hundred years, from Bach’s era to the recent definition (‘70s) by ISO (the International Organization for Standardization). For example, the pitch of Handel’s tuning fork, which was made in 1751, is 422.5Hz; however, another tuning fork used by Steinway & Sons to tune pianos in London in 1879 is 454.7Hz. The musical note ‘A’ as the standard pitch for orchestras has never been precisely defined and still varies depending on orchestras or countries. A series of historical concert pitches ‘A’ is assigned to specific devices in the given environment and is emitted at the same time with a certain order/composition.”

“Ryoji Ikeda : A.” Ryoji Ikeda | A, www.ryojiikeda.com/project/A/. Accessed 18 Mar. 2026.



Finally, within spatial audio and the reorientation of space through sound, the concepts of the Acousmonium and Acousmatics become central. The Acousmonium is a sound diffusion system developed in 1974 by François Bayle and originally used by the Groupe de Recherches Musicales at the Maison de Radio France. It consists of a large array of 80 loudspeakers of varying sizes and acoustic characteristics, designed primarily for the playback of fixed media works, where each speaker plays a different role in the content that's played back, like voices in a choir or instruments in a concert, bringing the spatial positions of individual sounds back into recorded fixed media work. As Bayle described in a 1993 CD sleeve note, the Acousmonium is “another utopia, devoted to pure listening,” functioning as a penetrable projection space arranged for immersion in sound and for the articulation of spatialized polyphony. In this system, sound is not simply played back but actively shaped in space.

The performance practice associated with the Acousmonium is known as diffusion, in which a composer or performer dynamically controls the spatial distribution, movement, and relative amplitude of sound across the loudspeaker array. This transforms playback into a performative act, where the architecture of the speaker system becomes an instrument amongst the space. Today, the Acousmonium continues to exist and evolve through institutions such as the INA GRM in Paris, where it remains a foundational model for spatial audio practice and Acousmatic composition.

Acousmatic, adjective: referring to a sound that one hears without seeing the causes behind it (Schaeffer 1966: 91)

Next page: “Acousmonium of the INA GRM in Paris / Third Concert.” TO LISTEN TO, 6 Aug. 2025, www.to-listen-to.it/en/evento-festival/acousmonium-of-the-ina-grm-in-Paris-third-concert/



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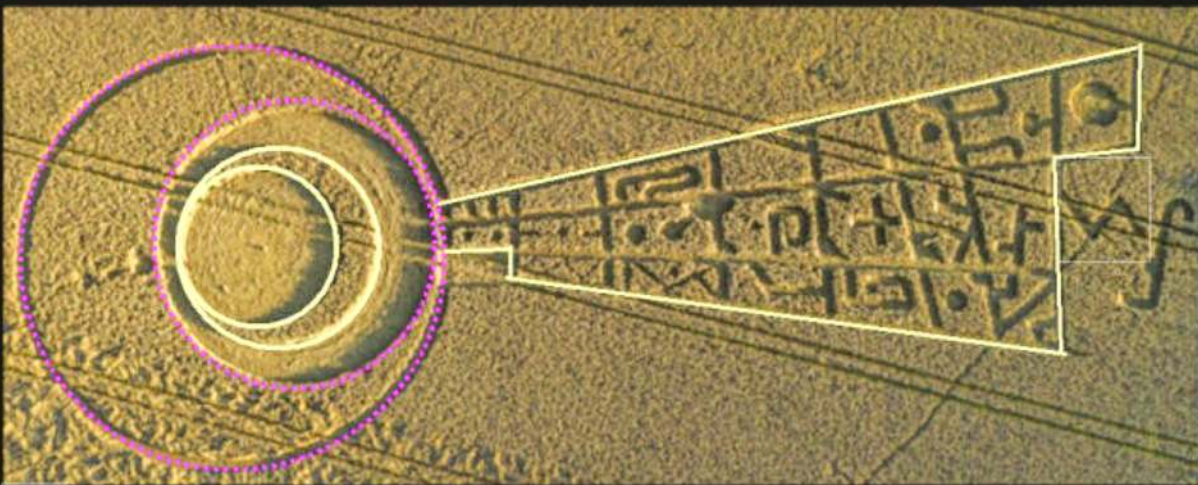
Interesting things happen in the world of Hi-Fi audio. Audiophiles and Hi-Fi enthusiasts focus on the highest fidelity sound for their home stereo systems. This came from the evolution of vinyl and home listening setups in the '70s, but with the rapid advancement of technology, people searched for higher and higher quality sound. This high-quality sound refers to a lot of different elements, but most importantly the full range of the frequency spectrum, from bass to high frequencies. In speaker design, the most popular way to get bass is with good box design and a really large (16–18 in) speaker driver. This is the most efficient use of space and has the most range in the speaker drivers. But for those interested in horns, this becomes a huge architectural and sculptural project. Because bass frequencies are so physically long, in order to amplify them with a horn, you need a long horn path and a huge mouth to the horn. A lot of DIY people disregard making horns for bass because of the immense space you need for them, but those who do end up doing a lot of architectural and structural work to make these big exponential and tractrix horn paths. With the restrictions of the existing house, they end up with very interesting shapes, but what if these horns were implemented into the original architectural design?

Here's an example of one enthusiast's ambitious horn subwoofer build, for his Hi-Fi listening room. The Royal Device audio room belongs to Roberto, the audio designer who made it. This is a truly messy, ridiculous DIY architectural feat for the passion of audio. May be the most passionate anyone's been about bass response ever. I could go on and on about DIY audio rooms and huge, wall-sized horn-loaded speakers, but this is truly the craziest thing I've seen. And the guy's a nut too! Here's an image from his site if you don't believe me. I see where he gets all his practice in diagrammatic drawings. I present to you an archive of most of this project.

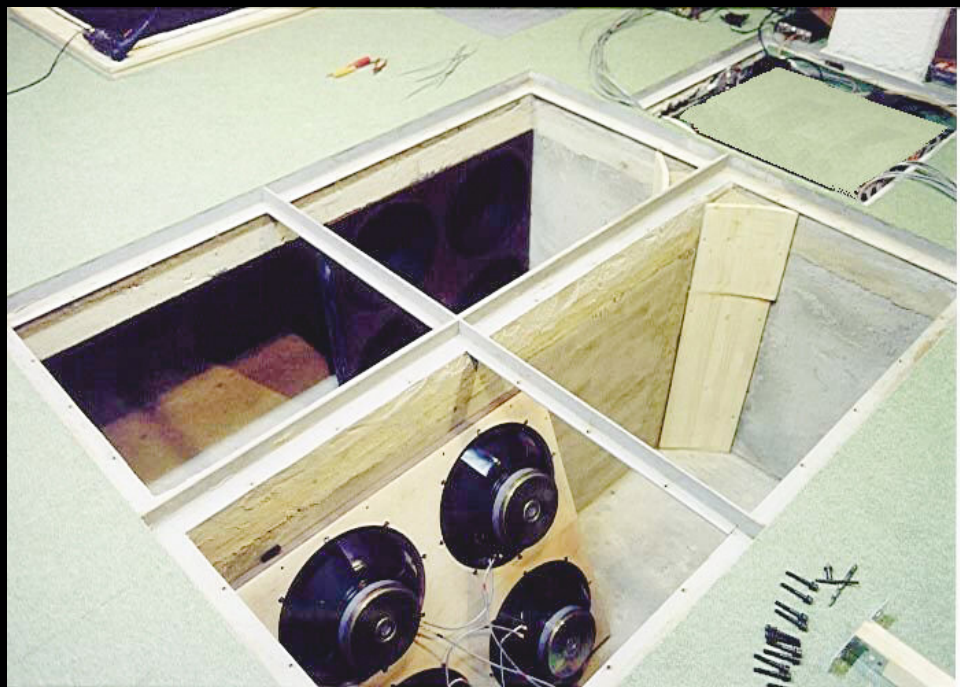
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17-8-2017 the END of TIMES COMET STAR CROP CIRCLE - [click on the figure](#)

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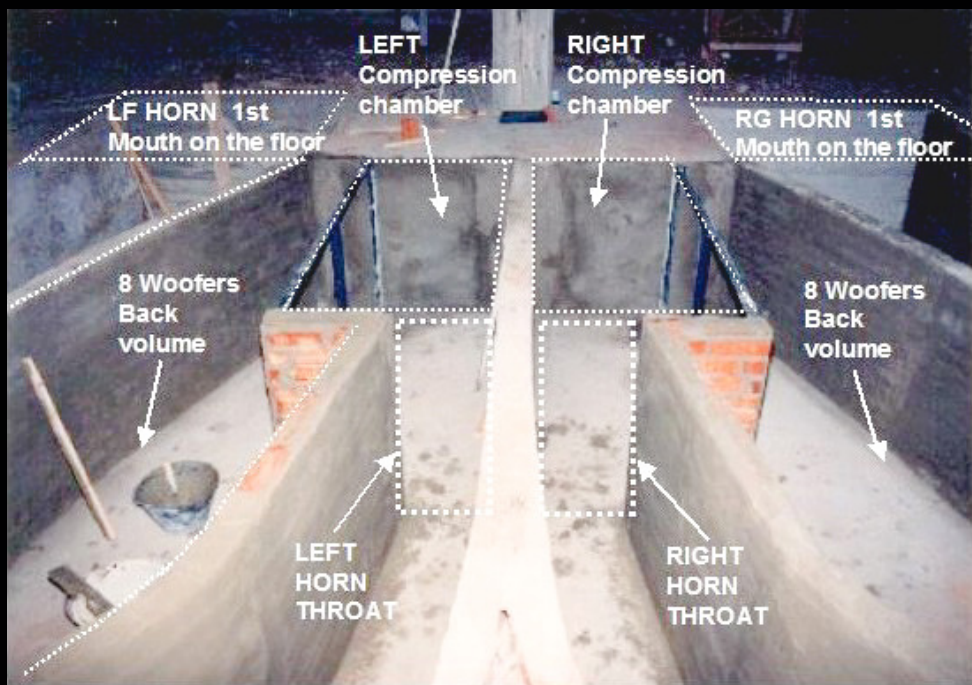
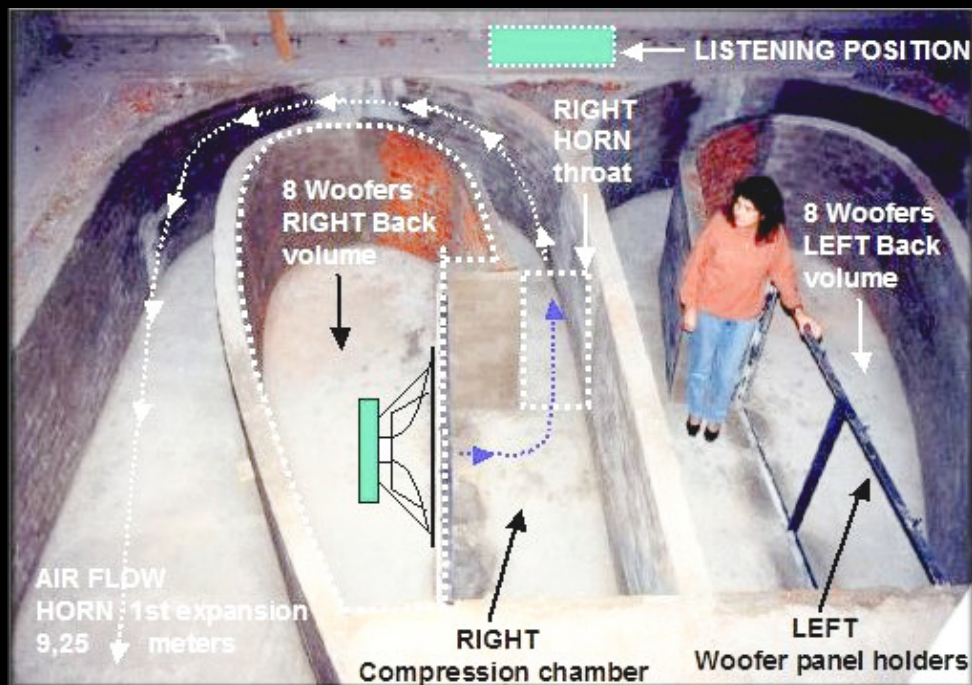
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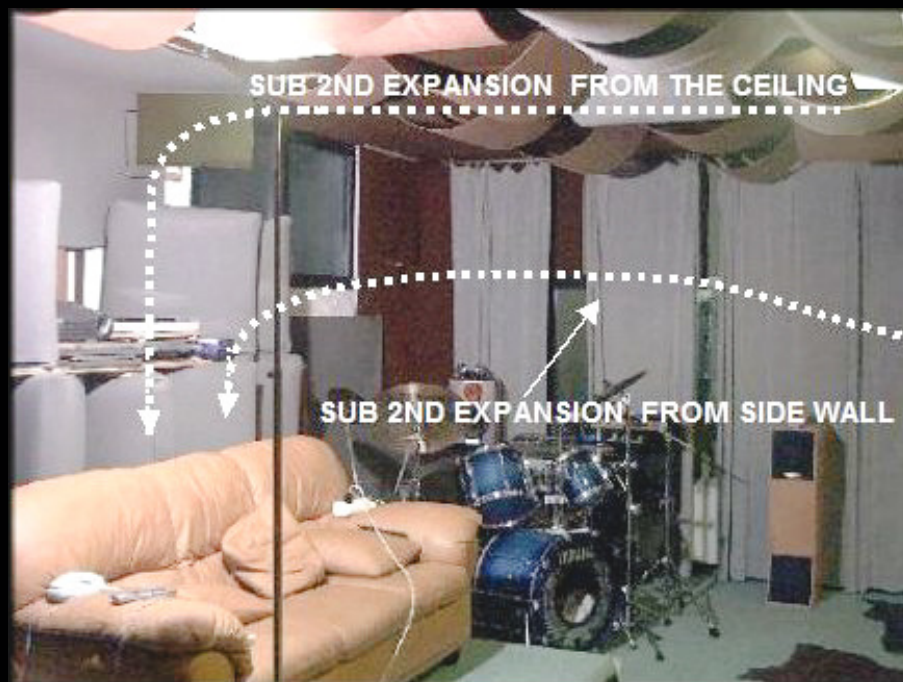




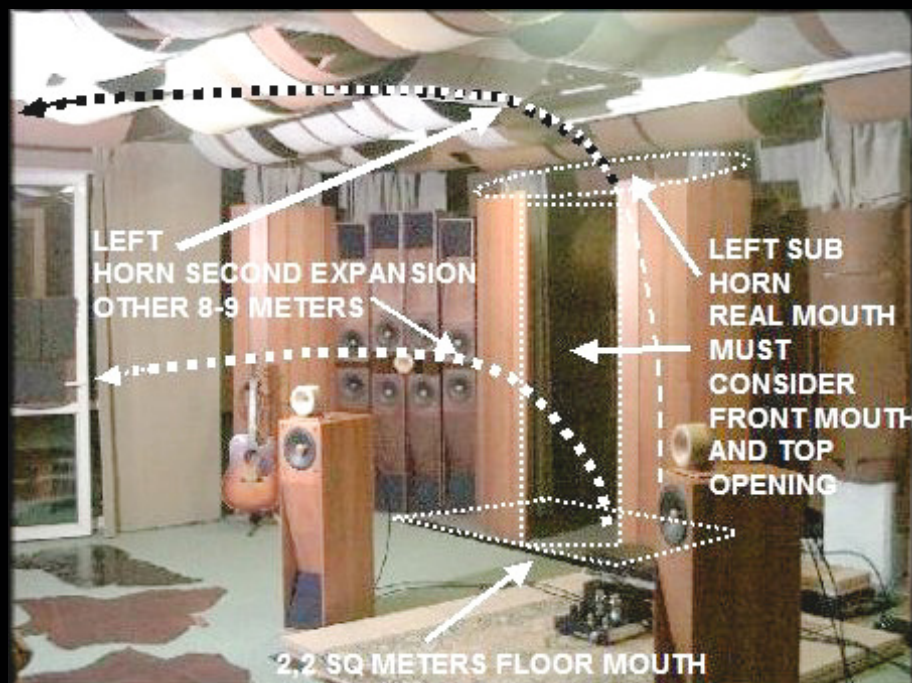


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The speaker stack is a representation, a totem, a shrine, a ritual object in translating sound. Each layer of the speaker stack directly correlates to its own architecture and program. The bass horns represent the dirt beneath the layers of grass, the heart-beat of the earth. We feel these low wavelengths as deep vibrations. It's what makes the hair in your nose tickle or your shirt fly up in the air. It's the bass drum that keeps your feet moving. We dance on this land; we kick our feet on this dirt together. The indigenous practice of drum circles and dance gives thanks and homage to the ground beneath our feet; we celebrate by moving on the ground. The bass holds the longest history.

The drum has been the communicator since the beginning of time. The bass tells the stories of the elders, as the highs tell the stories of the future. The bass is omni-directional

below
60
Hz,
mul-
tidis-
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plinary,
un-
biased,

smooth, and slow. The high frequencies reach your ear first, directional, passionate, and definitive. The midrange represents the skin, body, and voice, the storyteller, the magician. The speaker cabinet is a temple for the speaker driver, an architecture for acoustically amplifying its voice. The architecture of the speaker cabinet is the vessel for the voice. Speaker design is rooted in Kaizen. The sound system plays songs, hymns, archival recordings, live performances, hours and hours, and miles and miles of wavelengths that make this architecture tell its own story. There is an ephemeral nature to an



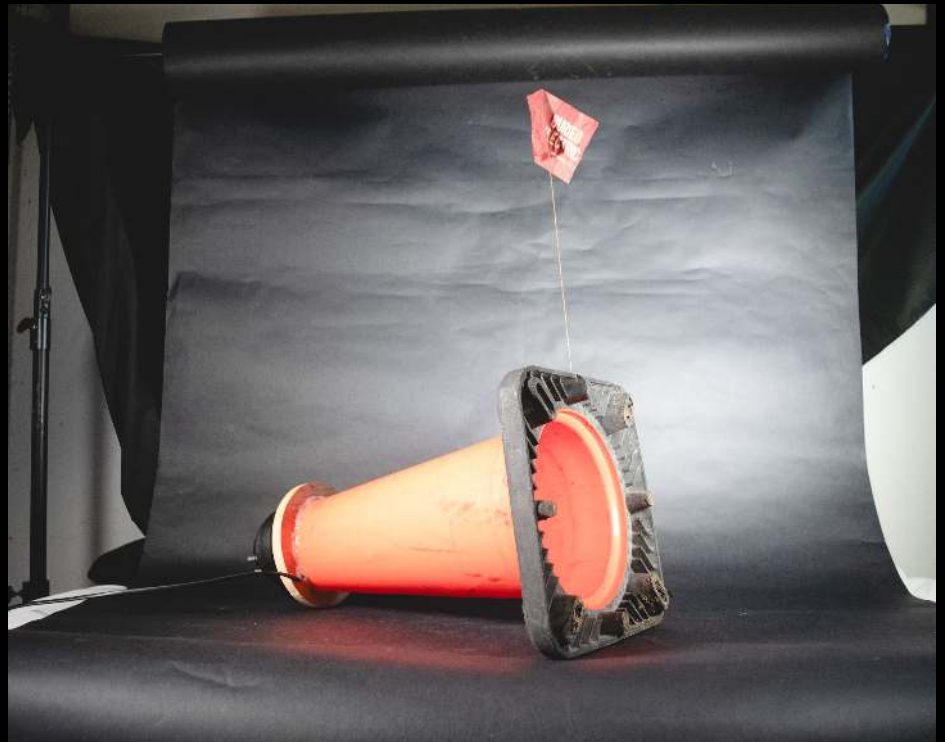
resistance

object that
emits sound: you
hear a song, and then
it's over. You may never
hear it again, there's
no evidence it was ever
played, you may even
forget it the next day,
but you can always go
back to this object and
experience it anew, like a
sunrise the next morning.

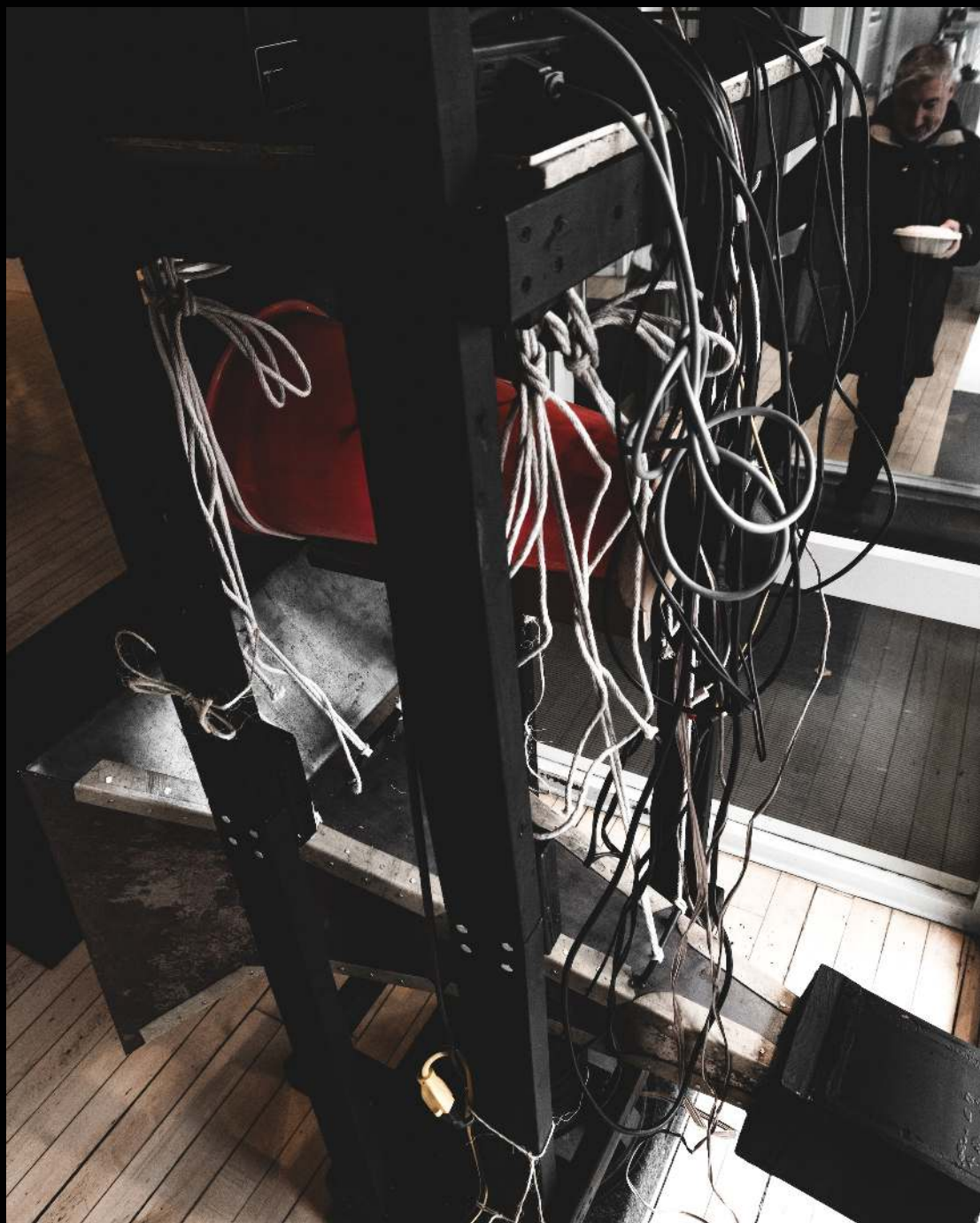
My thesis probe
lives as a sculptural
sonic representation of
culture in the form of a
shrine. The speaker stack
is made from multiple
concepts and builds. The
first is the translation of

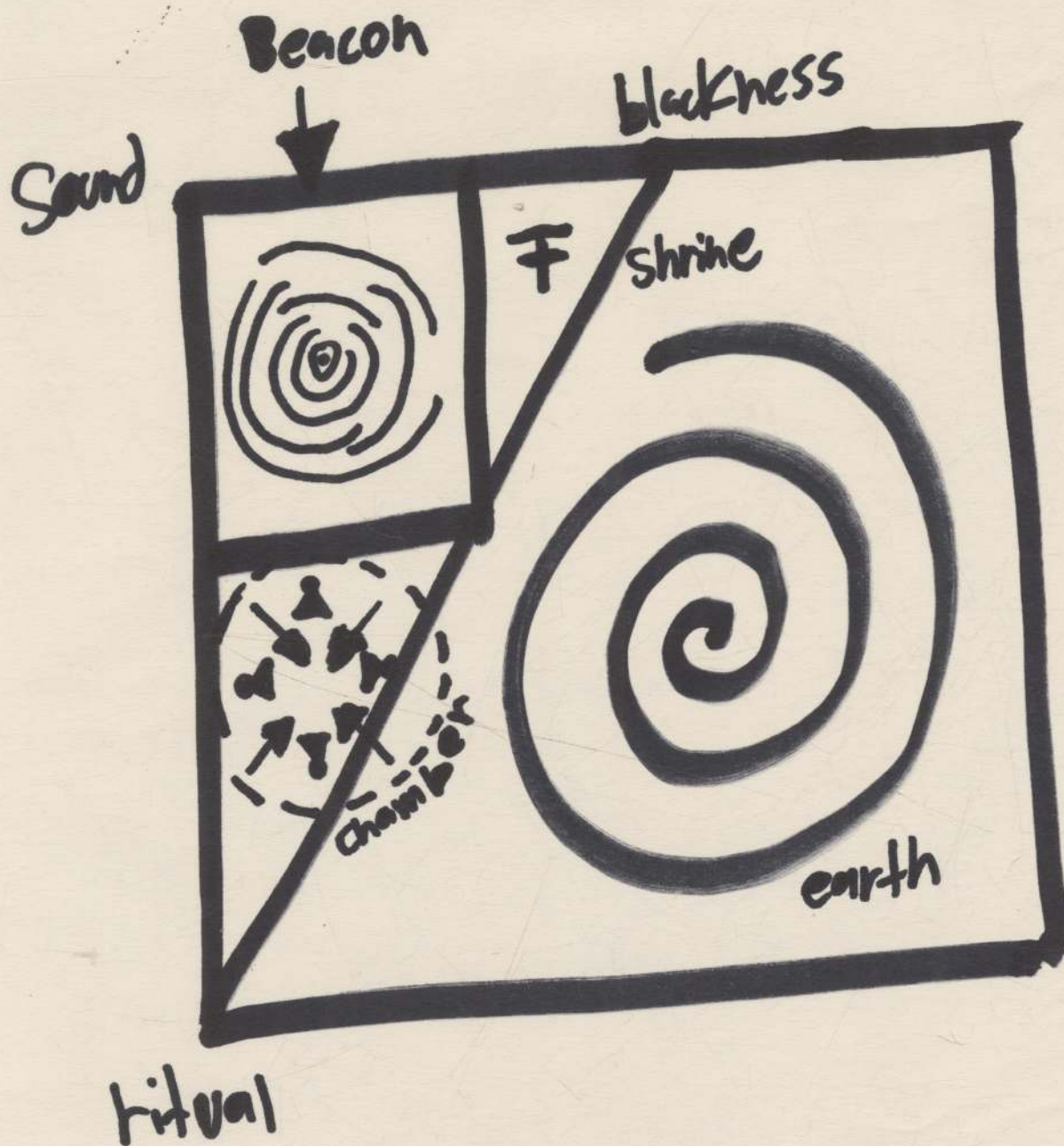
a traffic cone into a high/mid speaker horn with a compression driver at the end. The tag "buried electric" honors the electronics and sound rooted in the ground. This was inspired by my project for States of Exception, and finding interesting sonic spaces while surrounded by broken infrastructure, or sonic objects inspired by broken infrastructure. Ultimately, though, I see traffic cones everywhere in Providence and always think of the shape as a speaker cone. It's always been a representation of one. Even in its function, it screams, "LOOK AT ME, I HAVE SOMETHING TO SAY, BE WARNED!" In my bedroom, I have a lamp made of a traffic cone, it makes my room feel very warm. It's a funny relationship, but now I can't imagine my room without it.

The highs come out of a high-frequency cabinet I found in the basement of my friend's house on Tuxedo Ave. The bass uses the same cabinet, from the other high that I found, this time without the horn or compression driver attached to it, and a slit for the front of the driver that's attached to the top of the cabinet, acting as an acoustic low-pass for the sound coming out of the front of the driver. The back of the 18-in bass driver is open baffle. The midrange horn is the steel horn that I built as a material test for my intervention for Urban Metabolism.





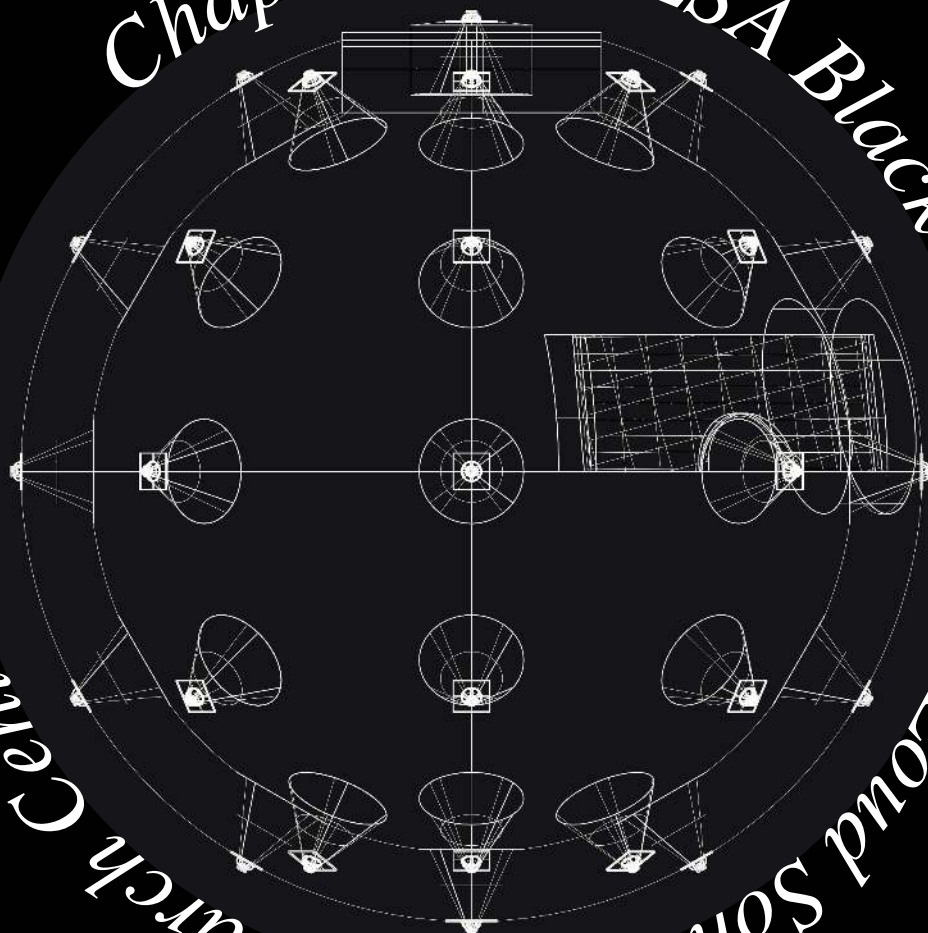




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Chapter 7: BALSA Black Archive for Loud Sonic Acts Research Center



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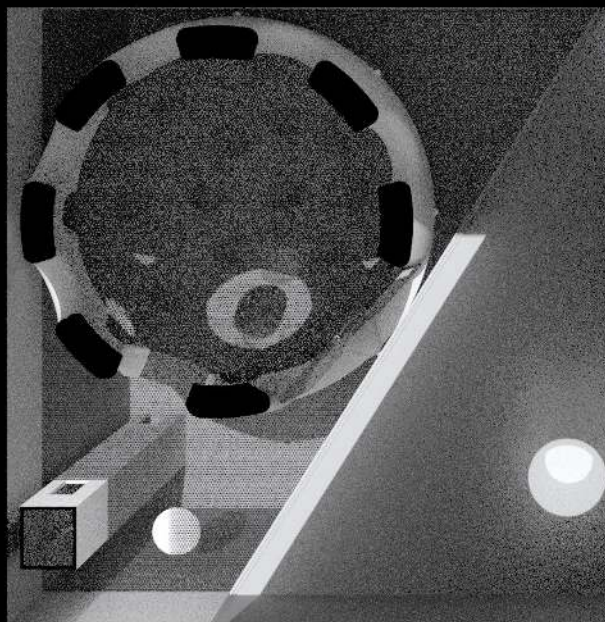
The Black Archive for Loud Sonic Acts
AKA BALSA is a speculative research
facility designed with accessibility, per-
formance and mediation in mind. The site
is across from the Javits Center in. NYC,
sitting inside of sunken ground next to
a maintenance rail yard and a broad-
casting center. The broadcasting center
is the poetic beacon for black sound as
the research from these facilities are to
be broadcast widely, as like the sound
from a speaker horn. I am attracted to
the sunken ground as a ritual way of

↑
section 1

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connecting to ancestors and the history that the ground holds. To be rooted in the ground is to broadcast your existence in the context of the ancestors of black histories, traditions and rituals. The body acts as the grounding rod, when struck by lightning, dissipating energy into the ground as to provide the ground with the nutrients of black energy and all that is alchemized within it through the rituals that take in these spaces. Balsa consists of a Spatial Audio/Ambisonics Sphere array with 42 speakers and 4 subwoofers in one room, and a discotheque with 4 speaker stacks in the other room. Both spaces are accessible via an elongated pathway from the street, with a well of light along the top. In-between pathways is the ritual tea room



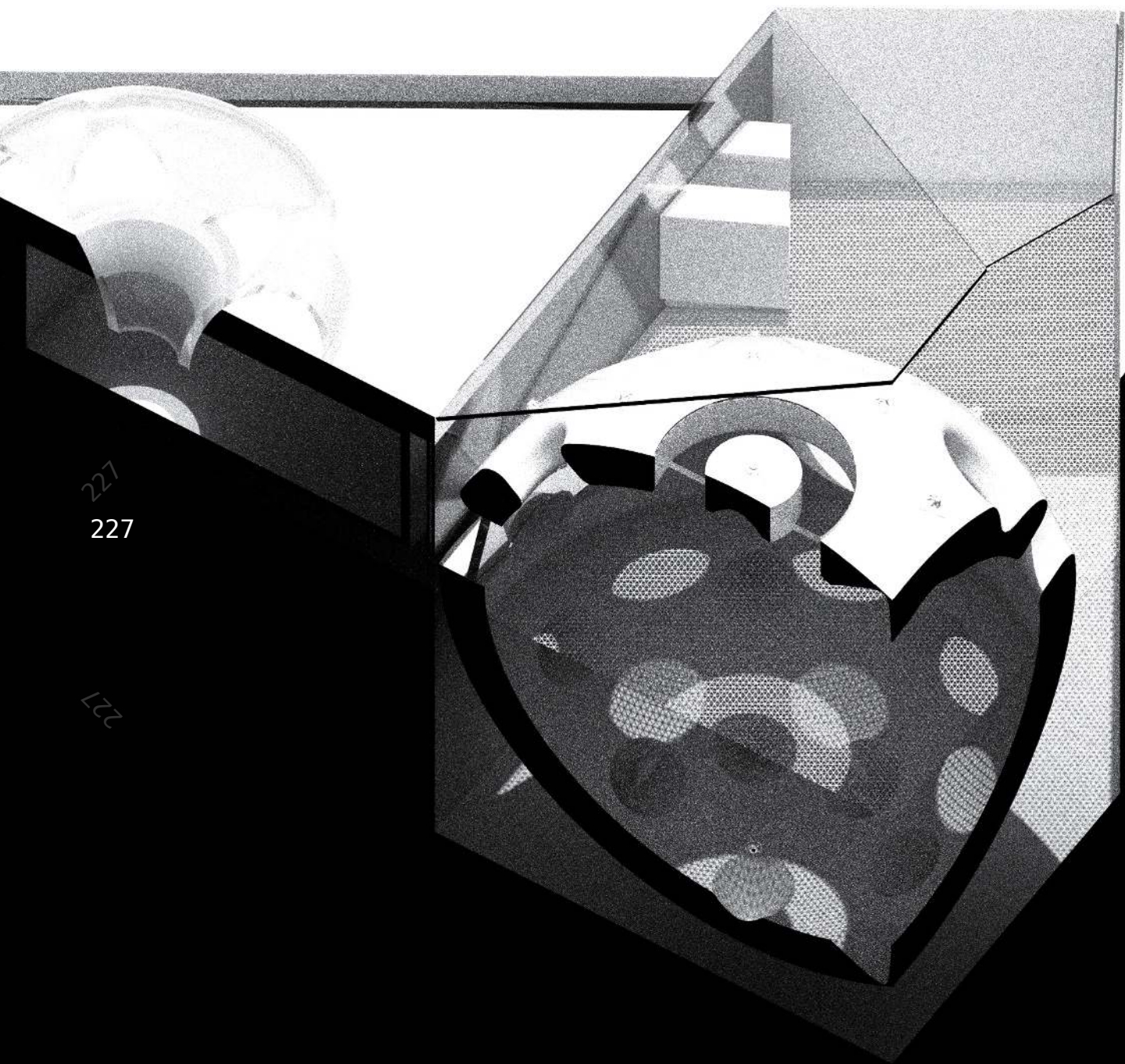
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with an aperture well of light and sound in the form of an acoustic waveguide to encourage the interaction and deep listening of the sound of our environment and all that it encompasses. This space is meant to reorient our senses and how we experience the technology and infrastructure of our surroundings, and transform it into something meditative. Sound is used as the medium for translation and reorientation of these conversations of technological politics in our rapidly advancing society. Not only is this space the median between the outside and these research/ritual spaces but it is the median for the political conversations surrounding sound spaces and how they are designed. It's important that we hear the acoustic horn as the Acousmonium before the amplified horn. It is important that we ground ourselves before sound lifts us off of the ground. The spatial audio studio research facility provides people with the medium of panned sound. We all experience sound around us but music is stereo, movies are 5.1, Apple is panning Sabrina Carpenter around your head like a "4D Sound Experience" YouTube video from the early 2000s and trying to convince you its Spatial Audio. Nothing sounds like the live preference from the band, and even then most electronic musicians or single instruments are coming at you stereo or mono. Spatial Audio allows us to have new conversations and breaks the boundaries of how we design sound for space and space for sound. These facilities are often tied to academia and institutions which kills countercultural movements and binds the spaces to the people that have the privilege of using them. This space is to be shared, for everyone to experience sound, especially BIPOC and Trans individuals. This reorientation and panning and movement of sound is to reorient,

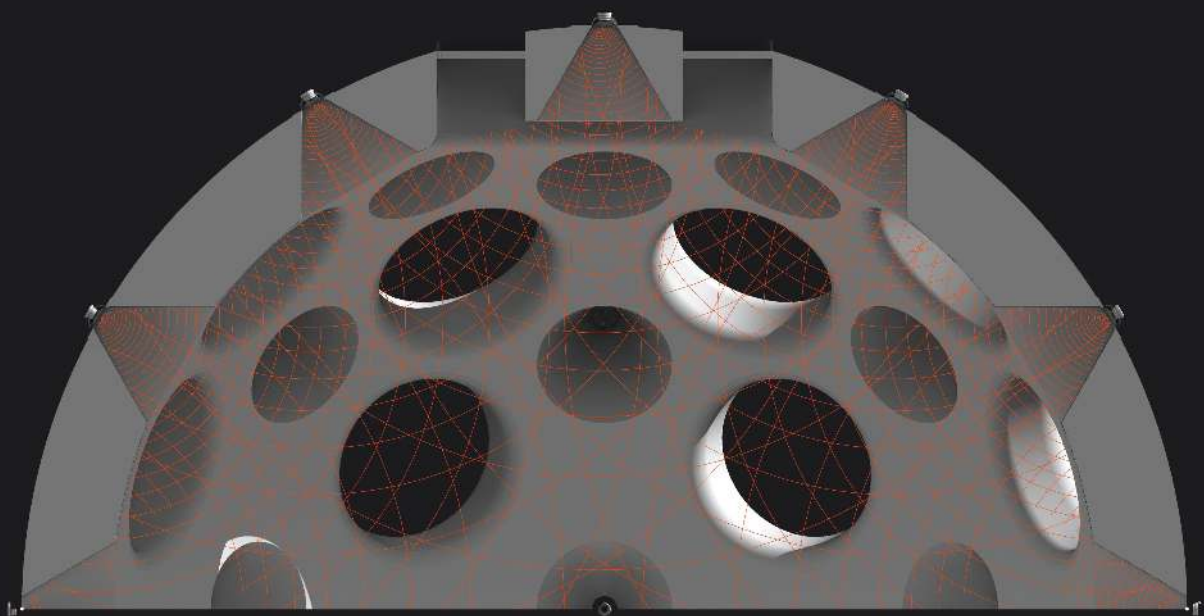
pan and
move BIPOC
studies into the future
and into the dream world
on this non-linear timeline.
It's the forward movement,
embedded in the earth and in
the ground as the ritual. The sound
room is the collective music listening,
as music is the healer. Many artists, children
and elders will share their stories through these
interactions and make essential connections and this
space to facilitate these connections deep within the
surround. Architects agree-there is no equal. We
must project our voices through all means necessary.
The architecture here is un-blackified. There is no
CAD for black architecture, no rendering software
trained on black histories, no sound system that
is black, these cybernetics must happen through
how we reorient the way we think about sound
and technology. Sound is the new medium for the
cybernetics of Afrofuturism and Balsa is the archi-
tectural capsule into the future. Think about your
soundscape, whether it be of privilege or minority.
What are the sounds associated with your daily life
and how can you interact with, sample, research and
acknowledge these sounds as power sources for de-
sign and conversation? Sound is omnipresent. Sound
is so physical that The absence of sound for those
who cannot experience is equally if not more im-
portant. Amplified sound is a privilege and with this
cybernetic medium and the topologies of the dance
floor we can create and change physical spaces and
how we interact with the world through these ideas.

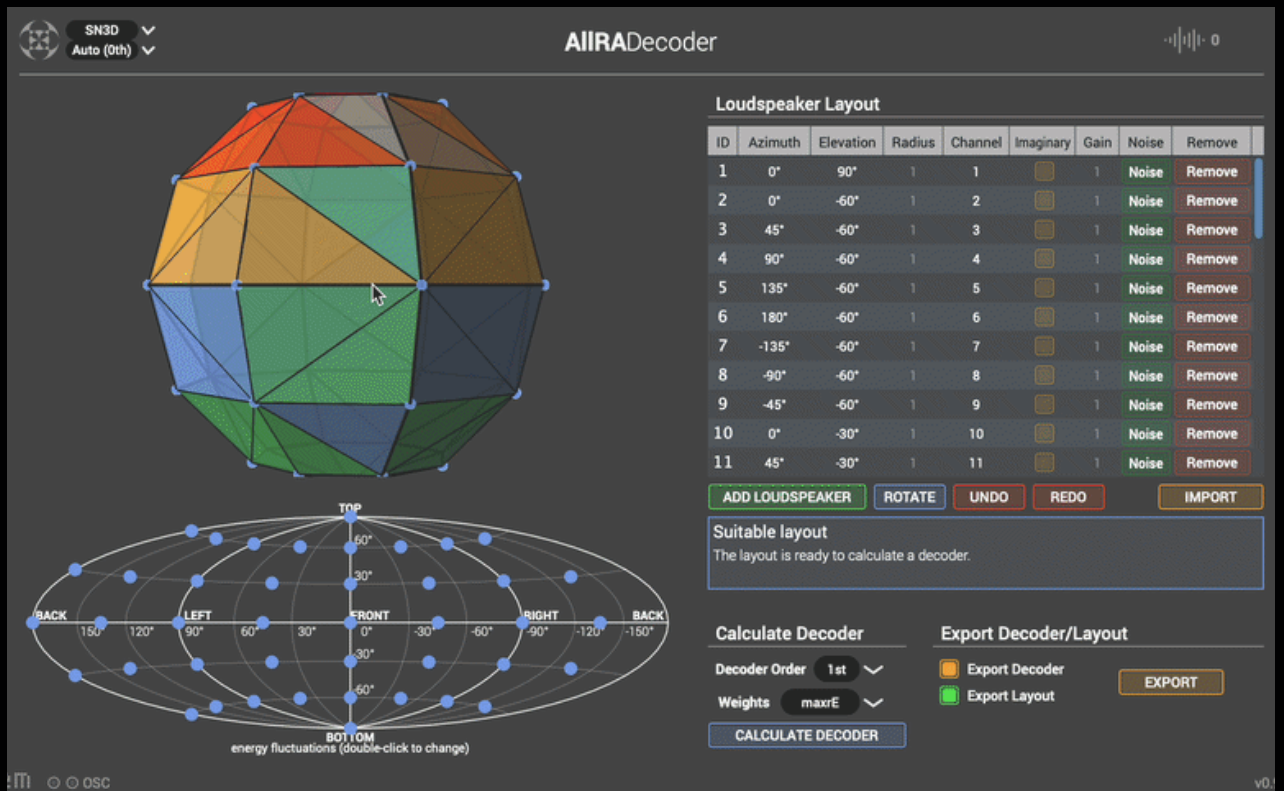


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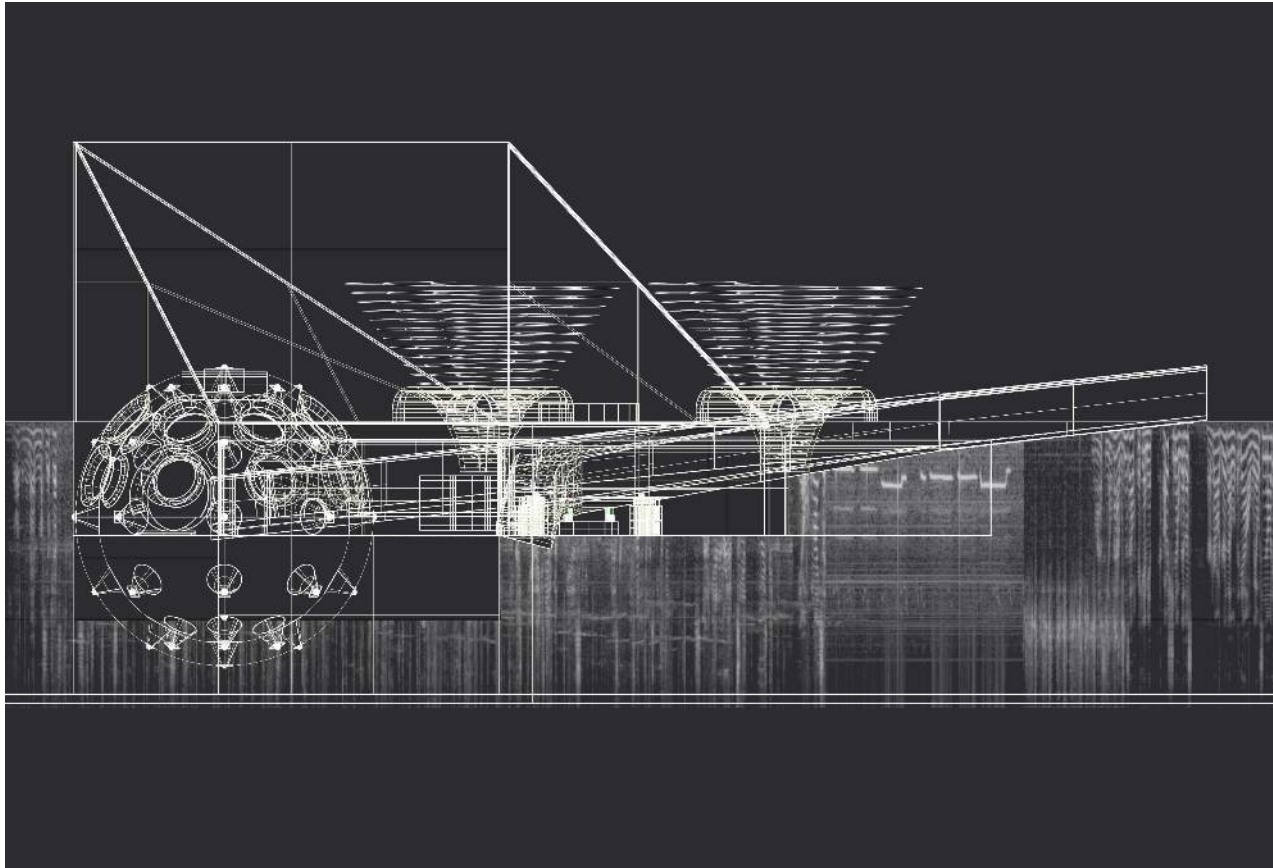
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Simulation of the 42ch conical speaker array in IEM Decoder

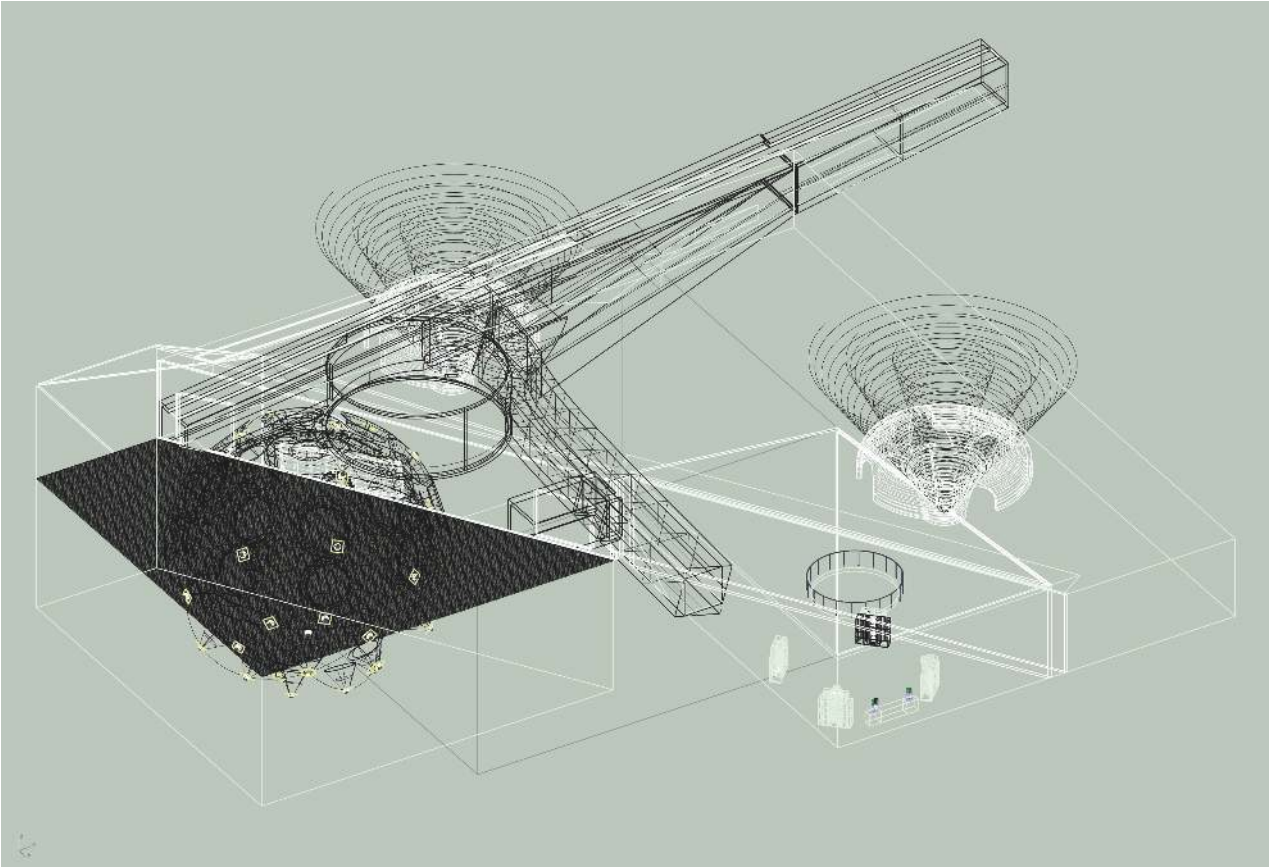
The interior of the spatial array is 54 feet in length and height. Each individual coaxial full range speaker is horn loaded with a circular cone extracted Fromm the acoustically treated wood panel spherical structure. Apertures in the structure allow for light and diffuse reflections of sound in the array. The ground is an acoustically transparent mesh metal net, sunken so the directivity to the direct center is at ear level of the listener. The spatial system runs on Dante connected to a MOTU interface for configuration and ADC/DAC applications. On the roof of the wooden sphere is a skylight. The conical forms are to amplify the sound of the drivers for the loud space while still having acoustic overlap between drivers to ensure smooth spatial panning and avoid beaming. These speakers are not powered, on the ground floor beneath the array is a rack of 21 power amps, and 4 power amps dedicated to the 4 subwoofers.



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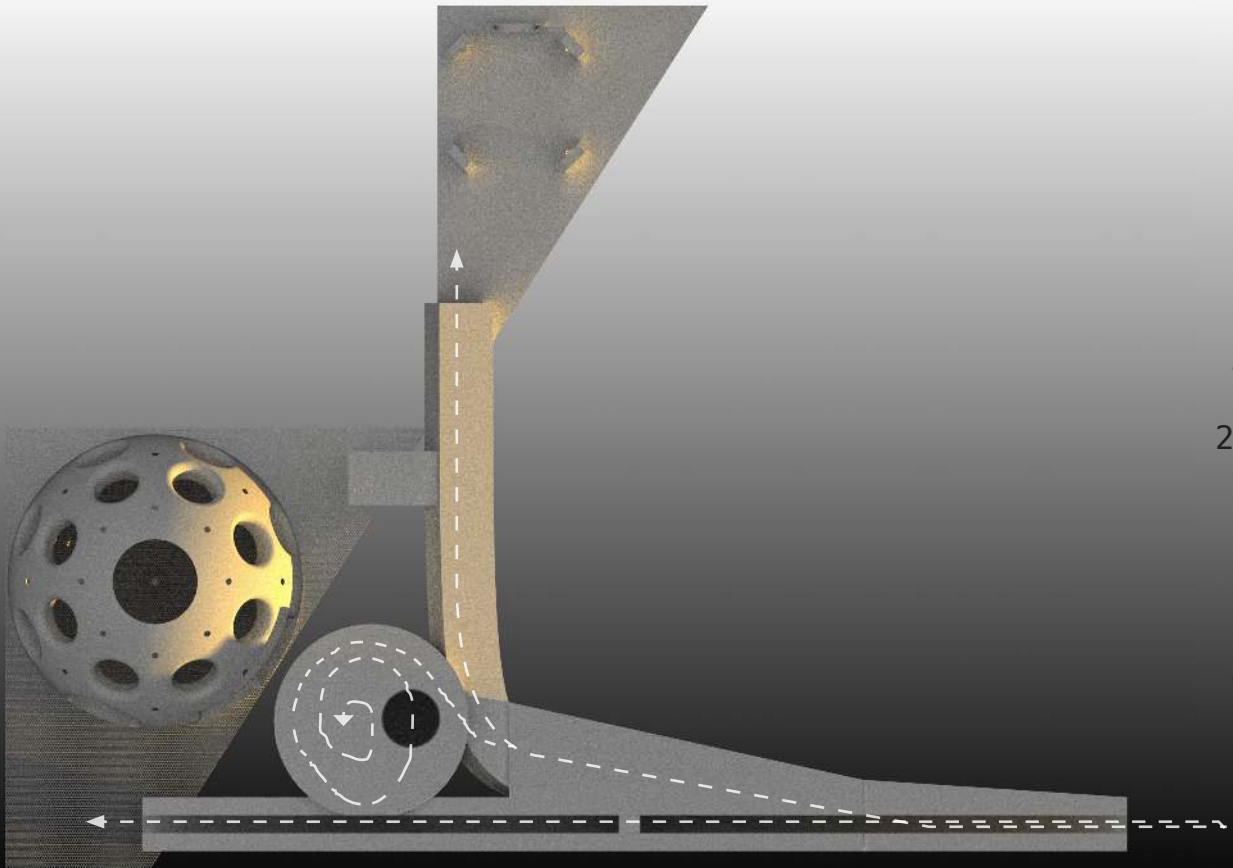
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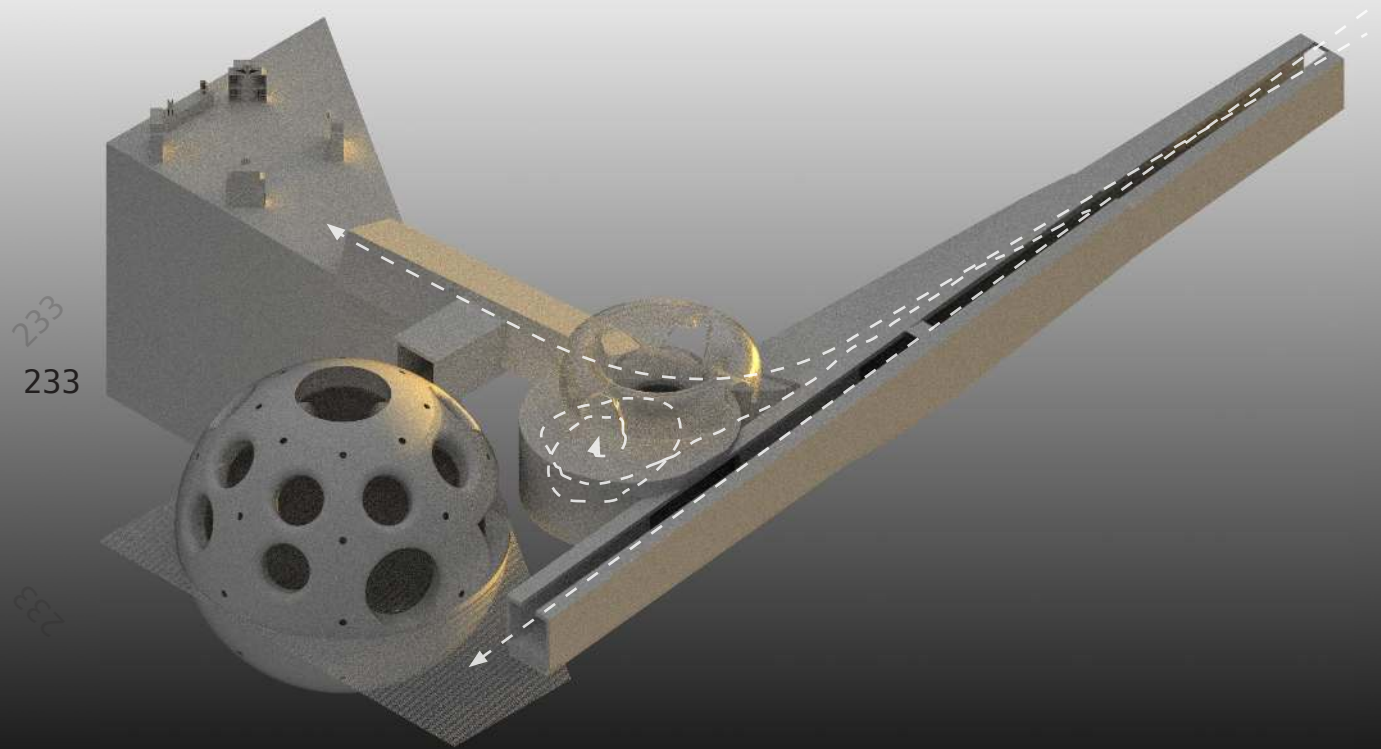
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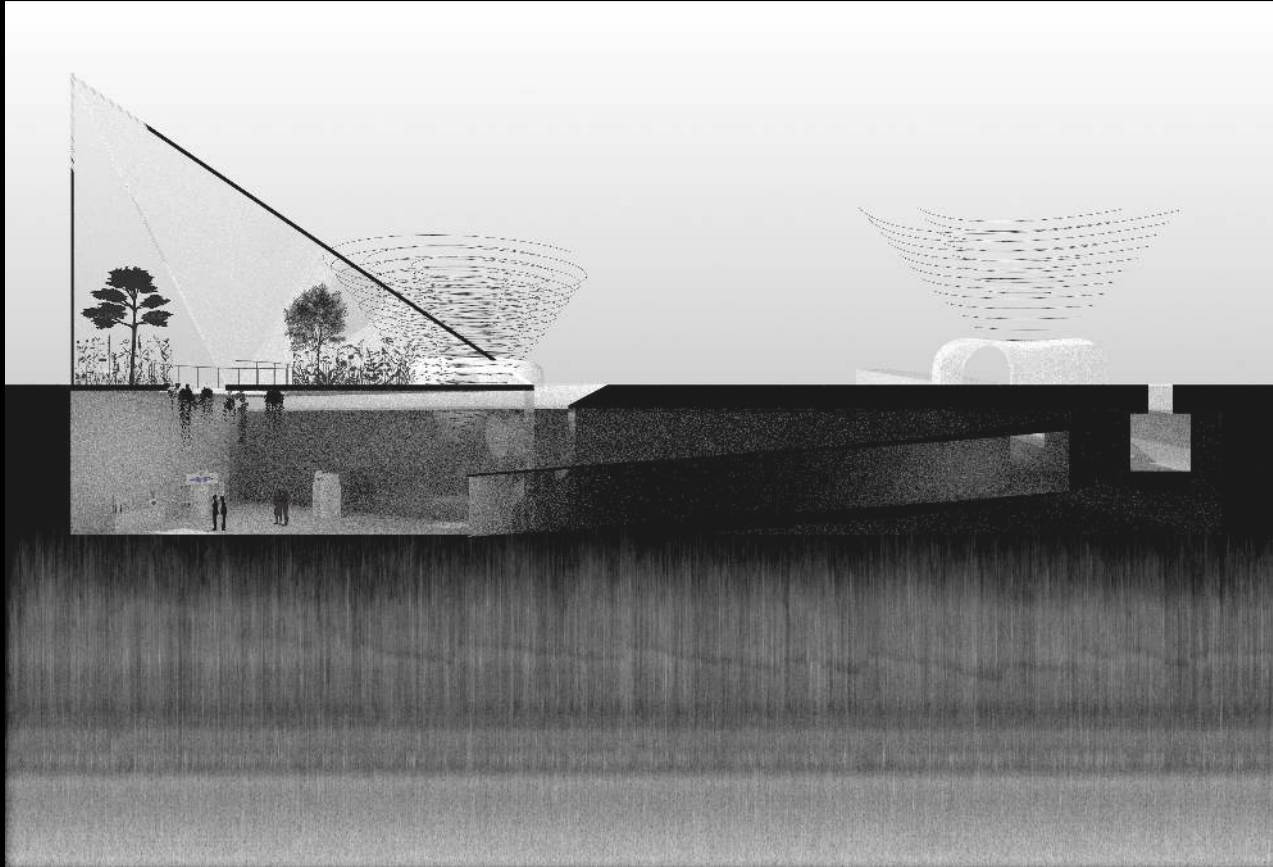
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Circulation is organized along a linear and curved corridor that acts as the primary throat of the project, guiding movement through a central circular horn tea room. From this acoustically isolated and defined mode, circulation disperses in a spiral radially, providing access to both the dance floor and the sound room. The sequence establishes a gradual spatial and sonic transition, moving from a constrained, directional path into a more expansive and resonant central volume,



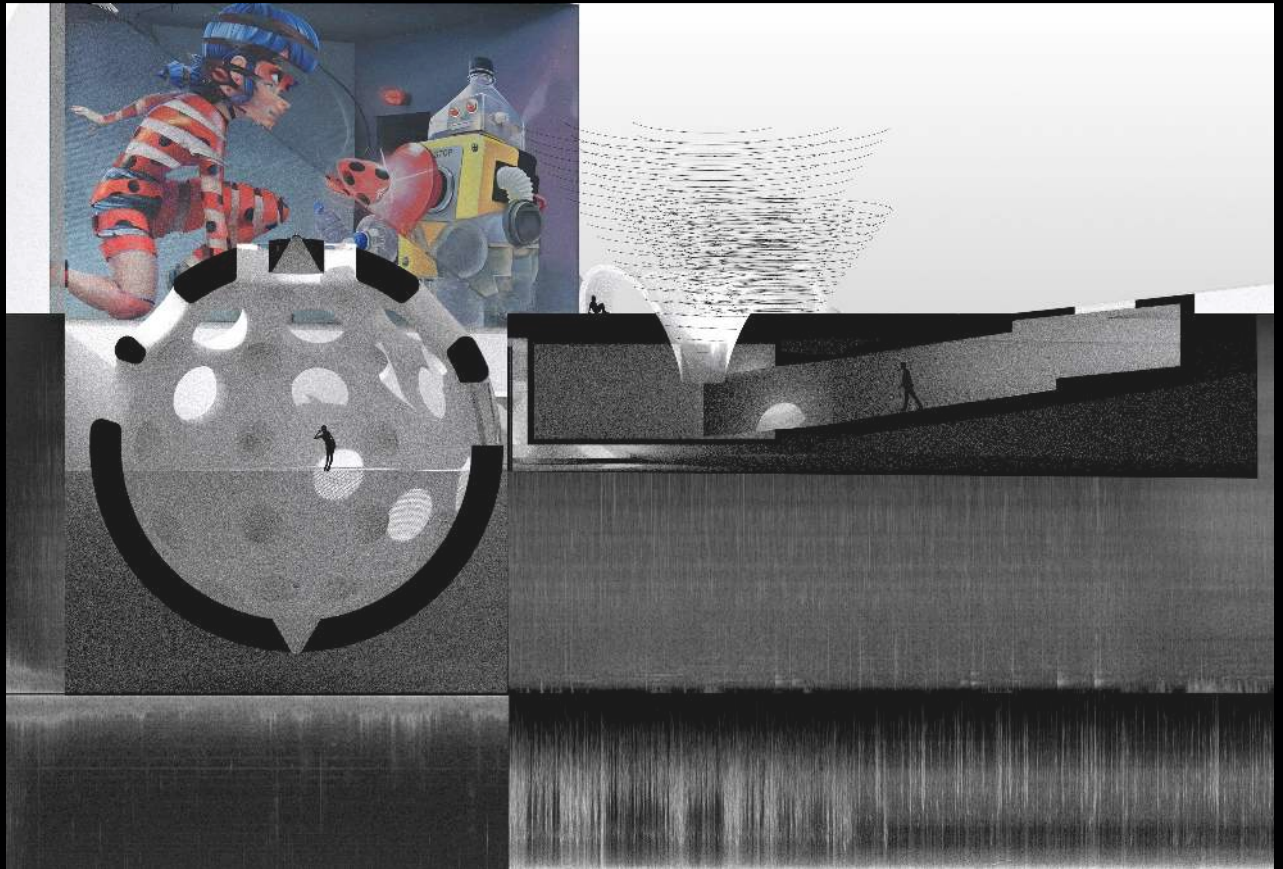
before branching into programmatically acoustically distinct spaces, to ensure no bleed between spaces sonically. The program of this interior tea room is to situate people in a conduit channel before their transition into sound spaces.



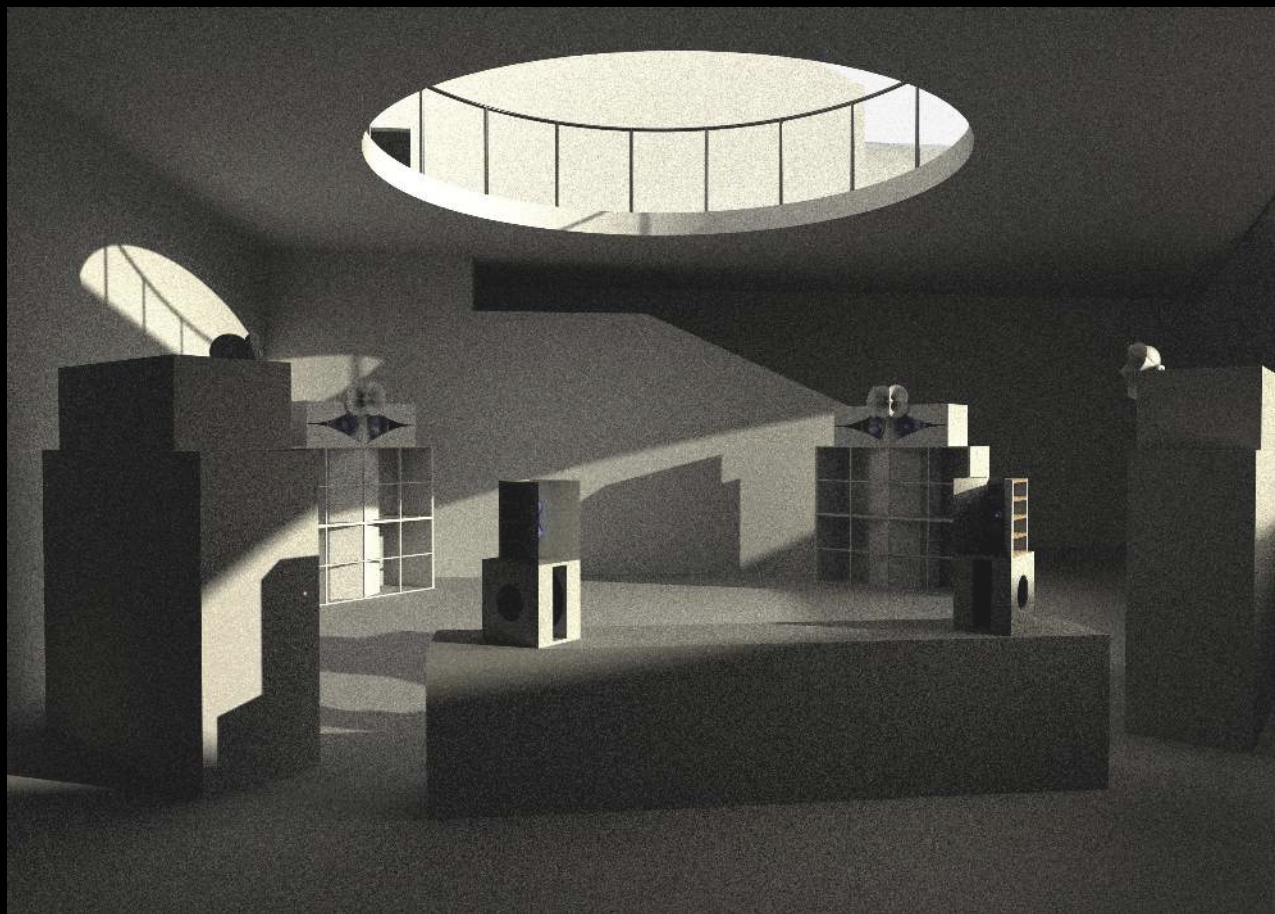
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The atrium above the dance floor acts as the ground beacon greenhouse “chill out” aperture intersexon conduit. The ground is represented in these images as spectrogram graphs showing the frequency content on a linear timeline of indigenous music and field recordings. The spectrogram is a way of visualizing sound as texture and as ground as the ground on this site is rooted in the histories of these sounds. The JMLC horns on an architectural scale amplify the sound from the tea room and the train yard, with protruding openings and balconies to listen along the acoustic path of the horn. There are two on the site. The park is the spiral matrix for aeronautical circulation of these spaces. In between the rail yard and the sound spaces lies a deep well of light and water, where water flows in via the a-horns and the chamfered edges of the park. This well acts as a boundary between the spaces and forces an organic lens from one space into the other. This was



inspired by the grass as an organic intervention intersecting technology and amplifiers from the earth and acting as this cybernetic conduit. The spaces are separated via triple pane glass so the water flows along the glass when it rains. Hydrophones are embedded in this system and can be patched into the spatial array or the dance room to listen and experiment with the sound of the water. The well supports the surrounding ecosystem. The sites intent is to be overgrown with vegetation. The spaces are to be informed by blackness and the black experience, and will not appear as cold as these architectural drawings. This may take the form of installations, shrines, objects and cycling BIPOC artists in residence. These drawings are to clearly show the architectural nature of the project, and how sound is projected and informs the design.



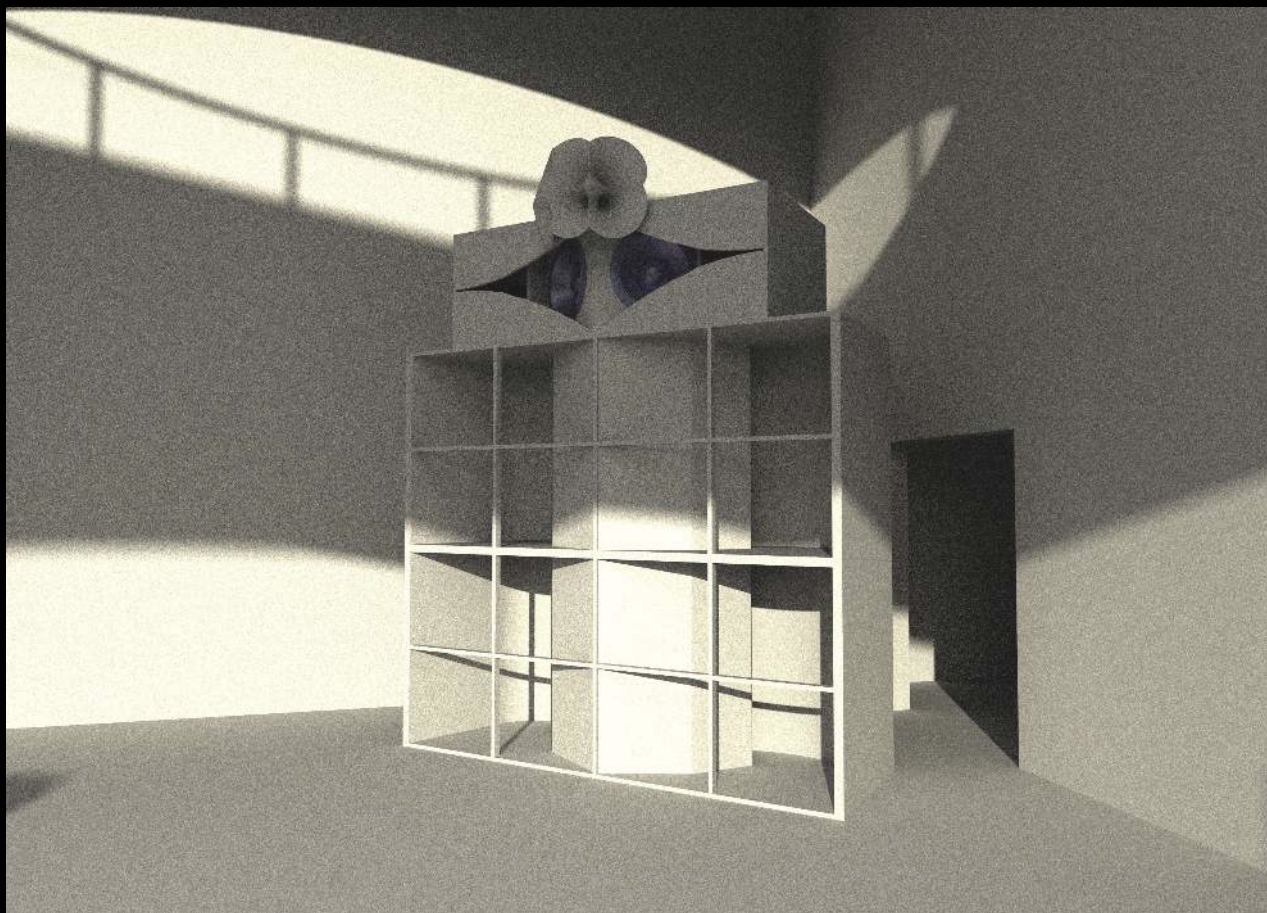
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The system is a multi-way, fully horn-loaded reinforcement stack designed around acoustic impedance matching, high sensitivity, and controlled directivity across the full bandwidth. Each section is treated as an independent acoustic system, optimized for its operating range and then integrated through DSP-based crossover, phase alignment, and delay management.

The low-frequency section consists of dual W-bin folded horns, each loaded with 2 15-inch drivers. The W-bin geometry creates a segmented expansion that increases acoustic loading on the cone while

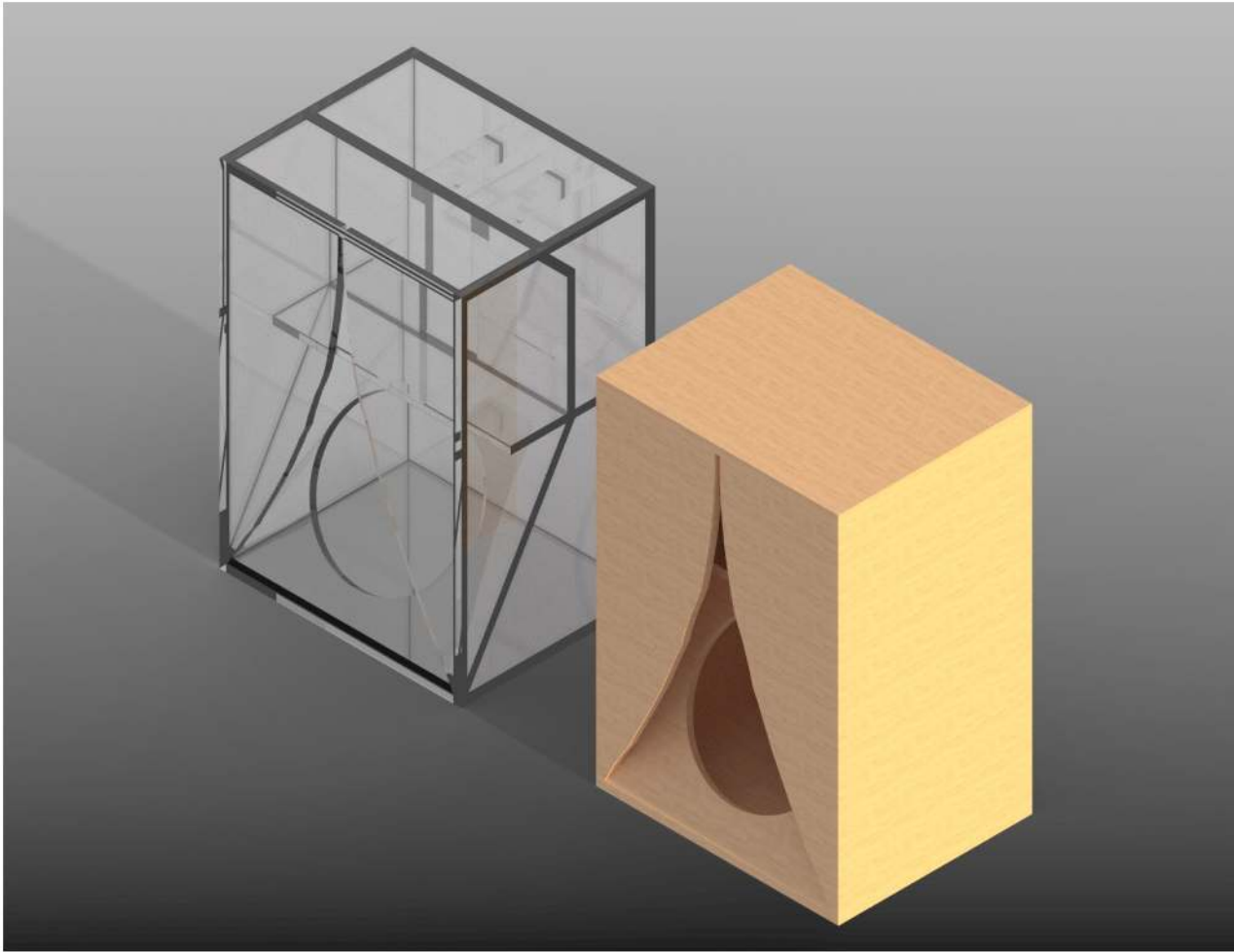
maintaining a relatively compact footprint. The flare rate and path length define the low-frequency cutoff, which in this case sits around 20 Hz when boundary-reinforced. The option to extend the mouth in a Levan-style configuration effectively increases the horn mouth area and lowers the acoustic cutoff. These bins rely heavily on boundary coupling with the floor and walls to complete the horn and stabilize loading. Air mass in the horn path acts as the primary reactive element, minimizing cone excursion within the passband and increasing efficiency compared to direct radiators.

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The main limitation here is group delay introduced by the long acoustic path. The time offset between the driver and the horn mouth can smear kick transients. This is inherent to large folded horns. To address this, DSP controlled time alignment or alternative geometries such as HOQS (High Output Quarterwave Society) designs, H-frame dipole-assisted designs and hybrid W-bin alignments are being considered. These reduce path length and stored energy, improving impulse response and perceived speed while maintaining reasonable efficiency. This is needed for faster house music/minimal and techno.

The midrange section uses Karlson-inspired 6th-order bandpass enclosures with 15-inch Beyma full-range drivers. This alignment combines a front and rear chamber with tuned apertures, creating a controlled passband with steep roll-offs on both sides. The Karlson slot introduces a variable acoustic impedance across frequency, acting as a dispersive element that broadens radiation while maintaining efficiency. Unlike a pure horn, this design trades some directivity control for a more diffused but still forward presentation. Cone motion is tightly controlled within the passband due to the dual-chamber loading, reducing distortion and improving



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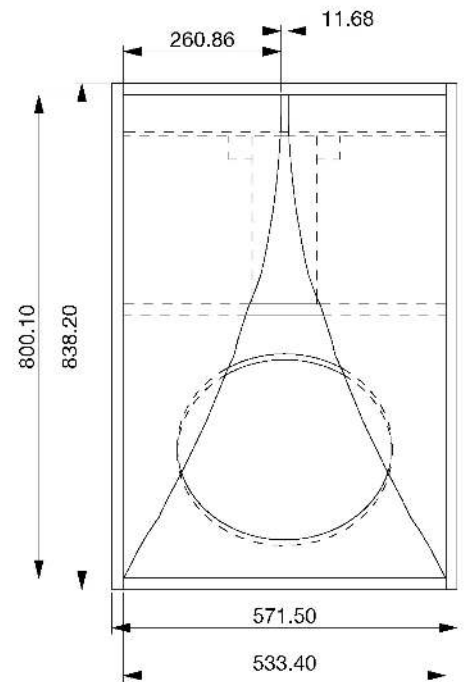
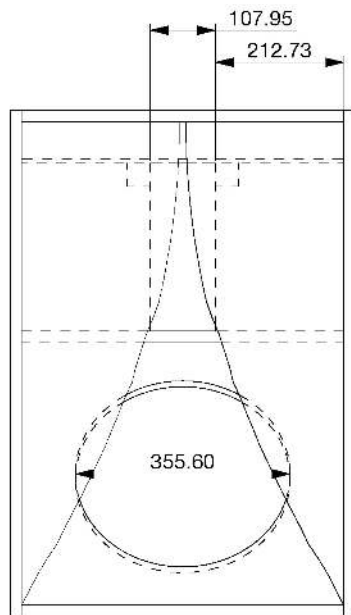
Karlson Coupler Speaker Design for 15in driver

Material: 3/4in Douglas Fir Plywood

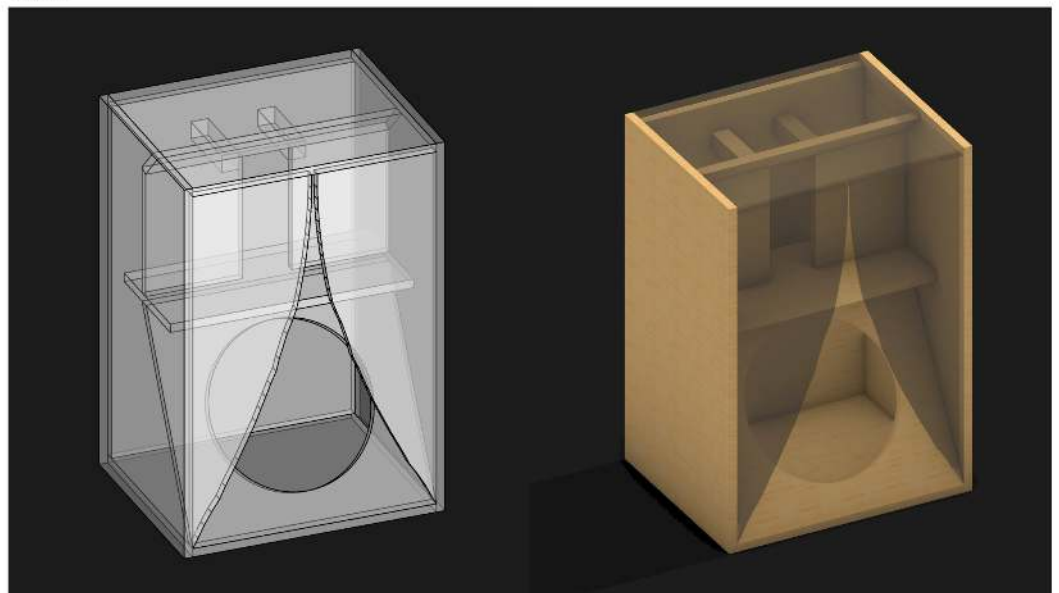
Units: Millimeters

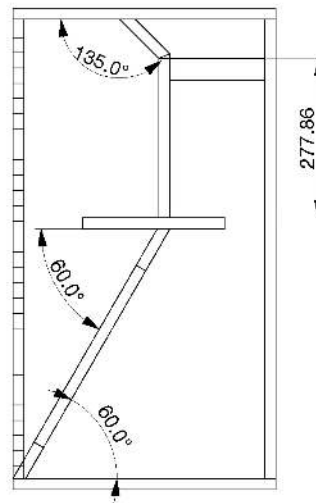
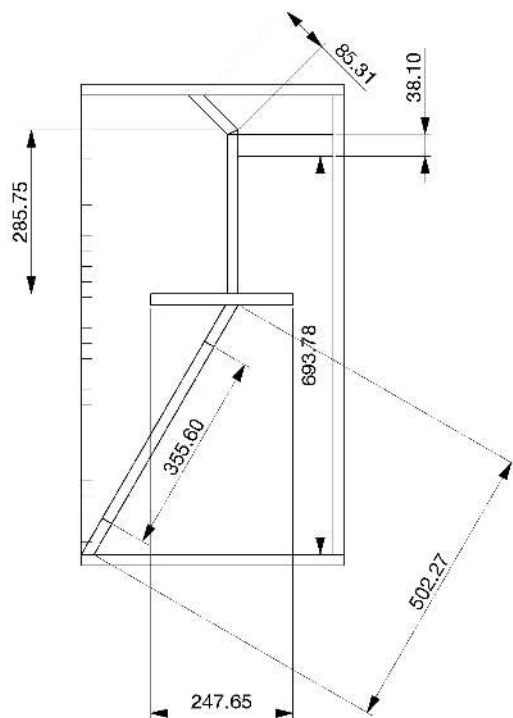
From various found DIY plans

femi shonuga-fleming



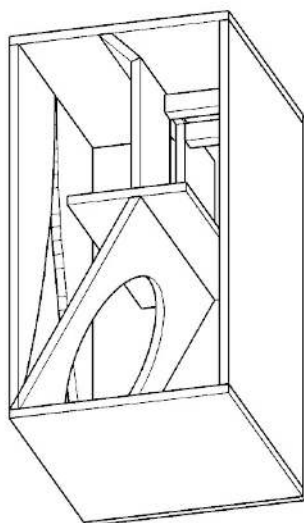
Front dimensions with flared cover and port behind the top of the flare. Two square beams support the port baffle.



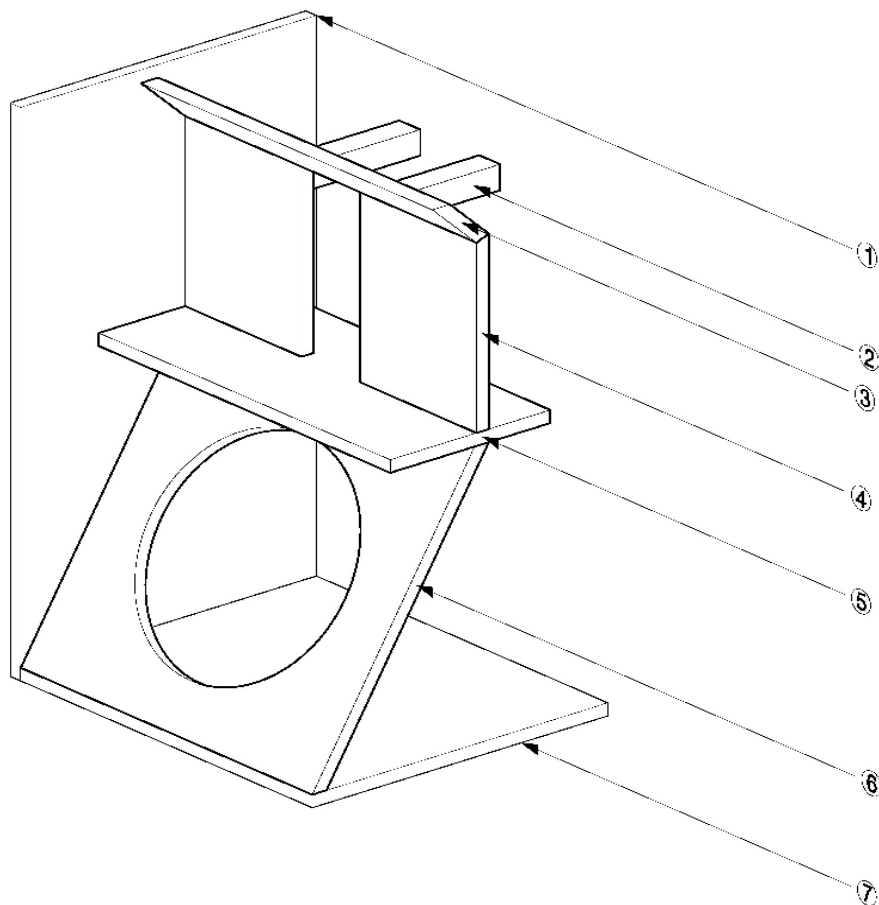


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Right view dimensions. The back of the speaker sits inside the 60deg space, with its cone facing the flared front cover. Here you can see the supporting beam from the side. Here's a view from the bottom



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THE VERSATILE KARLSON "12"

*Furnished With Separate Base
For Mounting In Any Position*

MODELS

12-M Karlsonite mahogany 12-U Unfinished plywood
12-B Karlsonite blonde 12-K Self-assembling kit
12-MT Tray, in mahogany Karlsonite
12-BT Tray, in blonde Karlsonite

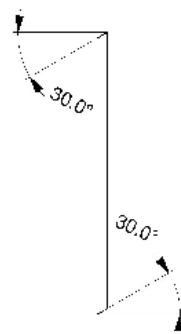
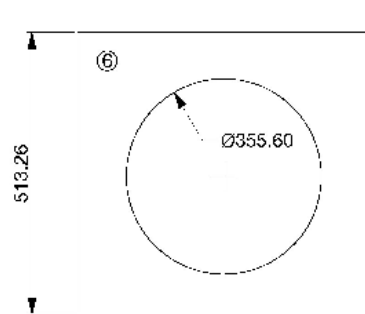
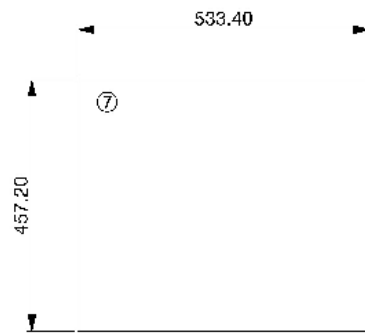
SPECIFICATIONS FOR THE KARLSON "12"

Size: 25 $\frac{3}{4}$ inches by 16 $\frac{3}{4}$ inches by 13 $\frac{3}{4}$ inches, furnished with separate base
2 $\frac{3}{4}$ inches high.
 $\frac{3}{4}$ and $\frac{1}{2}$ inch plywood.

Adaptors for 10" and 8 inch speakers extra

Weight: Approx. 35 pounds

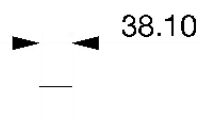
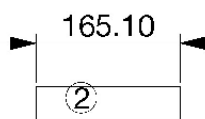
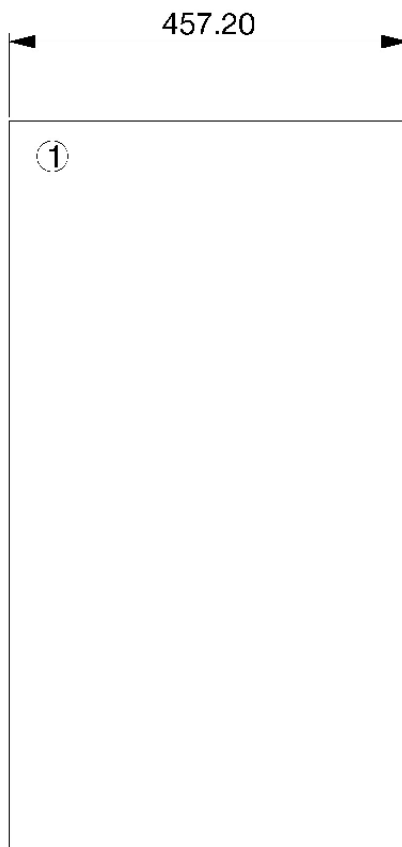
Primarily designed for use with 12 inch speakers.
Performance characteristics equivalent to those of the Karlson 15 at all moderate sound levels.

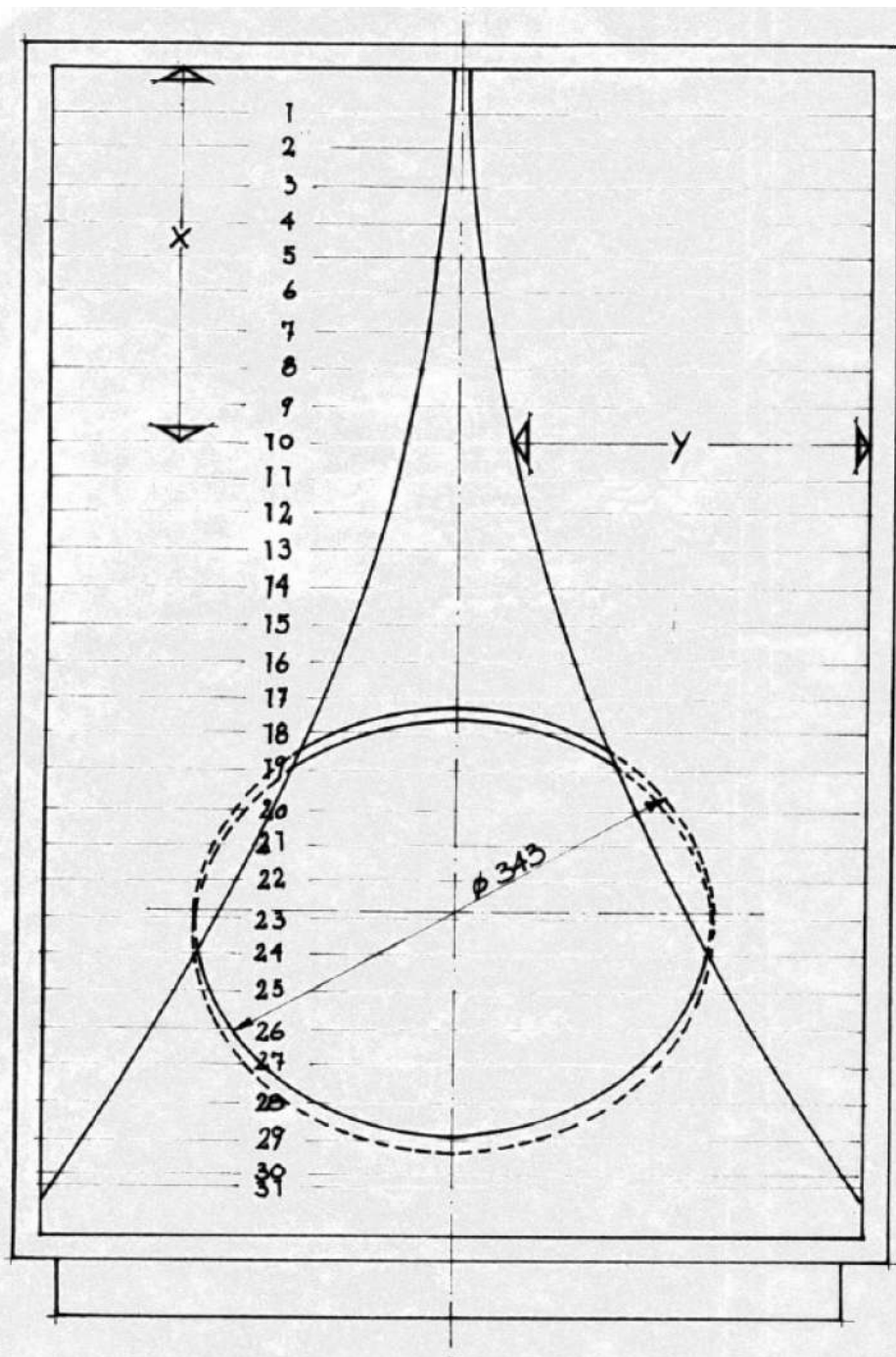


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NR	x.	y.
1	25,4	260,9
2	50,8	260,1
3	76,2	258,6
4	101,6	256,5
5	127,0	254,0
6	152,4	251
7	177,8	247,4
8	203,2	242,8
9	228,6	238,5
10	254,0	233,2
11	279,4	227,1
12	304,8	220,7
13	330,2	213,6
14	355,6	206,2
15	381,0	197,9
16	406,4	189,2
17	431,8	180,1
18	457,2	170,2
19	482,6	159,8
20	508,0	148,6
21	533,4	137,9
22	558,8	125,0
23	584,2	112,0
24	609,6	99,3
25	635,0	85,3
26	660,4	71,4
27	685,8	56,1
28	711,2	40,6
29	736,6	24,9
30	762,0	8,4
31	766,8	6,4

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KARLSON SPEAKER ENCLOSURES

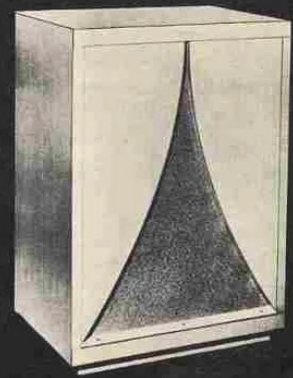
"give
lips
to
your speaker!"

In a Karlson Enclosure—only in a Karlson—suddenly a speaker—any speaker—produces sounds of brilliance, range and purity never achieved before—or, since.

This true miracle of sound, the Karlson Coupler, is the result of the most spectacular advance in acoustic engineering in years. All the Karlson Enclosures use this principle which enables an extraordinarily flat response over the entire audio spectrum. Lows as well as highs come through with cleanliness and definition of tone never before realized and thereby approach perfect stereophonic reproduction.

Perhaps you have heard a Karlson Speaker Enclosure the size of a table radio produce a live orchestra sound coming out of a bare wall. Or you may have felt the walls literally shake from the bass response of a Karlson. These are only two of the phenomena explained in the booklet titled THE KARLSON ENCLOSURE, available without cost.

We've reprinted in this booklet comments of recognized impartial authorities like John Marshall, writing in the January 1955 RADIO-ELECTRONICS magazine his fascinating findings that a Karlson Enclosure puts out a bass "far beyond the design capacity of the speaker used." In THE KARLSON ENCLOSURE booklet, too, another authority reports on the basic design principle of the Karlson ("a truly beautiful piece of scientific reasoning") as contrasted with ordinary enclosure systems. For the blue-print minded, John E. Karlson discloses the construction and engineering details. And everyone will want to read of the many interesting and varied ways the Karlson can be positioned to fit into any decor, plus our frank review of recommended speakers.



Learn All About...

What made the equipment start crawling off the display tables at the Los Angeles audio show. We'll be happy to send at no charge to you a 32 page booklet, THE KARLSON ENCLOSURE, which explains all. You'll find THE KARLSON ENCLOSURE is crammed with facts and impartial reports you should know about speakers and enclosures.



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transient behavior. The effective operating range is approximately 200 Hz to 5 kHz, where the driver operates within a highly efficient and mechanically stable region.

The high-frequency section uses a 6-cell tractrix horn, chosen for its smooth expansion profile and reduced internal reflections compared to exponential horns. The tractrix curve maintains a more uniform wavefront propagation, reducing phase irregularities and minimizing harshness. The multi-cell configuration improves horizontal dispersion by segmenting the wavefront, preventing beaming at higher frequencies. Dual compression drivers are coupled to the horn throat, increasing available diaphragm area and lowering distortion under high output. This also improves thermal handling and reduces compression at high SPL. This section operates from roughly 5 kHz to 16 kHz, maintaining consistent polar response and high efficiency. Above this, the system separates the ultra-high frequencies (16 kHz–20 kHz) into ceiling-mounted dispersion units. These are not meant for direct localization but for spatial augmentation. By physically elevating the source of the highest frequencies,

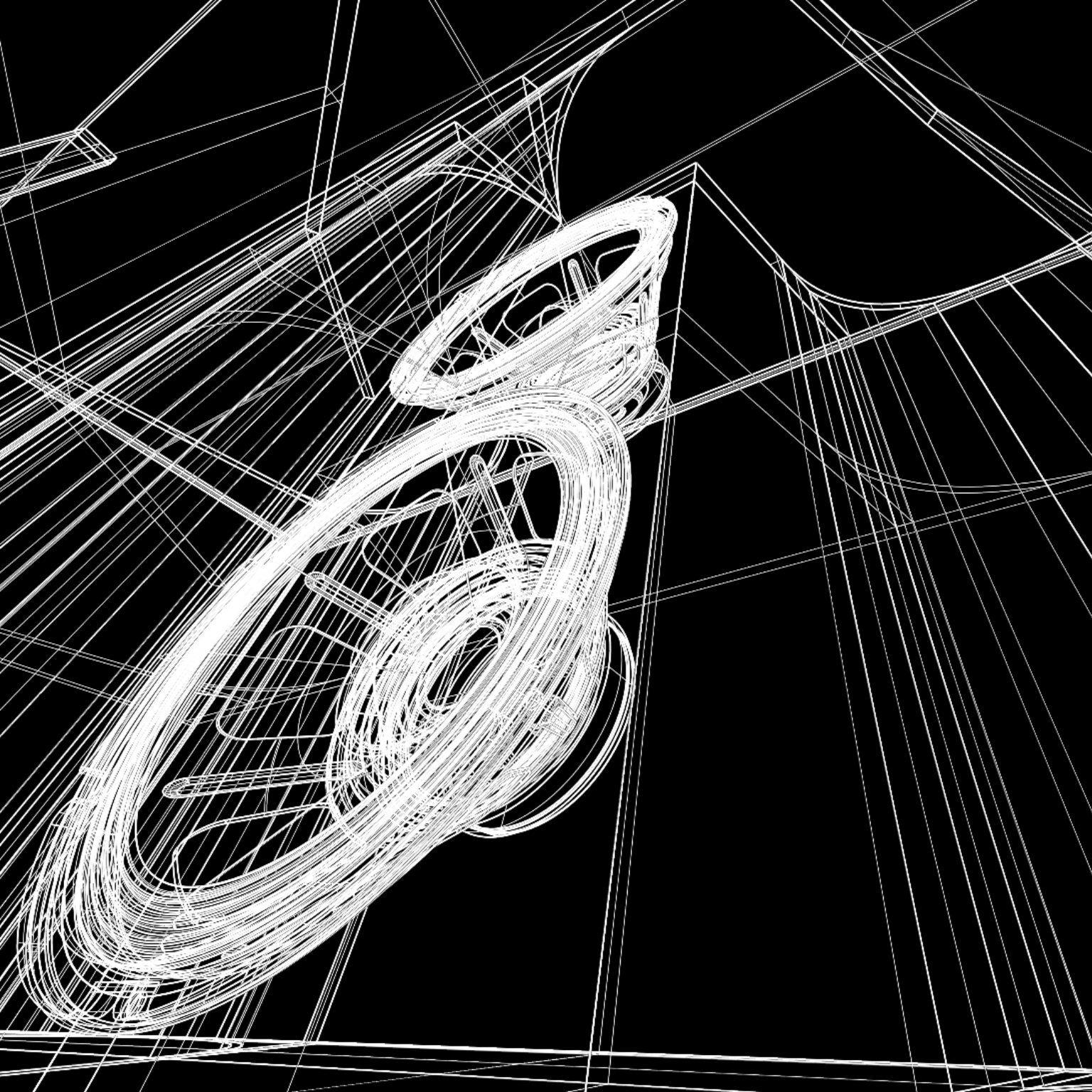
the system introduces vertical diffusion and reduces the directional bias of the main stack. This creates a more immersive high-frequency field, enhancing perceived air without increasing harshness at ear level.

Amplification is fully discrete, with each band independently powered. Each stack is tri-amped, allowing precise control over gain staging and dampening. This also prevents intermodulation between bands and allows each amplifier to operate within an optimal load range. The total system is rated at approximately 2000W, but due to the high sensitivity of horn loading, actual acoustic output is achieved with relatively low power input compared to conventional direct-radiating systems.

All crossover functions are handled in DSP. This allows for steep crossover slopes, easy phase correction and time alignment. Delay compensation is critical here, especially between the folded low-frequency horns and the forward-radiating mid/high sections. EQ is also applied in DSP to correct for horn resonances, throat coloration, and room interaction. This approach avoids the insertion loss, phase shift, and component limitations of passive crossovers.

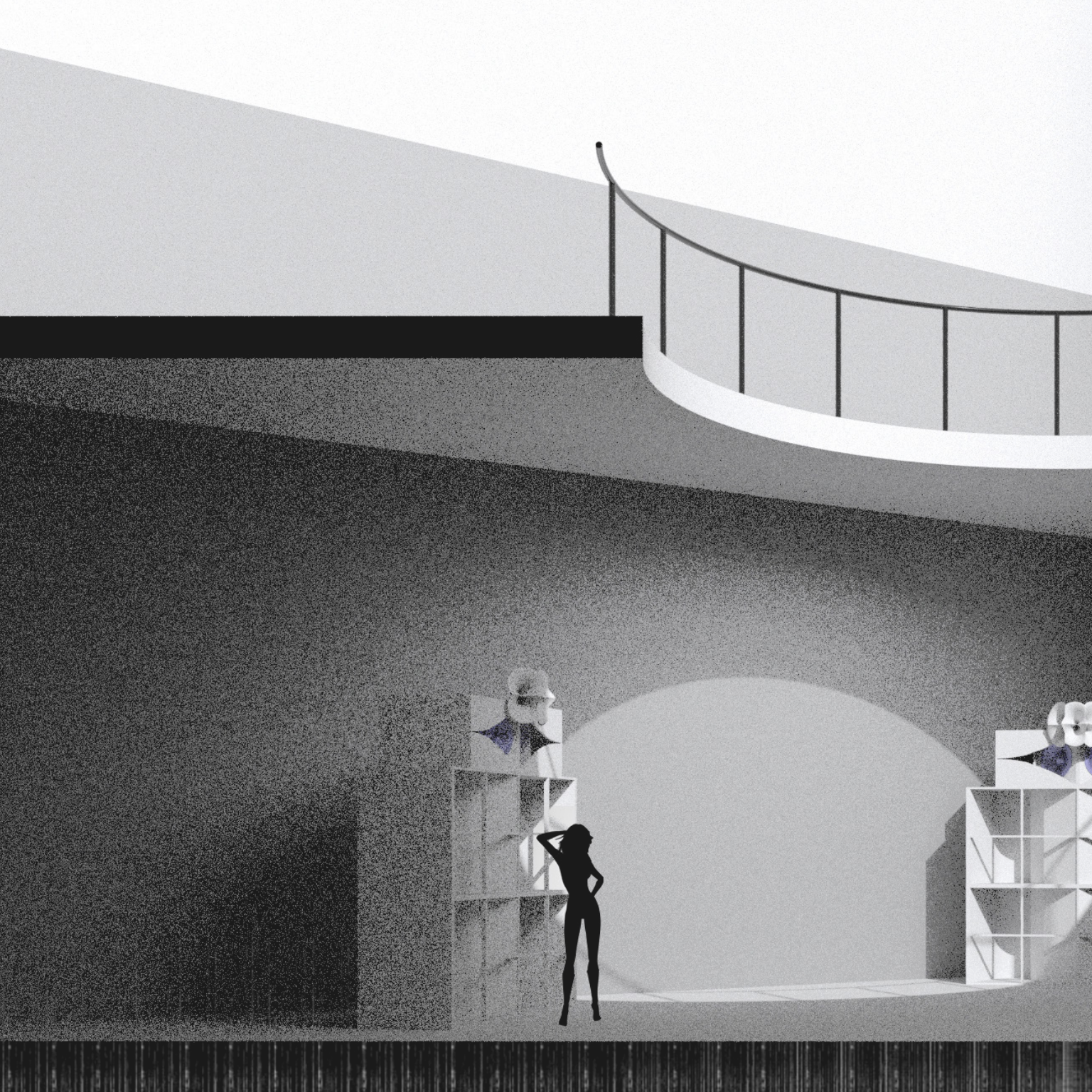
Wall assemblies are constructed with a layered system: a structural backing wall, an air gap, and mineral wool (rockwool) absorption ranging from 4 to 12 inches in depth depending on location. Thicker sections are reserved for corners and rear walls, where low-frequency pressure maxima occur, effectively functioning as bass traps. In primary reflection zones, thinner absorption (approximately 2–4 inches) is used to control early reflections without excessively damping the energy.

The system is not fixed. It is designed to be modular and adaptable, allowing different sound systems to be brought into the space. This supports ongoing tuning, comparison, and evolution. The goal is not a single “perfect” system, but a platform where different configurations can exist, and where sound is experienced differently depending on the system.



The air is really pushed through the latex horn, the push and pull of your favorite dubstep track squeezed sensually through the bass speaker port would have sex with a speaker part, sound is transi-
The nodes are anonymous and the sky is blue! You wouldn't have sex with a speaker part, sound is transi-
The nodes are anonymous and the sky is blue! You wouldn't have sex with a speaker part, sound is transi-







Vinyl Reference

Side A

Sun Ra and His Arkestra. Door to the Cosmos. El Saturn Records, 1979. Vinyl recording. (00:00)

Ashanti, Onyx. “Far Off Sounds: Onyx Ashanti Programs Himself.” Far Off Sounds, 2018. YouTube, <https://www.YouTube.com/watch?v=qdizFnpp2oI>. (00:00)

Westerkamp, Hildegard. Talking Rain. Live performance, 2016. (00:00)

Tate, Greg. Commentary on sampling. The Last Angel of History. Directed by John Akomfrah, 1996. (00:32)

Shonuga-Fleming, Femi. All. Field recording, 2025. Unreleased. (00:56)

Rhythm and Sound, with Tikiman. “Music A Fe Rule.” Rhythm and Sound, 1997. Vinyl recording. (01:00)

Cardew, Cornelius. Treatise. hat[now]ART, 1999. CD recording. (01:16)

Acid Mothers Temple and the Melting Paraiso U.F.O. Supernal Infinite Space. Static Caravan, 2001. (01:20)

Young, La Monte. The Well-Tuned Piano Part 1. Gramavision. 1987 (01:20)

Baraka, Amiri. “Black Art.” 1965. YouTube, https://www.YouTube.com/watch?v=Dh2P-tlEH_w. (01:29)

Blasser, Peter. Fish Guts. Video art, 2009. YouTube, https://www.YouTube.com/watch?v=EcavAP_CghA&t=123s. (02:24)

Minimal Man. “Chicken Store.” Perlton Records, 2004. Vinyl recording. (02:50)

Shonuga-Fleming, Femi (Sadnoise). “Jazz Beat in Soil [Movement 1] (Coalescence).” Self-released, 2024. (02:55)

Unknown speaker. When We Were Kings. Directed by Leon Gast, 1996. Cropped audio excerpt. (03:12)

Fishkin, Daniel. Solar Sounders. Audio recording of installation, 2025. Recorded by Femi Shonuga-Fleming. (03:20)

Fell, Mark. “Multistability 1-A.” Raster-Noton, 2010. MP3 recording. (03:40)

Jones, Pierre, and Mark Fell. Interview on musical equipment. Don’t Blow It in the Vector, directed by Richard Sides, 2014. (03:59)

Villalobos, Ricardo, and Andrew Gillings. “Andruic and Japan.” Fabric 36. Fabric Records, 2007. MP3 recording. (04:10)

Perälä, Aleks. Project Immersed: How Does Sound Guide? YouTube, 2024. Reversed excerpt. (05:14)

Rocha Iturbide, Manuel. Ping Roll. Biennale of Sydney, Sept. 1998. Sound installation. (05:32)

Boards of Canada. “Music Is Math.” Geogaddi. Warp Records, 2002. MP3 recording. (05:36)

Choi, Jung Hee. The Tone-Field: Perceptible Arithmetical Relations. Mela Foundation, 2021. Audio recording. (05:44)

Jaar, Nicolas. “Specters of the Future.” Circus Company, 2011. MP3 recording. (05:59)

Actress. “Dancing in the Smoke.” Ninja Tune, 2017. MP3 recording. (06:02)

Leitner, Bernhard. Spiral-Raum 1973–2008. Sound installation. (06:03)

Doudou N’Diaye Rose Orchestra. “Diabote.” Real World Records, 1992. Vinyl recording. (06:04)

Leitner, Bernhard. Pioneering Sound Art with Bernhard Leitner | RESONATE. YouTube, uploaded by reSITE, 15 May 2018, <https://www.YouTube.com/watch?v=uPbq9aixozo> (06:18)

Side B

Shonuga-Fleming, Femi (Sadnoise). Sunken Ground. Self-released, 2026. Vinyl recording. (00:00)

Composition, Mixing and Mastering by Femi Shonuga-Fleming

Vinyl Mastering and Pressing by Audio Geography Studios, Providence, RI.

Drop Files and Devices Here

Works Cited

Books, Dissertations & Theses

- Baraka, Amiri. *Blues People: Negro Music in White America*. William Morrow, 1963.
- Blasser, Peter. *Stores at the Mall*. MFA Thesis, RISD, 2015.
- Eshun, Kodwo. *More Brilliant Than the Sun: Adventures in Sonic Fiction*. Quartet Books, 1998.
- Mesker, Alexander Nicholas. *Analysis and Recreation of Key Features in Selected Autechre Tracks from 1998–2005*. MA Thesis, University of Huddersfield, 2007.
- Schaeffer, Pierre. *Traité des objets musicaux*. Éditions du Seuil, 1966.

Films & Video

- Akomfrah, John, director. *The Last Angel of History*. Black Audio Film Collective / Channel 4, 1996.
- Ashanti, Onyx. “Far Off Sounds: Onyx Ashanti Programs Himself.” *Far Off Sounds*, 2018. YouTube, <https://www.YouTube.com/watch?v=qdizFnpp2oI>.
- Baraka, Amiri. “Black Art.” 1965. YouTube, https://www.YouTube.com/watch?v=Dh2P-tlEH_w.
- Blasser, Peter. *Fish Guts*. Video art, 2009. YouTube, https://www.YouTube.com/watch?v=EcavAP_CghA&t=123s.
- Gast, Leon, director. *When We Were Kings*. PolyGram Filmed Entertainment, 1996.
- Jones, Pierre, and Mark Fell. *Interview on musical equipment. Don’t Blow It in the Vector*, directed by Richard Sides, 2014.
- Leitner, Bernhard. “Pioneering Sound Art with Bernhard Leitner | RESONATE.” *reSITE*, 15 May 2018, <https://www.YouTube.com/watch?v=uPbq9aixozo>.
- Perälä, Aleks. *Project Immersed: How Does Sound Guide?* YouTube, 2024.
- Sides, Richard, director. *Don’t Blow It in the Vector*. 2014.

Sound Recordings & Musical Works

- Actress. “Dancing in the Smoke.” *AZD. Ninja Tune*, 2017. MP3.
- Acid Mothers Temple and the Melting Paraiso U.F.O. *Supernal Infinite Space*. Static Caravan, 2001.
- Boards of Canada. “Music Is Math.” *Geogaddi*. Warp Records, 2002. MP3.
- Cardew, Cornelius. *Treatise*. hat[now]ART, 1999. CD.
- Choi, Jung Hee. *The Tone-Field: Perceptible Arithmetical Relations*. Mela Foundation, 2021. Audio recording.
- Doudou N’Diaye Rose Orchestra. “Diabote.” *Jëkër*. Real World Records, 1992.

Vinyl.

Fell, Mark. "Multistability 1-A." Multistability. Raster-Noton, 2010. MP3.

Fishkin, Daniel. Solar Sounders. Audio recording of installation, 2025. Recorded by Femi Shonuga-Fleming.

Jaar, Nicolas. "Specters of the Future." The Network, Circus Company, 2011. MP3.

Minimal Man. "Chicken Store." Perlon Records, 2004. Vinyl.

Rhythm and Sound, with Tikiman. "Music A Fe Rule." Rhythm and Sound. Burial Mix, 1997. Vinyl.

Rocha Iturbide, Manuel. Ping Roll. Biennale of Sydney, September 1998.

Sound installation

Shonuga-Fleming, Femi (Sadnoise). "Jazz Beat in Soil [Movement 1] (**Coalescence**)."

 Self-released, 2024.

Shonuga-Fleming, Femi (Sadnoise). Sunken Ground. Self-released, 2026. Vinyl.

Shonuga-Fleming, Femi. All. Field recording, 2025. Unreleased.

Sun Ra and His Arkestra. Door to the Cosmos. El Saturn Records, 1979. Vinyl.

Villalobos, Ricardo, and Andrew Gillings. "Andruic and Japan." Fabric 36. Fabric Records, 2007. MP3.

Westerkamp, Hildegard. Talking Rain. Live performance, 2016.

Young, La Monte. The Well-Tuned Piano Part 1. Gramavision, 1987.

Sound & Art Installations

Fishkin, Daniel. Bed Piece. Sound installation. Date of installation not specified.

Ikeda, Ryoji. A. Sound installation, ongoing. Parabolic speaker array.

Kapoor, Anish. Dismemberment, Site 1. Sculpture / installation, Gibbs Farm, New Zealand, 2009.

Leitner, Bernhard. Spiral-Raum. Sound installation, 1973–2008.

Musical Compositions & Scores

Xenakis, Iannis. Metastasis. Orchestral composition, 1953–54.

Xenakis, Iannis. Concrete PH (Paraboloïdes Hyperboliques). Musique concrète, composed for the Philips Pavilion, 1958.

Architectural Works & Designs

Le Corbusier and Iannis Xenakis. Philips Pavilion. World's Fair, Brussels, 1958. Architectural design.

Concepts, Practices & Organizations Referenced

Bayle, François. Acousmonium. Sound diffusion system developed 1974, Groupe

de Recherches Musicales, Maison de Radio France, Paris. Currently maintained by INA GRM, Paris.

Oliveros, Pauline. *Deep Listening: A Composer's Sound Practice*. iUniverse, 2005.

Websites & Online Resources

“Acousmonium of the INA GRM in Paris / Third Concert.” To Listen To, 6 Aug. 2025, www.to-listen-to.it/en/evento-festival/acousmonium-of-the-ina-grm-in-paris-third-concert/.

HundredRabbits (Rekka Bell and Devine Lu Linvega). XXIIIVV. xxiivv.com. Accessed 2024.

HundredRabbits. **Orca**. Live-coding environment. 100r.co, accessed 2024.

Lines Forum (llllllll.co). Community archive of **Teletype** scripts and discussions. Accessed 2022–2024.

Leitner, Bernhard. *Sound as Building Material*. Quoted in exhibition materials / interviews. Date variable.

Software & Hardware Instruments

Cycling '74. Max/MSP. Software, cycling74.com.

Attowatt. I2C2MIDI. Eurorack module / firmware. GitHub, accessed 2023.

Monome. **Teletype**. Eurorack module and scripting ecosystem. Monome.org.

Monome. Grid. Tactile controller. Monome.org.

Blasser, Peter (Ciat-Lonbarde). Rollz5. Handmade synthesizer. ciat-lonbarde.net.

Blasser, Peter (Ciat-Lonbarde). **Cocoquantus**. Handmade synthesizer. ciat-lonbarde.net.

Blasser, Peter (Ciat-Lonbarde). Shnth. Handmade synthesizer. ciat-lonbarde.net.

Rebel Technology. Ppool. DSP environment for Max/MSP.

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