Quilt for Yarn/Wire and *Instrumental Objects*, a Three-Episode Podcast Series About the Creative Practice of Matmos

by

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Defense Date: November 16th, 2023

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor
of Philosophy in the Department of
Music in the Graduate School
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ABSTRACT

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Abstract

Quilt is an album made from sounds sourced from my mother's quilting practice and from recording sessions held with the piano and percussion quartet Yarn/Wire. For *Quilt*, my mother and I designed a quilt based on the Quartered Stripes Quilt pattern. The sounds of my mother ironing and cutting the fabric then piecing the fabric into the quilt were sampled and processed. The recording sessions with Yarn/Wire included them recording musical passages I had written them, as well as structured group improvisations, and free-form experimentations. *Quilt* joins the two sources into one sonic world.

Instrumental Objects is a three-episode podcast series about the creative practice of Baltimore-based avant-electronic duo Matmos. The podcast uses the multiple definitions of the word "object" as lenses to examine Matmos' approach to music making. Starting with objects reimagined as instruments, then move to Pierre Schaeffer's idea of sonic objects, then end with the contemporary ideas of Object-Oriented Ontology. Presented as a podcast, my research is able present deconstructions of Matmos' works, interviews I conducted with them, and fly-on-the-wall excerpts of them creating material for the album *The Consuming Flame: Open Exercises in Group Form*.

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And finally to my family, which grew while I was working on this dissertation.

1. Introduction

This dissertation is made up of two large projects: a creative project and an analytical project. The two projects were conceived of independently but grew closer together. Matmos' approach to making music influenced how I composed *Quilt*, and my creative work on *Quilt* influenced how I approached and understood Matmos' sample and collage based creative practice.

Quilt started as an idea I pitched to my mother over dinner one night at my parent's house in Michigan. "Let's design a quilt, then while we make it, I'll record the sounds and use those sounds along with music I'm writing for Yarn/Wire to make an album," I said. My mother was excited by the idea and the next day we were sifting through her fabric collection looking for inspiration. We were both drawn to stripes and found a pattern for a Quartered Stripes Quilt. I recorded the sounds of my mother making the quilt: ironing and cutting the fabric, then sewing and piecing the fabric into the quilt's intricate pattern. Those recordings were cut into samples which were then turned into textures, rhythmic elements, and instruments.

The recording session held with Yarn/Wire presented the opportunity to experiment with different interpretations of material I had written for them, realize guided group improvisations, and follow our ears as we found sounds and ideas. These sessions were revelatory. For most of my life as a composer recording sessions came at the end of a project, they were the final document of a piece. For this project, the recording sessions were a part of the composition process. Ideas from one session were revised and revisited for the following sessions, textures made out of samples from one would be fodder for improvisations in the next. The recordings from the sessions were edited and manipulated to create textures that blur the lines between documentations of musicians playing instruments and studio-based compositions.

Instrumental Objects started out as a message Martin Schmidt sent me on Twitter saying "Wanna record me a minute and half or so of ANYTHING at 99 bpm? For new Matmos..." I sent a recording of myself speaking a line from a poem, edited to fit into 99 bpm, then asked Martin if I could "follow" them as they made the album (which would come to be known as *The Consuming Flame: Open Exercises in Group Form*) and write about it for my dissertation. I found myself on the phone with Matmos the following week and they agreed. I spent two weekends at Matmos' home and studio in Baltimore in the fall of 2019. I had a third weekend scheduled with them in March of 2020, but that was cancelled due to the COVID-19 pandemic. during these weekend-long stays, I observed and recorded them working, and sat with them for interviews. I was able to visit Matmos once more, in November of 2023 to do a weekend of follow-up interviews. The next week, my son Nima was born.

The podcast has three episodes. In each episode I approach Matmos' work through various ideas of "objects". In the first episode I connect the Italian Futurists' use of noises, and the objects that make them, to Matmos' use of a washing machine on their album *Ultimate Care II*. Then I introduce Pierre Schaeffer's idea of the Sonic Object, and how he connected it with Edmund Husserl's idea of phenomenology. I liken Husserl and Schaeffer's idea of using variation to find an object's essential qualities with Matmos' handling of a submission for the album.

The second episode looks at the generations of composers after Schaeffer and which of his philosophical ideas they kept and which they rejected. Pierre Henry and Matthew Herbert are two composers in the generations after Schaeffer who kept Schaeffer's methods but rejected his philosophical ideas. They are also two composers who were fundamental in the formation of Matmos' way of working with sound. I end the episode by talking about the idea of collage, looking at its origins, then looking at how contemporary Art Historians are understanding and

discussing collage. I end the episode by looking at two moments on the record that use collage in two different ways.

The final episode situates our conversation in the world of Object-Oriented Ontology, a contemporary strain of philosophy that understands every thing: real, imagined, fleeting, permanent, material or immaterial as objects in relation with other objects. I connect this to Laurie Anderson's Tape Bow Violin as a way to further interrogate the relationship between storage medium and playback head, before moving to the new affordances opened up with digital mediums and virtual playback heads. I end the episode by dissecting a recording of a moment I recorded in the studio of Martin discovering a new possibility in a virtual instrument he was using, and track how that new possibility changed the outcome, and vibe, of the session.

2. *Quilt* for Yarn/Wire

2.1 Project Description

My mother, Karen Frederickson, is a fiber artist. She knits, sews, rug-hooks, and quilts. I grew up wearing hats and sweaters knitted by my mother, sleeping under quilts she made, and using homemade potholders, hot-pads and washcloths in my kitchen. Recently, as the art world re-thinks the distinction between Art and Craft, I have seen her work in a new light. I see her keen sense of color, the exquisite detail in her quilting, the focus needed to execute an intricate pattern.

The album *Quilt* follows the production of a quilt designed by myself and my mother. We adapted the Quartered Stripes Quilt pattern, which uses the rearrangement of striped fabrics to create squares overlapping in a 3D space. After designing the quilt and selecting the fabric, my mother began the long process of producing the quilt. I recorded the sounds of the process: ironing, cutting, sewing, and quilting, along with the sounds of us talking about quilting, about the cat, about the neighbors. Those recordings were cut into samples which I reimagined and turned into textures and instruments.

After the quilt was finished, I began writing music for the piano and percussion quartet Yarn/Wire based off of the patterns found within the quilt. The arrangement of colors, the rhythm of the cuts were turned into fodder that generated gestures, sections, or harmonies. Over multiple recording sessions spaced out over multiple months, Yarn/Wire and I recorded those ideas, improvised over simple rules, and searched for ways to interpret rhythmic cycles. All of those recordings were edited, sampled and cataloged before being stretched, reversed, rearranged and resampled.

The two sound worlds, the sounds from the sewing machine and the sounds from the Yarn/Wire recording sessions were collaged to create the album *Quilt*. Aside from a few simple

synthesizer sounds and bass guitar overdubs, all of the sounds on the album originated either in my mom's quilting studio or in the recording studio. The track's names come from quilting terms, and the cover art and artwork associated with the album come from the quilt at the center of the album.

2.2 Track Listing

1. Setting

1a. "He got up on the desk"

2. Backstitch

3. Piecing

3a. "The big machines"

4. Walking Foot

5. Mitered Corners

5a. "Now on some machines you can buy a stitch regulator"

6. Loft

6a. "The whole key to good quilting is constant speed"

7. Grain

8. Freemotion

8a. "There's a way to do this"

2.3 Track Construction

All materials referenced in section can be found in the supplemental materials included in the dissertation or can be found at www.brooksfrederickson.com/dissertation. All figures are located in the Appendices A - C.

2.3.1 Setting

Setting - Arrangement of blocks and various fabrics in a quilt. A straight setting is when blocks are placed in vertical and horizontal grid like design. Diagonal is when a block is set on point, resembling a diamond.[1]

This track is made from looping short segments from a piece I composed for Yarn/Wire, along with a synth bass which is doubled at the end with a noisy-melodic instrument made from a sample of my mom's sewing machine.

In writing the material for Yarn/Wire, I looked to the quilt, specifically the patterns of color, and sizes of blocks, to generate pitch and rhythmic materials. I passed MIDI data interpretations of the patterns in the quilt into systems of Max4Live and stock Ableton MIDI devices which returned melodic gestures and harmonies. From those, I created a number of short pieces grouped under the title "Quilt Analysis. The piece this track is derived from is E from Quilt Analysis. The score is presented in Figure B.1, the recording is labeled "01 - Original edit of E.wav".

The screenshot of the Ableton session, Figure A.1, shows the limited tracks used in this project. At the top is a "MIDI Control" track which controls a resonator which is on the "Comp"

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[1] National Quilters Circle Editors, "Glossary of Quilting Terms," https://www.nationalquilterscircle.com/article/glossary-of-quilting-terms/

track. The resonator reads the MIDI data and uses that to open up specific resonant bandpass filters on the Piano and Vibraphone tracks. The second track “MIDI Bass” is a simple, pulsing bass sound that holds steady on D for most of the track. It is doubled later by the track “Sewing Lead.” This track contains a Sampler instrument loaded with sounds of my mother’s sewing machine. The track has two copies of the instrument, which move from right to left independently. The two Samplers are set slightly differently to create a phasing effect which is more pronounced when gliding from pitch to pitch.

The audio tracks are looped selections from Quilt Analysis - E, crossfaded into each other to create overlapping repetitions and smooth transitions from one loop to the next. At mm. 69 of the project, the vibraphone tracks fade out while a phaser on the piano tracks fades in. The vibraphones return at mm. 78 when the bass and “Sewing Lead” enter.

2.3.2 Backstitch

Backstitch: A stitch used to secure the stitch at the beginning and end of a seam by stitching 2 to 4 stitches forward, 2- 4 stitches back and then proceeding with your seam. This technique is done to secure the seam and ensure it does not pull apart during piecing or quilting of quilt.[2]

I think of the track Backstitch as many small machines running in sync with each other. The piano and vibraphone parts were generated with a Max4Live plugin I created called Loop Jump, seen in Figure C.1. The plugin moves the loop start and loop end points along a clip’s 16th note grid. Users can select a portion of the clip using the slider in the middle of the plugin, the “auto random” button turns on a setting that will move the loop points after the loop runs through

[2] Ibid.

four cycles, the “new loop points” button will automatically select new loop points, and the “panic” button randomizes all of the settings. The loops can be as long as the clip, or as short as a 16th note, but always adhere to the rhythmic grid of the clip.

The material for Backstitch came from an improvisation sampling session with Yarn/Wire. For the session, I created improvisation instructions, shown in Figure B.2, that consisted of a bank of notes and a bank of ways to play those notes. During the session I would say, “Let’s use the third set of notes, and the second texture.” The material for Backstitch came from the first set of notes, and the first texture. The constant pulse with shifting harmonies and accents paired well with the controlled rhythmic randomness of Loop Jump plugin.

When working on the piece, I loaded the recordings from each member of Yarn/Wire to separate tracks, and put a Loop Jump on each track. I then set the output of each track to record onto another separate track. I set initial values on each Loop Jump plugin, then hit record and let the audio run. I changed parameters and chose different regions to loop as the audio ran. I did multiple runs this way. I thought of this process as akin to generating long stretches of fabric that I knew I was going to cut and rearrange later, mirroring the process I saw my mother go through while quilting.

The bass part was generated by a different set of tools. I recorded notes from three octaves of C dorian, then made an instrument with Ableton’s Sampler that maps the notes to MIDI notes. I did not map the pitches to the correct note, choosing instead to remove the note-to-pitch connection to follow my ear rather than my fingers. The MIDI input is run through an arpeggiator which generates constant 16th notes in the “Random Other” mode. That stream of notes is then run through a Max4Live plugin I made called “Simple Rhythmic Probability,” shown in Figure C.2. The user sets the number of steps (from one to eight) and the rhythmic

division (16th to whole notes), and the probability of a note being able to pass through for each step. The output from that is run through another Max4Live device made, Simple Probability, shown in Figure C.3, which is a simple probability gate. Those notes then hit the sampler and trigger a bass guitar note. The result is a stream of some-what-random but some-what-predictable grooves based in C dorian. I applied the same process of interacting with the instrument while recording long takes to be cut down later. The final bass line was then transcribed and doubled by my Moog Mother-32 synthesizer.

The track called “Sewing Shaker” is made up of loops of stitching patterns recorded from my mother’s sewing machine. The loop on the top track is four 16th notes long, while the loop on the bottom track is three 16th notes long. Unsynced, slow LFOs sweep EQ gain bumps up and down the frequency spectrum to create motion within the repetitious sound.

In the B section, starting at mm. 327, longer takes from an improvisation using the second set of pitches (c# aeolian) and the first texture are used. The improvised harmonies and accented pulses from Yarn/Wire are underpinned by a bassline I recorded after the fact that highlights the harmonic shifts and reinforces the inherent meter. As the section progresses, the vibraphones fade out, while resonant filters on the piano recordings fade in. The acoustic texture at the beginning of the section subtly morphs into a surreal texture before snapping back to the vibraphone and piano texture in the middle of 364.

The A section begins to return at mm. 379. Here there is a new texture, “High Whisps” come from the piano samples used in the first section, but the timber is modified using Ableton’s Spectral Time and Reverb plugins. The main piano, vibraphone, and bass tracks are sent to a Reverb send to create a more spacious sound. The bass track is changed to have two different

electric bass parts panned hard Left and Right playing in duet. The Mother-32 synth part and Sewing Shaker tracks have been removed.

2.3.3 Piecing

Piecing: Process where fabric pieces are sewn together to form a block, garment or quilt.[3]

Piecing is the most through-composed track on the album. The material began as a piece called Synth and Duos (Figure B.3) which I composed for the first recording session with Yarn/Wire. The idea of the piece was that each member of Yarn/Wire would have a MIDI controller alongside their instrument that would control either a virtual synthesizer based on a modified sine wave, or a plugin that is a recreation of a Synclavier which contains a sample of my mother spraying the fabric while ironing.

In the original intention of the piece, there would always be two people playing acoustic instruments, and two people playing synthesizers. In preparing for the recording session, I realized that the only important parts to notate were the acoustic parts. The score I made for the session does not include the synth parts, the synthesizer parts were already programmed in Ableton.

Small interventions happened during the editing of the audio. Most notably starting in mm. 56, where I layered two different takes of that vibraphone parts and added in subtle phasor and echo. The interventions in the following section, mm. 82-95, consist of a stretched version of the piano duet, and a granulized version of the piano duet creating a halo of almost-piano timbers to accompany the intricate piano passage.

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[3] Ibid.

We re-recorded the piano due in mm. 82-95 in the second recording session for two reasons. The first reason was the rhythms and phrasing in my writing were not as legible as I had hoped. I rewrote the section to be rhythmically simpler and to give the players easier transitions between the alternating phrases. The rewritten piano duo is shown in Figure B.4. The second reason was to capture a closer-mic'ed, more focused sound. The microphone position for the first session worked well for the washy sound in the rest of the piece, but that section needed more precision in its timber.

2.3.4 Walking Foot

Walking Foot: Presser foot attachment that helps to easily feed more than two layers at the same rate.[4]

My mother's sewing machine has a number of preset sewing patterns: zig-zags, alternating long and short stitches, decorative flourishes, etc. Each preset sounds slightly different, a quicker stitch here, a brief needle adjustment there, yields different rhythmic motives. We sampled a few of these sewing patterns after finishing the quilt.

The main rhythmic motive at the beginning comes from one of these sewing patterns. I cut the sample into four equal sections and mapped each section to a range of a Sampler instrument. Each sample covers two octaves, with the root - original speed and pitch - of each sample being placed at the top of each range. The first section rises through the range of the four samples. As they reach the top of their ranges, samples of Yarn/Wire playing excerpts from Quilt Analysis - A (shown in Figure B.5) begin a similar process. Each measure of Quilt Analysis - A was mapped to a range in a Sampler, with the root of the sample being placed at the top of a two-

[4] Ibid.

octave range. As they approach the top of the range, faster frequency-modulated versions of the sewing pattern and Quilt Analysis samples fade in. The texture shifts again to reveal the original Quilt Analysis - A recording, augmented by a subtle delay.

2.3.5 Mitered Corners

Mitered-Corners: A binding strip that is sewn and folded at a 45-degree angle at each corner, giving the appearance of a frame corner.[5]

This track started out as an exploration of what I could do if I limited myself to using only samples from my mother's sewing machine. Sewing machines tend to make percussive, rhythmic, sounds: bobbins winding, needles moving up and down, plastic flaps opening and closing. By setting myself up to make a track solely from those sounds, my first inclination was to make tapestries of rhythmic patterns. Overlapping, asymmetrical lengths of rhythmic cells, making a groove out of micro-edits of hits. I found that process to be uninspiring. In a way, it felt too close to my research into Matmos.

I began to experiment with Ableton's Spectral Resonator, a plugin they introduced with Live 11.0. The plugin performs an Fast Fourier Transform (FFT) analysis on the incoming signal. Users can send MIDI data to the plugin which opens frequencies to be excited by the amplitude of frequencies within the incoming signal. I found that when I played chords on a MIDI controller, the impacts of the sewing machine samples created interesting textures and harmonic overtones.

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[5] National Quilters Circle Editors, "Glossary of Quilting Terms," https://www.nationalquilterscircle.com/article/glossary-of-quilting-terms/

I was wrestling with the harmonic aspect of using the Spectral Resonator when decided to look back through my folder of textures I had created by running Yarn/Wire audio through Max/MSP patches. The piece I wrote for Yarn/Wire, titled Amelia, see Figure B.6 and "02 - Amelia Recording.mp3", was inspired by the harmonic progression, and rhythmic feel of Joni Mitchell's song Amelia.

I ran the recording of Yarn/Wire through a Max patch, shown in Figure C.4, I made which used the [mc.2dwave] object to warp the playback of the audio file. The [mc.2dwave] object is a multi-channel (hence *mc.*) version of Max's 2d.wave object. The 2d.wave object breaks an audio file into an X and Y axis. The X axis divides the file into *n* rows, while the phase of the Y axis "determines which row(s) will be used for playback." Having an mc. version of the object means there are multiple, independently addressable copies of the 2d.wave object packaged inside the object. I recorded myself improvising with the parameters of the patch, generating unexpected textures, finding strange worlds within the sound. I took those improvisations and saved them into a folder. I pulled one of those improvisations for the next step in the process.

To generate the harmonic world of this track, I used Ableton's Audio to MIDI function to generate MIDI data from the "03 - amelia_edit mc-2d jump 1.aiff" soundfile. I knew the dense, non-tonal, non-rhythmic nature of the texture would yield unexpected results from Ableton's Audio to MIDI and for the most part, kept the dense cluster of MIDI notes. Those stretches of MIDI notes then were routed to control the Spectral Resonators on the percussive sewing sample tracks, creating slowly decaying harmonic bursts along with the sewing samples.

2.3.6 Loft

Loft: Loft is another word for thickness. The higher the loft of batting the thicker the quilt, this does not necessarily mean the warmer your quilt. There are wool battings that are very thin and super warm.[6]

The majority of the sounds in this track come from an improvisation by Yarn/Wire. The improvisation uses notes from the third bank of notes (C major), executed in the fourth prompt, with the vibraphones each rolling dyads, while the pianos strike long chords. The improvisation yielded two distinct sounds, the continuous rolling of the vibraphones and the impacts of the chords.

The track starts with the rolled vibraphones notes which go through a delay set to 105% feedback, a gentle saturator, and a series of compressors and limiters that control the growing feedback. The second section introduces the piano chords. Under the chords is a Sampler loaded with the chords. Each note of the Sampler is set to loop a small fragment of the decays of the chords. The Attack and Decay for the notes are set so the textures fade in and out slowly.

In the third section, at mm. 33, faster vibraphone recordings return. These are heavily processed through Ableton's Redux plugin and a plugin I made in Max called Trem Vol, shown in Figure C.5. Redux reduces the sample rate of the audio, yielding a controlled digital distortion that maintains the pitch, but alters the timber. I employed a trick here that I used many times on the album: creating two copies of something, panning them hard left and hard right, then changing each slightly over time. In this instance, the sample rate of each Redux is being controlled by two slowly moving LFOs. The LFOs are set to be out of sync with each other. Trem

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[6] Ibid.

Vol, is a tremolo plugin where the tremolo rate is mapped to the volume of the incoming signal. The louder the signal, the faster the tremolo, the quieter, the slower.

The last section, starting at mm. 45, brings back the original vibraphone texture, before moving to the sampled piano chord texture. On top are chords pulled from the third section.

2.3.7 Grain

Grain: The direction of threads running through a woven fabric.[7]

This track stands out from all of the others sonically and procedurally. Sonically it is more focused than the other tracks. All of the sounds heard come just from the sample of my mother saying, "So what I do is, I put it on a slower speed, and I put my foot all the way down." Procedurally this track is unique because it is a capture of an improvisation I did on the Laptop Ensemble concert held at the Duke Coffeehouse on December 5th, 2023, just sixteen days after my son was born.

For the improvisation, I created four identical Simpler instruments. I mapped the knobs of a MIDI keyboard to control the depth of the randomness of the pitch of each one, and some parameters connected to Ableton's Beat Repeat plugin: Chance, Gate, Feedback, Grid, Interval, Offset, and Dry/Wet. I also manipulated the project's overall tempo, which causes the Simpler to warp and stretch the audio sample.

During the improvisation, I searched for new textures I could pull out of the sound. I found phasing effects by setting shallow depths of randomness in the sample's pitch, which I could expand into ad-hock choruses by deepening the depth of randomness. I found frozen vowels when I lowered the tempo and engaged the Beat Repeat.

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[7] Ibid.

Stylistically the track is an anomaly: there are no evolving harmonies, no interlocking rhythmic patterns. I see it as a glimpse into the process of making the record, of trying to take a recording from my mother's sewing room and find a musical texture within it, of trying to make art while my family grew, and as a public display of the private act of making studio-based music.

2.3.8 Freemotion

Free Motion Quilting: A process requiring a free motion quilting, darning or hopping foot. Requires you to drop your feed dogs so you can move fabric freely in all directions. Special gloves marketed for free motion quilting can help in controlling the fabric by providing extra grip.[8]

To end the album, I wanted to make a track that felt like a release, that felt more exuberant than the other tracks on the album. The material on this track is sourced from a few different places. The original seed of the idea came from working with material generated through improvising with Yarn/Wire. We used the notes from the fourth bank of notes (C mixolydian) and executed in the third prompt.

For the texture at the beginning, the audio has been reversed and stretched to many times its original length. Ableton's Warp algorithm creates choppy, fluttering textures. Punctuating the texture are hits of vibraphones and electric bass. The vibraphone interjections, and vibraphone parts at the end of the track, were recorded as overdubs in the third recording session I had with Yarn/Wire to match the key of this track. The material comes from the end of Quilt Analysis - C, which I transposed up a 5th to re-record on the third recording session.

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[8] Ibid.

The first two thirds of this track have no discernable meter. There is a pulse, but very few indications of meter. With the entrance of the vibraphones and kick drum at mm. 97, a meter begins to be established, though the half-note kick drum obscures the true meter. As the section builds, the 5/4 solidifies, culminating at mm. 112 with the entrance of the bass and backbeat.

By this point there are a number of layers made up from sounds from various phases of the project. Most of the rhythmic tracks come from my mother's sewing machine. The "Backbeat" track is a bobbin being unwound, the "Sewing Patterns" track is made out of samples of the different sewing patterns, which were also used on the track Walking Foot. The "Aux" track is made from small percussive sounds from the sewing machine, cut into different notes on a Sampler and triggered by a random arpeggiator. The only percussive elements not from the sewing machine is the kick drum, which was recorded by Russell during a Yarn/Wire recording session.

The harmonic progression is three measures long, which along with the 5/4 time signature acts to eschew the square four-measure, 4/4 phrase length associated with Electronic Dance Music, which this section takes inspiration from.

3. *Instrumental Objects*, a Three-Episode Podcast Series About the Creative Practice of Matmos

The following is the script for the podcast *Instrumental Objects*. The recording of the podcast is available in the supplemental materials of this dissertation and is also available at www.brooksfrederickson.com/dissertation.

3.1 Instrumental Objects - Episode 1

Welcome to Instrumental Objects, the podcast that examines the creative practice of Baltimore-based avant-electronic duo Matmos. I'm your host Brooks Frederickson.

This is a three-episode podcast mini-series about Matmos and how they make music. More specifically, I'm going to ask the question "What Objects are instrumental to Matmos' creative practice?" I'm going to answer the question by examining how Matmos made their album *The Consuming Flame: Open Exercises in Group Form.* Over the next three episodes we're going to talk about Matmos through examining objects, philosophy, things that make noise, digital data, and everyone's favorite amplified crayfish nerve tissue (Martin interjection?)

I should be upfront about why I'm making this podcast and how this podcast came to be. This podcast is part of my dissertation for my PhD in music composition from Duke University. The requirement wasn't for a podcast, but for a piece of writing the length and rigor of an academic journal article. I chose to present research as a podcast because Matmos works directly with sound, there's no notation, no handwritten sketches to analyze, no score to study. Making a podcast allows me to interact with Matmos' work without having to translate it to some graphic representation or describe it with text.

So that's the assignment, but why did I choose Matmos? I chose Matmos because I am fascinated by how they make music. How they, two musicians with a wholly different approach

and background in music than me - make their music by working directly with sound, working orally, working outside of musical notation.

I first met Matmos in 2014 at the So Percussion Summer Institute at Princeton University, where I was a student composer. In their role as guest artists at the Institute, Matmos assembled an ensemble of students and taught us, through oral instructions, through gestures, through vague directions, how to play their music. I was fascinated by the freedom in their methods, mystified by the table full of electronics, and totally entranced by the music we made.

I kept in touch with Matmos and right as I was starting to think about a topic for my dissertation, Martin reached out to me on Twitter and asked if I'd want to be a part of this album they were working on. I of course said yes, then asked if I could observe them as they made the album and write about it for my dissertation. Matmos were both on board with the idea. I went to their home studio in Baltimore in the fall of 2019 and observed them working and conducted interviews with them.

Here are some facts you should know about the album *The Consuming Flame* before we get started. The album is three CDs long. It was released on August 21st, 2020. To make the album, Matmos asked 99 guest artists to send them audio - any audio - that was at 99 beats per minute, which is about this fast (*metronome clicks at 99 beats per minute*)

Matmos made the album by taking those submissions and sampling, chopping, stretching, effecting and collaging them together with elements they made.

There is a lot more to all of this, but to summarize: this podcast is part of my dissertation, I'm asking "what objects are instrumental to Matmos' creative practice?", I'm answering that by looking at the album *The Consuming Flame*, it's 3CDs long, all at 99bpm and made mostly from samples from 99 friends.

3.1.1: Introducing Matmos in Three Minutes or Less

Matmos is made up of Drew Daniel and Martin Schmidt. They have been making music together for over 25 years, and have also been a couple for just as long. In fact, their courtship began when Martin asked Drew to come over and make music on a computer he had at his house. Though as Martin told me in an interview, "And at the time it was sort of a lie. I was like, "I think...I have a computer, I think I know how to record sound on it. I think""

Martin Schmidt was born in a suburb of San Francisco called Burlingame. His father was a local doctor who decided to rejoin the Army and requested that the family be stationed on a base in Munich, Germany. Martin says his father, "wanted to move to Germany specifically because he wanted to see operas." Martin, who was 15 or so at this time, was designated as his dad's opera companion. "I saw 25 grand operas". After two years of living in Germany, the family moved back to California, this time to a different San Francisco suburb - Walnut Creek. During his high school years in Walnut Creek, three big things happened for Martin. He found a group of friends that turned him on to David Bowie and Brian Eno, he discovered his sexuality and "my mom, ok maybe whatever, if you were writing a book about me this would be important: my mother dies when I'm 17."

Following high school, Martin tried college at Southern Oregon State University. The school wasn't the right fit, but "there was a piano in the lobby of every dorm, and every night I would go from piano to piano for hours."

Then Martin started hanging out at the California Institute of the Arts where his friend from high school, Steve Goodfriend, was studying music composition. "I literally know nothing about new music. And suddenly I just move into a very important center of new music." Martin

bounced between there and Humboldt State University where he took classes in performance art and experimental film.

In 1986 he moved to San Francisco where he signed a lease for a warehouse space called, "455 10th St. Our vision was we were going to put on concerts, and have theater things, and do performance art." The space lasted for a few years, after which Martin moved back up to Humboldt County where "I literally just sat at a computer the whole time. I learned Photoshop, and I learned Adobe Illustrator. I put all my music stuff in the closet and never made music."

After his Humboldt interlude, Martin returned to San Francisco where he found a community in the Bay Area's gay clubs. He befriended the owner of Thunder Bay, by offering to make flyers for them. The owner, Doug, is an important figure in this story, so remember his name as we recount Drew's upbringing.

Drew Daniel was born in Montreal, but raised in Louisville, Kentucky by his mother and stepfather. His mother was a principal for a school for the deaf, and his stepfather ran a movie theater called The Vogue which screened art-house films, experimental films, and the Rocky Horror Picture Show. Drew's father was a surgeon who wrote medical textbooks, though Drew's stepfather's bookshelf was more interesting, "a lot of Grove Press texts by (Jean) Genet, (Samuel) Beckett, Henry Miller, and for me, importantly - and this is getting to music - William S. Burroughs." Drew employed Burrough's tape recorder experiments on his own tape recorder and made a tape "out of kids records, where I would use the pause button to make very tiny, little snippets of sound and that was directly inspired by Burroughs."

During his high school years, Drew continued to make tape collages, though the source material moved from kids records to Wagner, suicide notes and the alien from the movie Alien. After high school, Drew went to the University of California, Berkeley where he continued

making collages in his dorm and floated between the scenes his new location offered him. “I was going to punk rock shows and ska shows and then I knew people that were like Industrial Music DJs, and I started going to noise shows. But one thing that I did that I really didn’t see coming was I joined a Gospel Choir.”

Drew studied abroad at St. Catherine’s College at Oxford University during his junior year of undergrad. “On weekends I was going to London and partying in all night parties”. At these parties Drew was hearing Jungle and Drum and Bass DJs.

After Oxford, Drew moved back to Berkeley to finish undergrad. He began to spend more time in the gay clubs and discos in San Francisco. His boyfriend at the time, Doug - remember Doug? - owned one of the bars in the scene.

Martin first heard of Drew through their mutual friend Mike who told Martin that Drew “goes to Oxford and he’s really smart, and he’s smarter than you, Martin. But, he’s Doug’s boyfriend, so you can’t do anything about it, but he’s really smart. And so then I meet Drew, and he is really smart, but he didn’t scare me. And so the first few times we actually met, we just argued.”

Drew’s recollection of this time is that “Martin was the bartender at the bar that my boyfriend Doug started called Thunder Bay that was an 18 and up space. We were both attracted to each other, but I was still going out with Doug. There was a time where I’m like breaking up with Doug, but not yet going out with Martin, but Martin is kind of already showing up and wanting to hang out.”

After Drew and Doug ended up breaking up, he and Martin started dating. “So I started going out with Martin and making music with Martin and it was always simultaneous.”

In many articles and reviews written about Matmos, one of the first things the reader is told is that Matmos sources many of their sounds from objects traditionally thought not to be instruments.[1] Sounds on Matmos' records have been sourced from crayfish nerves, cosmetic surgery, interviews with their friends taken during ESP sessions, the washing machine that shares space with their basement home-studio, plastic objects, and in their album The Consuming Flame, the focus of this podcast, their community of friends and collaborators.

Matmos is not the first group to make music through sampling, nor are they the first group to recast traditionally non-musical objects as sound sources. They are, though, a part of a history of artists and musicians who have broadened the idea of what sounds could be considered musical. In the next section, we'll look back to the Italian Futurists to see the beginnings of an idea that is core to Matmos' creative practice.

3.1.2: Future Instruments

If we start with the idea that every object has the potential to make sound, then we add in that every sound could be heard as a musical sound, we end up with the idea that every object is capable of being an instrument.

The ideas that everything could be an instrument, and that every sound could be music, are relatively new. It used to be that only a small number of objects were considered musical instruments. These objects were purpose-built to be instruments - violins, pianos, flutes - all crafted specifically for the purpose of making music. If being a musical instrument was an

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[1] Tom Doyle, "Matmos: The Art Of Cut & Paste", Sound on Sound, May 2004, https://www.soundonsound.com/people/matmos; Brandon Stosuy, "Matmos: The Rose Has Teeth in the Mouth of the Beats (review)", Pitchfork, May 9, 2006, https://pitchfork.com/reviews/albums/5153-the-rose-has-teeth-in-the-mouth-of-a-beast/

exclusive club that only purpose-built objects were allowed into, it made sense that only their sounds were allowed to be involved in musical performances.

In 1909, the Italian poet Filippo Marinetti published his *Manifesto of Futurism*.[2] The Manifesto inspired a group of writers, artists, musicians, and poets to reconsider the rapidly modernizing Italy in which they lived. Four years after Marinetti's *Manifesto*, in 1913, Futurist painter Luigi Russolo wrote to the Futurist composer Francesco Pratella and laid out his idea for an expansion of what Russolo saw as music's limited timbral palette. Russolo's idea was to include "noises".[3] In the letter Russolo wrote, which was published as *The Art of Noises*, he suggests:

"Musical sound is too limited in its variety of timbres. The most complicated orchestras can be reduced to four or five classes of instruments different in timbres of sound… *We must break out of this limited circle of sounds and conquer the infinite variety of noise-sounds.*"[4]

To break out of what Russolo describes as the "limited circle of sounds", he is suggesting we, music makers and listeners alike, accept noise-sounds, with all of their subtleties and varieties, in the same way we accept musical sounds. To Russolo, the sounds of the quickly modernizing world in which he lived were not only sources of inspiration but were themselves musical.

Russolo envisioned a musical listening to the mechanical and natural noises of a city, in the Art of Noises he says,

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[2] Umbro Apollonio, *Futurist Manifestos* (Boston, Mass.: MFA Publications, 2001), 19.
[3] Christoph Cox and Daniel Warner, *Audio Culture : Readings in Modern Music* (New York, NY: Bloomsbury Academic, an imprint of Bloomsbury Publishing Inc, 2017), 11.
[4] Ibid. 12.

"We will amuse ourselves by orchestrating together in our imagination the din of rolling shop shutters, the varied hubbub of train stations, iron works, thread mills, printing presses, electrical plants and subways."[5]

Russolo's proto-soundwalk rehears the modernizing European cities as mechanical, ad-hoc orchestras. He brought this re-hearing into the concert hall with his piece from 1913 titled "Awakening of a City". Written for an ensemble of Intonarumori - mechanical noise instruments created by Russolo and his assistant Ugo Piatti, "Awakening of a City" recalls the sounds of the city - gurgling and whirling motors, churning machinery - recreated for presentation in a concert hall.[6] As you listen to this one-minute excerpt of a recording of the piece performed on recreations of Russolo's instruments, think of the mechanical processes that are generating these sounds. See if you can think of a machine that uses the same processes and generates similar sounds.

(Luigi Russolo - *Risveglio Di Una Città*[7])

I should note that the Futurists, including Russolo, embraced and promoted a number of objectionable views. Their lust for progress, speed, and innovation echoed many tenants of the fascism of Mussolini. Let's look closer at the Futurists Manifesto written by Marinetti in 1909. In the Manifesto Marinetti outlines the Futurists' views in a series of bullet points. In one of these bullet points he states:

"We will glorify war—the world's only hygiene—militarism, patriotism, the destructive gesture of freedom-bringers, beautiful ideas worth dying for, and scorn for women."[8]

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[5] Ibid. 13.
[6] Luigi Russolo, *The Art of Noises* (New York: Pendragon Press), 75.
[7] Luigi Russolo, "*Risveglio Di Una Città*", track 1 on *Die Kunst Der Geräusche*, WERGO, CD
[8] Apollonio, *Futurist Manifestos*, 22

In the following bullet point he states:

"We will destroy the museums, libraries, academies of every kind, will fight moralism, feminism, every opportunistic or utilitarian cowardice."[9]

The Futurists were obsessed with the idea of innovation, of the new possibilities offered by the newest technologies. Advances in transportation, manufacturing, and weaponry inspired the Futurists to break violently from traditional notions of art. Their sexism and Italian-centric nationalism made them think that they - a group of white European men - were the ones to break from tradition and usher in a new era of art making. Visual artists Valerie Jaudon and Joyce Kozloff's article called *Art Hysterical Notions of Progress and Culture* from 1978 puts the Futurists' violent ideas in conversation with other problematic views prevalent in the modern art world.[10]

For their part, Matmos has continued Russolo's practice, and definitely not politics, by including noises - byproducts of processes and actions - in a number of their works. Their 2016 album *Ultimate Care II* is made from sounds sourced from the washing machine that shares space in their home studio. Whereas Russolo endeavored to bring the sounds of progress, industry, war, and violence into the concert hall, the washing machine, a Whirlpool Ultimate Care II, for those of you keeping track at home, centers the idea of domestic machines and the often uncelebrated work of domestic labor.

To unpack this idea, let's learn a little bit more about Matmos and how they work. Each album they make is led by either Martin or Drew. For each album, they alternate who is in

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[9] Ibid. 22.
[10] Kristine Stiles and Peter Selz, *Theories and Documents of Contemporary Art : A Sourcebook of Artists' Writings*. (Berkeley Calif.: University of California Press, 2012), 176.

charge, who sets the rules and boundaries for the album. Ultimate Care II is a Martin album. He came up with the concept, he made the rules.

During Martin's biography at the beginning of the episode, he said, "if you were writing a book about me this would be important: my mother dies when I'm 17". The emotional ramifications of a teenage boy losing his mother are beyond the scope of this podcast, but one result of losing his mother was that Martin received an inheritance. "Really the story of my life is free money. Like a lot of artists who make it somewhere, what do you know, it's free money that makes it all possible. Not having to work. It's dead true for moi. My mother's father owned a dairy and a chain of soda shops in southern New Jersey called Richmond's Ice Cream". As a result of not having to work full-time, Martin has taken on more of the domestic labor in his and Drew's relationship. This labor includes doing the laundry. Drew, on the other hand, is a tenured professor at Johns Hopkins University where he lectures about Shakespeare and writes books about Early Modern and Renaissance literature.

Drew connects Martin's shouldering of the domestic labor, and the album Ultimate Care II in this way:

> "I think in a way it was a kind of flagging of our roles that I get up and put on a jacket and collared shirt and lecture about Hamlet and Martin does our laundry. So I think him saying "well ok the next Matmos album is about this washing machine" was also like him going, "hey guess what I'm doing you know guess what everybody that has clean clothes needs?" you know this is kind of like let's keep it real gesture. So it's kind of a kind of a telling thing that I had done this very conceptual telepathy album with you know this Shakespearean title and his response was this like let's think about domestic labor and a deliberately drab machine you know."

So, Ultimate Care II comes from Martin's proximity to the washing machine, his affinity for a clear and understandable concept, and the washing machine's inherent rhythmic thumping. Throw those all together, set it to the spin cycle and you end up with Ultimate Care II.

Matmos sourced not only the sounds for the album from the washing machine, but also sourced the album's form. The album's flow follows the washing machine's cycle. (Matmos - *Excerpt One*[11]) From the turning of the knob and filling up, to the rhythmic churning turned dance beat (Matmos - *Excerpt Four*[12]), to the fast spin and buzzer at the end (Matmos - *Excerpt Nine*[13]).

The washing machine joined Matmos as a member of their touring band in support of the album. Special electrical equipment and water pumps were packed alongside synthesizers and computers in Matmos' touring van. Here, 100 years after Russolo, was a machine center-stage, being heard as a member of a band.

After a short break, we'll skip ahead a few decades and talk about a different type of machine - tape recorders - and their impact on music and how they complicated the definition of an object.

3.1.3: Mid-century Modernism and Recording Technology

In the years after the end of World War II, around 1948, thirty years after Russolo's Art of Noises, recording technology had begun to give specially trained technicians the ability to record, edit, and effect audio. The invention and popularization of magnetic tape - similar to the tape used later in cassette tapes - allowed for a level of editing not previously available with wire or vinyl recording mediums. With magnetic tape, recording engineers could, for the first time, physically manipulate a sound recording. Simple operations like splicing - cutting a tape and joining its end to the end of a different tape, overdubbing - adding a sound to an existing recording, or cutting out a chunk of tape and reinserting it backwards, or creating a tape loop -

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[11] Matmos, "Excerpt One" 2016, track 1 on *Ultimate Care II*, Thrill Jockey, CD
[12] Matmos, "Excerpt Four" 2016, track 4 on *Ultimate Care II*, Thrill Jockey, CD.
[13] Matmos, "Excerpt Nine" 2016, track 9 on *Ultimate Care II*, Thrill Jockey, CD.

recording a sound on to a length of tape and joining its ends so the same length of tape circles around, replaying the same sound over and over again, were revolutionary acts.

With the advances in recording in the 1940's, sounds could be recorded or broadcast, removing them from the locality of their inception. Prior to the widespread use of recordings, the only way to hear a violin was to be near someone who was playing it. With recordings, you can not only hear a violin wherever you want, but because there are choices to be made within the recording and editing process, recording engineers can mediate a person's experience of hearing a violin.

In Paris in the late 1940's, Pierre Schaeffer, a trained engineer with musicians for parents, headed up Studio d'Essai, a center for creating works that were based on recorded sound.[14] Schaeffer's aim at this time was to find a way to use recorded sounds - sounds of trains, sounds of instruments, sounds of the human voice - to create pieces that were made in the studio and captured directly onto tape.[15] For Schaeffer these sounds, which he would later call "sonic objects" were raw materials to be worked with.[16] Using the technologies available, Schaeffer looped, reversed, truncated, pitch shifted, filtered, juxtaposed and overlaid sounds to create new sonic results.

This excerpt from Schaeffer's piece from 1948 titled Five Studies of Noises: Etude Violette, explores the new creative possibilities opened up by using tape. All the sounds in this movement were sourced from recordings of a piano made by another Pierre, Pierre Boulez. As

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[14] Dhomont, Francis. "Schaeffer, Pierre," Grove Music Online. Retrieved 3 Nov. 2022, from https://www-oxfordmusiconline-com.proxy.lib.duke.edu/grovemusic/display/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000024734?rskey=YPQrEc&result=1.
[15] Pierre Schaeffer, *Treatise on Musical Objects : An Essay Across Disciplines* (Oakland, California: University of California Press, 2017), 15-16.
[16] Ibid. 8.

you listen to this, consider each of these sonic fragments as distinct objects. Objects that have their own innate logic, have relationships with one another, and can grow and change.

(Pierre Schaeffer - *Cinq études de bruits - Étude Violette*[17])

To understand Schaeffer's process, and as a way to tee-up a discussion about Matmos, I think it's important to understand how a sound is recorded. It seems rather tedious to discuss the process, but in doing so we'll see the different phases the material passes through. To do that, let's have a technical interlude.

Microphones translate acoustic sound waves - the things you and I hear with our ears - into an electrical current. This current, running through the microphone's cable and into a recorder, controls the recorder's "write head" - that's "w-r-i-t-e" which inscribes a representation of the sound onto the storage medium. For magnetic tape, the audio data is written into the magnetic film on the tape. So far the sound has existed in three different ways - acoustic waves, electronic signals, and stored as data.[18]

To hear the sound, the process works in reverse. The data that represents the sound is deciphered by a "play head" which translates the data back into an electronic signal that drives a speaker and reproduces the original sound that was inscribed onto the storage medium.[19]

For a deeper dive into microphones and speakers, check out Cathy van Eck's illuminating book Between Air and Electricity. She not only goes deeper into how microphones and speakers work, but also makes a case for them being instruments and not just sound reinforcement

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[17] Pierre Schaeffer. "Cinq Études de Brutis - Étude Violette." track 3 on *An anthology of noise & electronic music. Volume #1.* Sub Rosa, 2002, CD.
[18] Peter Manning, *Electronic and Computer Music* (New York: Oxford University Press, 2013),12.
[19] Cathy van Eck, *Between Air and Electricity: Microphones and Loudspeakers as Musical Instruments* (New York: Bloomsbury Academic, 2017), 12.

equipment. Also see Peter Manning's book Electronic and Computer Music for an in depth history of the electronically activated European and North American avant-garde.

Let's go back to Pierre Schaeffer and his studio in Paris in 1948. Over the course of 1948, as noted in Brian Kane's excellent book about Schaeffer, *Sound Unseen*, Schaeffer coined and developed the term "sonic object". The term evolved from denoting the bit of magnetic tape on which a sound was recorded, to meaning the essential qualities of a sound, qualities that are revealed through manipulation and variation of the sound.[20] Schaeffer's conception of a sound object evolved into an idea that later he realized lined up with the German philosopher Edmund Husserl's idea of phenomenology and his theory of objects.[21]

In Husserl's theory, there are subjects, entities, and objects. You are a subject and the things around you are entities until you notice them, in which case they become objects. Before you enter a room, it is filled with entities - a couch, a table, a rug - when you enter and start noticing the entities in the room, they become objects. If you later remember being in the room and remember the rug in the room, the rug, recalled from memory, is still an object. Husserl does not distinguish or discriminate between the two, an object perceived sensually - seen, felt, heard, smelled - has the same object-ness as an object recalled in memory.[22]

Objects, and our relationships to them, are constantly in flux. If I were to walk around the rug and view it from different angles and heights, I would see different parts in more detail and might miss parts of the rug that are blocked by the table or chairs set upon it. The objectness of the rug stays intact even as I view the rug from different angles and vantage points. Husserl sees

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[20] Brian Kane, *Sound Unseen: Acousmatic Sound in Theory and Practice* (New York, NY: Oxford University Press, 2014), 33.
[21] Ibid. 19
[22] Ibid. 19-21

these various perspectives of an object as “adumbrations”. Adumbrations allow us to not only create a complete picture of an object in our minds by seeing different views of it, but also allow us to recognize an object if we only see a partial view of it.[23]

To give you a musical example of adumbrations, and to break up this long chunk of text, let’s replace the rug from our example with a sound recording. If I play the first few seconds of a recording you’re familiar with, you’ll probably be able to recognize the recording.

(Mariah Carey - *All I want for Christmas Is You*[24])

Or, if I drop in in the middle of the recording, you’ll again be able to recognize it

(Maria Carey - *All I Want for Christmas Is You*)

In this example, the recording of Maria Carey’s All I Want for Christmas is an object, and the two clips we heard were adumbrations of that object. Later today or tomorrow or next week, when the song is still stuck in your head, your remembering of the song will be an object, too. An object that has the same objectness as the original recording.

Let’s go back to Pierre Schaeffer and his idea of the Sonic Object. Schaeffer’s definition of a Sonic Object evolved as his creative practice evolved. In its final form Sonic Object meant the invariant qualities of a unit of a recorded sound.[25] This connects with another of Husserl’s phenomenological ideas, the idea that varying an object exposes its fundamental, invariant qualities.[26]

Imagine a rug in your mind - nice, it really ties the room together, doesn’t it. Now, change the color of the rug you’re thinking about. Change its shape, add some tassels at the end,

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[23] Ibid. 20
[24] Mariah Carey, “All I Want for Christmas Is You,” 1994, track 2 on *Merry Christmas*, Columbia, CD
[25] Ibid. 30
[26] Ibid. 32

change the height of the ply. Through all of those variations, we can find a rug's essential qualities, the things that stay constant through all of the variations. In this example we see that a rug, at its core, is a floor covering made out of some fibrous material, every other quality is variable, its size, shape, color, style, etc. Schaeffer's idea was that by creating variations of a sound, its invariant qualities will become evident. These may be the timbral qualities of the sound, or the overall shape of a sound. I think about the invariant qualities of a sound being the qualities that let us know what a sound is.

To conclude this section, let's listen again to the excerpt from Schaeffer's Five Studies of Noises: Etude Violette. This time, see if you can trace the variations of some of the sounds that Schaeffer uses. See if you can hear the qualities that persist through the variations.

3.1.4: Objects in Practice

In November of 2019 I traveled to Matmos's home studio in Baltimore to observe and interview them as they worked on The Consuming Flame. During this trip, Drew demonstrated his process for working with the audio submitted by Judith Zissman. Zissman, a writer and creative director at an interactive agency, is one of the contributors on the album who isn't primarily a musician. Through this demonstration, we'll hear how Drew used a piece of software called Paul Stretch to make a new texture from the sound, then we'll hear how he created multiple layers of sound from that new texture.

Each new variation of the material will give us another glimpse into what Schaeffer might consider an "essential quality". While you listen to this section, see if you can track the qualities of the original audio that are present in each variation. Drew has a powerful stable of digital tools to manipulate the sound, but in each process, I think you'll hear that some part of the original sound is retained.

The organization of layers and variations of variations is a little complicated. I'm going to give each layer a name and refer to them by those names. To start, I'll play the finished track, then I'll play the file that Zissman sent to Matmos, then I'll let Drew walk us through how he worked with Zissman's submission. Here's the first minute or so of track 1 from Disc three of The Consuming Flame, titled Blessed Order Of[27].

And here's the original submission from Zissman.

Now here's Drew.

> "I found the sounds were sort of the opposite end of the universe from like what makes Matmos, Matmos, you know which is like trying to find a very particular object or unusual sound. These are like, no disrespect, but like extremely generic, like piano, violin, drum machine. So I thought "Well, I want to work with this but it is a challenge to, because I don't really see a way in", you know. If I make a tiny little sample it's still going to sound like "Oh, that's a violin." I found it like exciting because I also found it like very hard to imagine what I can possibly do with this."

Like Drew said, one of the reasons Matmos sounds unlike anyone else is that they search out sounds from the world around them. No one else sounds like Matmos in part because no one else works with the same sound sources. With Zissman's submission, the sounds are ubiquitous. The stock drum machine, piano, and violin, are sounds that anyone with a computer can access. In working with Zissman's submission, Drew wanted to transcend the generic sounds of the recording and find a unique texture within the sounds. To do that, he loaded the audio into a plug-in called Paul Stretch, a digital tool released in 2006 that claims it can "transform any sound/music to a texture".[28] Here's Drew demonstrating the first steps in his process of working with Paul Stretch.

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[27] Matos, "Blessed Order Of," 2020, track 1 on disc three of *The Consuming Flame: Open Exercises in Group Form*, Thrill Jockey, CD

[28] Paul Nasca, "Paul's Extreme Sound Stretch", https://hypermammut.sourceforge.net/paulstretch/

> "So there's her file, now it's just stretched twice length, now I'm going to bring in multiple octaves of it. But still at this half time, you're still perceiving her drum rolls, but if I stretch it out….
>
> So that was the process, like subject it to Paul stretch in order to work with something so that you can draw out like what's harmonically appealing about the notes she picked. But, how can I estrange these textures so that they don't sound like a preset violin sound or a drum machine"

The new texture Drew made with Paul Stretch, which I'll call the "PaulStretched audio", is an amalgamation of the individual sounds present in the submission. If we think about this process through the lens of Schaeffer, we can see this first transformation as a way of finding some of the essential qualities of the submission. By blurring the notes and rhythms, and amalgamating the textures, Drew revealed a quality that underpins the original audio.

It is important to note that every layer in the track comes from this PaulStretched audio. Drew recorded the PaulStretched audio and then sampled it - created individual sounds that he could sequence on his keyboard or through his DAW. In doing so, Drew retains the sound's texture, but distorts its temporality. We no longer are hearing the sound from start to finish but are hearing fragments of the sound rearranged in time. Here's Drew playing examples of the samples on his MIDI keyboard. These samples were sequenced into the riffs that make up what we'll call the Riff Layer.

"And what it's doing is just taking a tiny micro-sample and dithering it and crossfading it with itself and stretching it to create this sort of drone. So that's what generated this. Which I then copied and dropped an octave with itself."

That accounts for one layer of the sound. Drew continued working with the PaulStretched audio to create a second, more rhythmic layer.

> "So, I've got audio that's more or less continuously going to be making sound, and the audio is the Paul Stretch process of her file. But then there's a mode where graphically you can draw automation of volume, so you can create little mini, micro

> slices of audio. And it's a way of implying rhythm out of, you know, something continuous."
>
> "So that's like putting into the PaulStrech little rhythmic cuts that give it the quality like a of a triplet line, but it's just attenuating the volume of the process, but in a way that feels like a beat. And what I like about it is that it means the content can be constantly shifting with regard to its texutres, but you can hold a rhythmic idea in the midst of the constant change."

This new layer, which we'll call the Rhythmic Layer, presents another variation of the PaulStretched audio. As opposed to the Riff Layer, which rearranged the samples of the PaulStretched audio into riffs, this layer presents a temporally-linear version of the audio, but interrupts it with rhythmic volume attenuations. Drew creates these attenuations by drawing in volume automation. In modern DAWs, users can draw lines to control different parameters of a sound. In this case, Drew is drawing automation to control the volume of the track. He refers to these as "cuts" because he is cutting the audio's volume at specific points.

"Because the cuts are on beat, it takes the fact that I'm stretched her so her drum machine time has no relation to the time of 99 BPM but the volume cuts enforce 99 BPM. So it's another way of like playing with, you know, perceiving rhythm without being too didactic about, you know, a kick drum on the one or whatever."

In the finished track, Drew starts with the Riff Layer, then brings the Rhythmic Layer in 30 seconds into the track. The Rhythmic Layer's entrance is subtle, but noticeable if you listen for the faster, 16th note-based rhythms. The two layers playing simultaneously give us two different temporalities of the PaulStretched audio.

Since you have heard the PaulStretched Audio, I wonder if you can hear these two layers as adumbrations of that layer. Like seeing a picture of a rug but run through two different Photoshop effects. I also wonder what part of the PaulStretched audio remains for you through

these two layers? The harmonic content? The texture? Something else? Listen to this excerpt and see what comes up for you.

Let's keep going. Drew made two more layers from the PaulStretched Audio.

"So this is the same stretched material, but now it's up many, many octaves through a cascading series of reverbs and compressions. Then I rendered some of it as audio and extracted the MIDI notes to produce a sort of bass line."

For this layer, which I'll call the Ghost Whistle, Drew transposed the PaulStretched Audio up four octaves.That audio is then fed through reverbs, which makes the sound more spacious and blurs the individual pitches. What is left is a ghostly whistle, a high tessitura shadow of the PaulStretched Audio.

The last layer, the Bass Layer, is the first sound we hear that is not from Zissman's submission. To make this layer, Drew used Ableton's Audio to MIDI functionality to transcribe the Ghost Whistle layer into MIDI data, which he then transposed down a few octaves and sent to a virtual synthesizer. The connection to the original audio is still there as the bass notes are derived from a version of it, but this is the furthest away from it we've gotten.

So, to sum up, this brief moment of music ends up having four distinct layers, all coming from the PaulStretched variation of Zissman's original audio. Each variation of the PaulStretched Audio retains some of the characteristics of it, but each reconfigures its time, pitch, or texture.

I wonder if Schaeffer's idea of the sound object holds up in this example. Are any invariant qualities revealed through Drew's process? Are each of these layers pieces of a puzzle that reveals some underlying trait? Does that trait come from the PaulStretched audio or is it also present in the original audio from Zissman? Questions like these are subjective and open to your own interpretation. Looking at this through Schaeffer's lens, we can say that these variations do

bring us closer to finding the immutable qualities within the PaulStretched Audio. Some part of the sonic fingerprint of the PaulStretch Audio is present in each variation, and if we hold all of those fragments up together, we can see some of its immutable qualities, which in turn gives us some of the immutable qualities of Zissman's original submission.

One quality that I hear persists throughout the variations is the digital noise introduced by Paul Stretch. Here is a clip of Drew working with Zissman's original audio in Paul Stretch. He demonstrates the FFT parameter - FFT stands for "Fast Fourier Transform " - which controls part of the analysis that the Paul Stretch Algorithm is performing.

> "You get a crispier white noise sound if you adjust the FFT size. You hear that kind of like, it's not bit-crushed, but it's similar kind of sound. But still at this halftime you're still perceiving her drum rolls, but if I stretch it out. Now it sounds like this aerosol spray can, or a waterfall or a jet engine. But now if I adjust the FFT size. So now I'm getting the piano harmonics stacked in octaves, plus the crash of the drum machine's cymbals and rides and maybe the snare impact has become this ashy horizon line."

Drew decided to set the FFT parameter so that some digital noise was added to the original sound. The noise is present in all of the layers. In the Riff Layer, the noise adds to the hard cuts at the beginning and end of each note. The faster notes of the Rhythmic Layer are articulated by the blast of noise that comes with each cut. In the Ghost Whistle texture, the noise acts as fodder for the reverb, extending the notes beyond their original rhythmic values.

When I first started working with this material, I didn't notice the noise that was added by Drew in Paul Stretch. I didn't really notice it when I first listened to the finished track either. It was only through repeated close listening and analysis that I honed in on it and started to understand it as an immutable part of the sound of the PaulStretched Audio. It isn't the only immutable part for sure, but it shapes how each layer sounds. In each layer, the noise works hand-in-hand with the manipulation: accenting the rhythmic cuts and adding to the whistling texture.

Ok I'm going to leave it here for now. In the next episode, we'll see what happens after Schaeffer's ideas go out of fashion, how Matmos interacts with collage, and what happens when a cult leader is mashed up next to Boris Johnson.

3.2 Instrumental Objects - Episode 2

Welcome to Instrumental Objects, the podcast that examines the creative practice of Baltimore-based avant-electronic duo Matmos. I'm your host Brooks Frederickson.

In the previous episode, we looked at a few different types of objects that are instrumental to Matmos' creative process. First, we looked at one history of music being made from objects generally considered not to be instruments - Matmos' washing machine as band member, stemming from Luigi Russolo's Art of Noises and Intonarumori. Then we looked at Pierre Schaeffer's idea of Sonic Objects and phenomenology, and how Matmos used variations to bring out the unique qualities of the submissions they received for *The Consuming Flame*.

In this episode we'll look at one more of Schaeffer's philosophical ideas, then we'll look at which of his ideas the next generations of composers, including Matmos, kept and which they abandoned. Then we'll talk about Matmos' relationship to collage, and then end by looking at a few examples of different collage techniques found on The Consuming Flame.

3.2.1: A New Way of Listening

In the previous episode, we talked about phenomenology, a movement in philosophy that focuses on knowing through phenomena - gathering understanding of the world around us through how we experience it. We talked about phenomenology's interest in finding the essential, or immutable, qualities of an object. To do so, phenomenology employs variation. The idea is to think of an object, then vary its color, size, shape, material, etc. to find the qualities that persist through the variations. Let's look at one more of Schaeffer's ideas, the idea of reduced listening.

In Europe in the 1930's and 1940's, recorded and broadcasted audio was becoming accessible to the broader population. Before recordings and broadcasts, in order to hear music, to hear a sound, or to hear someone speaking, you had to be physically near the sound source. This proximity made it easy to match a sound with its source: if you heard a trumpet, you knew a trumpet player was nearby; if you heard a speech, you saw the speaker. With recording and broadcasting, sounds became dislocated and disassociated from their sources. You no longer had to be in proximity to a sound's source to hear its sound.

Schaeffer called listening to a sound removed from its source acousmatic listening. You're participating in acousmatic listening right now, actually. You can't see me, you aren't present at the recording of this sound, but you are perceiving this sound separately from when it was created.

Let's listen to a short excerpt from one of Schaeffer's pieces to think about this mode of listening. In this instance, we're moving in time and space to a train yard in France in 1948. The trains that made these sounds are long retired, the echoes of the clangs long faded out, but the recordings, the captured soundwaves, still exist. As you listen, think of the removal of the sounds from their sources.

(Pierre Schaeffer - *Cinq Etudes de Brutis - Étude aux chemins de fer*[29])

Within the acousmatic situation, Schaeffer proposed a type of listening called reduced listening. In reduced listening, the listener brackets the associations they have with a sound and hear it just as a sound, without thinking of its origin, without thinking about how it was made, without thinking about its cultural contexts. In French, Schaeffer's native language, there are four

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[29] "Pierre Schaeffer - *Étude aux chemins de fer,*" Internet Archive, https://archive.org/details/PierreSchaffertudeAuxCheminsDeFer

verbs that mean listen or hear. The one that matches the mode of reduced listening best is *entendre*, which Brian Kane defines as "listening to a sound's morphological attributes without reference to its spatial location, source, or cause; we attend to sounds as such, not to their associated significations or indices."[30]

Listen to this movement from Schaeffer's Etude aux Objects from 1959 and see if you can listen using reduced listening. Try not to identify the sources, try not to imagine how the sounds were made, just follow the sounds as they are presented and disappear.

(Pierre Schaeffer - *Etude aux objets*[31])

Schaeffer's theorizations fit together like puzzle pieces. The sound object is only possible with recorded sound when one can manipulate the recordings, which creates distance between the sound and its source, creating an acousmatic situation and the possibility for reduced listening.

Schaeffer's music and theorizations were influential to the younger generation of composers, many of whom were under his tutelage at Studio d'Essai. In the next section, we'll discuss which of Schaeffer's ideas the next generation kept, and which they let go.

As a buffer, here's a clip of Three Guitar Lessons by Matmos, a track we'll talk about later in the episode

(Matmos - *Three Guitar Lessons*[32])

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[30] Kane, *Sound Unseen*, 27
[31] "Pierre Schaeffer" Internet Archive, https://archive.org/details/20PierreSchaefferLaTriedreFertile1976IIStrette
[32] Matmos, "Three Guitar Lessons," 1997, track 6 on *Matmos*, Vague Terrain, CD

3.2.2: Moving past Schaeffer

Philosophical movements come and go. Philosopher Graham Harman, explains it this way.

"Philosophies are never refuted; they're simply abandoned. A philosophy doesn't die because someone comes up with knock-down arguments against it. Philosophies generally die because they come to seem too narrow, they seem to have too many arbitrary assumptions, they don't seem to describe the world as we know it very well."[33]

The next generation of music concrete composers moved away from Schaeffer's idea of reduced listening. Pierre Henry, who was both a student of and assistant to Schaeffer, kept Schaeffer's techniques of manipulating recordings, but questioned his idea about concealing the source of a sound. Whereas Schaeffer saw music concrete as a way to liberate a sound from its source, Henry equated music concrete with photography, seeing music concrete as a way to present an object from the world and manipulate it, but not to lose its source.[34]

Henry's ideology is on display in his 25 movement *Variations for a Door and a Sigh* from 1963. Notice that the piece names its sources in its title. In the piece the recordings of a doors, a sigh, and a small saw-like, metal instrument are presented, manipulated, and collaged to create a life cycle of sorts. Sleeping, yawning, gymnastics, anger, swaying, fever, chanting, snoring, then finally death are all represented within the work.

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[33] Graham Harman, "Graham Harman: What is an Object? | Föreläsning" YouTube, 2015, 25:09 https://www.youtube.com/watch?v=9eiv-rQw1lc
[34] Nicolas Verin, "Entretien avec Pierre Henry," http://www.ars-sonora.org/html/numeros/numero09/09c.htm

I'm going to play part of one of the movements of *Variations for a Door and a Sigh*, and this time, unlike in the Schaeffer example earlier, think of the door. Imagine a door making these sounds, imagine yourself listening more closely to doors in the future.

(Pierre Henry - *Variations for a Door and a Sigh* - *Movement 23: Ronflement*)

During an interview I conducted with Matmos over the phone, I asked them about music concrete and if they saw themselves in the lineage of composers like Schaeffer and Henry.

DREW: Oh yea,

MARTIN: If we were to flatter ourselves.

DREW: Martin and the specifically the French GRM school, that was hugely important the the genesis of Martin and I as a band, because our awareness of Variations for Door and a Sigh, was the thing we bonded over, despite the fact that we sort of liked different sides of the electronic music world. I was into harsh noise and industrial music and hip hop and techno, and Martin was into synth and Krautrock and Brian Eno, but we both loved Variations for Door and a Sigh. And it really was a foundation - How are we going to make collages together? Oh, let's pick an object as a source and explore what we each can do with that object. That's straight out of Variations for Door and a Sigh.

I think what we were much less interested in, and frankly much less aware of was Schaeffer's theorization of the *object sonore*, and the theoretical ideology of concrete, the agenda that Schaeffer had. We weren't into that and we weren't talking about it.

MARTIN: We didn't really know about it. Schaeffer's theoretical underpinnings were only translated into English like two years ago. In a weird way, I'm glad we just had like a dumbass, youthful "you make recordings and you cut them up and make a symphony out of sounds instead of music instruments."

DREW: I think the key difference right is referentiality. We were totally influenced by Henri, but also by Doctor Rockit, Matthew Herbert record where the song was called Cameras and Rocks because it was made out of cameras and rocks. And this piece wasn't attempting to hide that fact at all, whereas the entire Schaeffer ideology of acousmatic listening only happens when you conceal the source, and so the French, when they were theorizing this sort of Church of Concrete way, they were all about concealing a source. We never thought that was interesting or worth doing, so we just didn't bother because we thought it was much more interesting to have the information about the source act on the hearing.

It's worth reemphasizing that Matmos didn't know Schaeffer's theories when they started making music. Matmos didn't come up through the world of academic music, where they would have been taught Schaeffer's theories in their music history classes, they came to music concrete as curious listeners, as people who found the rearrangement of recorded sounds interesting. Because of this, Matmos wasn't hung up on trying to create within Schaeffer's philosophical boundaries. Matmos saw Henry and Herbert naming their sources - doors, sighs, cameras, rocks - and put their own spin on that model.

Like Graham Harman said earlier, Schaeffer's philosophy of concealing the source of the sound died out. It was important to him, but not to his students like Henri, or the following generations of musicians like Herbert.

Let's swing back around to Matmos. In another interview I did with Martin, he further opened up Matmos' thinking around sampling and around naming their sources.

> "So, when we initially started, the first two records it's like: guitar, I have a guitar, oh I don't know how to play the guitar, so I'll put this guitar on my lap and play it. "I'm Drew with the sampler, so I'll sample it." So we made a song out of the guitar. It's all guitar. Like there's nothing clever about that. It's a fucking guitar, it's not a good idea."

(Matmos - *Three Guitar Lessons*[35])

"So on that first record, we did it with kooky sounds because whatever - because "oh we'll do it with this kooky sound." We sampled crayfish nerve tissue, because I had a DAT recorded checked out from the Art Institute and we were fucking around and we were at the Exploratorium in San Francisco, and there was a display that someone else made of an amplified crayfish nerve tissue. You pressed a button and it went (Martin imitates sound), how even did that work? I have no fucking clue, someone else did the science amplifying a crayfish nerve tissue, I stood there with a microphone that I borrowed with a DAT machine that I borrowed and then we played it back and sampled it. (Martin imitates sound), and then in the liner notes it said "Amplified Crayfish Nerve Tissue" and people were like "Oh, whoa!" "Oh, you like that?"

(Matmos - Verber[36])

"What we used of these ides for, and we've said this a bunch of times, and we've said it because it's true. They're just ways to just not have to make music about anything. It's just like, it's just the grain of sand around which to grow the pearl. You have to start with something."

"People like it when you say you recorded an evocative sound, a sound that makes you think about sound in the world, that makes you think about the world, that makes you think about your relationship to technology, that you think about your relationship to sound and technology. And then hopefully the sound does it, too. And you could say that that is the grain of sand around which we grew the Matmos pearl."

After the break, we're going to talk about how these objects interact when put next to each other, but before that, let's listen to a few minutes from The Consuming Flame. This is from about 32 minutes into the first disc, you'll hear Nate Nelson on drumset, with Josh Quillen on steel drums.

(Matmos - *Virgin Unspotted*[37])

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[35] Matmos, "Three Guitar Lessons," 1997, track 6 on *Matmos*, Vague Terrain, CD
[36] Matmos, "Verber," 1997, track 9 on *Matmos*, Vague Terrain, CD
[37] Matmos, "Virgin Unspotted," 2020, track 8 on disc one of *The Consuming Flame: Open Exercises in Group Form*, Thrill Jockey, CD

3.2.3: Collage

We've looked at why Matmos names their sound sources, now let's look at how the meaning of those sounds change when they are collaged with other sounds. To do so, let's take a deep dive into collage. To start, I asked Drew and Martin about their first experiences with collage. Let's start with Martin.

> MARTIN: Yea, um, ok so, one time when I was like, seven or something, I had two older brothers and a sister, who were like, like serious center of the Cyclone hippies and they took care of me and my brother one day and then they, in the way of young hippies dropped, us off at someone else's house. And I only have these sort of like shadowy memories of that day, but, I'm pretty sure they were too gay gentlemen, in this sort of early 70s way where they had like super long hair and like big mustaches, and they lived in a Victorian in San Francisco and they had decoupage everywhere. It's like cutting out pictures from magazines but putting them on objects. Like covering your suitcase with keyholes and eyeballs and… So, that afternoon, and it comes to music too, because like my father only listen to classical music. These guys have all these records, we pulled out a record and that record that I pulled out was *Sgt. Pepper's Lonely Hearts Club Band*. Neither of us had any experience or knowledge of at all. And sure enough the cover is a giant collage of all these culturally significant people, and then we put on the record, and then that played! (laughs) And you know I remember pretty clearly being like "whooaaaah" because it has this through line of classical music in that it starts with like the audience and then you know the orchestra warming up and then it does its crazy psychedelic Beatles thing. And we spent this afternoon, like staring at this record cover and listening to the psychedelic pop music that is so wearisomely familiar now.

But, yeah so may- you know maybe collage - first collage, you know could be that. And is that all a lie? It's glued together with likelihoods.

DREW: Is your memory itself a collage?

MARTIN: Yea, exactly.

In Martin's story he encountered collage in three different ways: decoupage on the couple's furniture, collage on the front cover of Sgt. Pepper's Lonely Hearts Club Band, and the collaging of musical styles on the album. Drew's answer takes us to the attic of his childhood home where he encountered his step-father's library.

> "A lot of Grove Press texts by (Jean) Genet, (Samuel) Beckett, Henry Miller, and for me importantly and this getting to music; William S. Burroughs. The first like textual descriptions of gay sex that I read about when I was just hitting puberty was a William S. Burroughs text The Soft Machine, which is also a cut up. So like collage and queer sexuality and experimenting with cassette recorders that's what Boroughs is talking about, and they all kind of arrived simultaneously to my consciousness.
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> Making music really started for me when I made a cassette out of kids records with pause button edits. Where I would use the pause button to make very tiny little snippets of sound - little strings of snippets. And that was directly inspired by Burroughs. It was done in collaboration with my little brother who's 10 years younger. So I would record Matthew saying things, I would record myself reading texts and cut them up, and then I thought, based on reading Burrows, he was describing using multiple tape recorders, and because my mom had a school there was a music room, so I started to do experiments with multiple tapes playing back to a third tape recorder. So you could multitrack, you know. You would make a pause button edit of a voice and put it on one tape, and then make a pause button edit of some music and put it on another tape, and then play them both back to a third tape.
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> I was doing a zine called Conqueror Worm named after the Edgar Allan Poe poem about maggots, so the conqueror worm is a maggot, and the zine was like reviews of punk records and noise records and collages, lots of visual collages. And eventually I knew I wanted to have a cassette come with the Conqueror Worm where every issue would not only have visual collage but sound collage."

For Drew, collage was a way he could make not only music but visual art. By taking snippets from other sources like children's records, texts, his kid brother singing, or visual media, he was able to make something new out of them.

When Drew and Martin started dating, Drew saw a collage Martin had made as a good sign.

DREW: And when I went to date Martin, to his apartment, he had this collage that he had made of gangster faces. That you had like cut up and taped together. That yeah (it) was a cool little collage that you had made, and I was like "oh that's cool you know I like that Martin makes collages as well."

MARTIN: I have no recollection of this

DREW: You don't remember that either?

MARTIN: No.

DREW: Yeah, no you had this cool thing that you had made.

Before we go further with Matmos and collage, let's define collage, trace its history through art, and catch ourselves up on the current thinking about collage. The act of collaging has been around for hundreds of years.[38] Some art historians point to German anatomy texts from the mid-sixteenth century which featured hinged flaps revealing the inner workings of the human body, others cite 19th century volumes of delicately cut and pasted plant clippings.[39] It was only in the early 1900s when artists like Pablo Picasso and Georges Barque began incorporating previously printed paper into their paintings that the term collage was coined.[40] The word collage comes from the French verb *coller*, which means "to glue". Nowadays, collage has found its way into literature, music, film, and with decoupage, everyday life.

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[38] Patrick Elliott, Freya Gowrley, and Yuval Etgar, *Cut and Paste : 400 Years of Collage*. (Edinburgh: National Galleries of Scotland, 2019), 10.
[39] Ibid. 26
[40] Ibid. 9

In the late-1970's, Group Mu, a group of semioticians, philosophers who theorize about the "signs and symbols that deals especially with their function in both artificially constructed and natural languages" likened collage to language.[41] They proposed that like making a collage piece of art, we construct our sentences out of pre-made elements, words. The differing arrangement of these words, like the arrangement of the images in the collage, create different meanings.[42] This led Group Mu to say that the "definition of collage must itself be a collage".[43]

If we consider language a collage, then it is difficult to find something that is not a collage. A car engine is a collage of parts made all over the globe, expertly assembled to work together, a bookshelf is a collage of books picked up along one's life, a quilt is a collage of different fabrics. And as Drew says: "If composition itself is the process of putting things together, then there's no difference between composition and collage."

If we can think of collage as an enormous umbrella under which we can find nearly anything, why talk about collage? If it's so ubiquitous, why is it important? Again, Drew explained it this way.

"Collage as a principal feels banal when it gets tamed and just put on the shelf of art historical techniques, but the sort of radical combinatorial possibility that anything can be transformed by being made adjacent to anything else, and that it becomes like a push pull of forces of what do they do to each other."

Current conversations in the art world are approaching collage from this exact angle. The act of collage isn't novel any more. We now have to ask what happens when these disparate

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[41] "Semiotics", Merriam-Webster.com. https://www.merriam-webster.com/dictionary/semiotics
[42] Elliot, *Cut and Paste,* 35
[43] Ibid. 35

objects are placed next to each other, how they transform one another, how they create a new idea by existing next to each other. In a recent essay for the catalog of *Cut and Paste: 400 Years of Collage* held at the Scottish National Gallery of Modern Art in 2019, art historian Yuval Etgar writes:

> "The essential site of collage's activity lie not in the narrative portrayed by the images used, but in the way these are disrupted when they are cut, placed side by side or piled on top of another. Collage, in other words, is a preoccupation with margins, edges or gaps that stop us from interpreting the pictures as a carrier of information and enable us to see it with fresh eyes. Indeed, the history of collage is implicated in the evolution of the way in which artists employed edges as a potential site of disruptive activity that can criticize, support or accentuate certain aspects of the image bound by them."[44]

Matmos' collages are enlivened by their choice to name their sources. Sounds aren't just sounds, but are indicators of cultural objects and entanglements. When two sounds from different sources, different cultural contexts are collaged together, as Etgar said, the collage enables us to hear the sound with fresh ears. We're going to break down two spots on the album that use the idea of collage in two very different ways.

In the first clip, which runs from 27 minutes and 22 seconds to 31 minutes and 10 seconds on the first disc, we hear voices in five different ways. Let's listen first, then I'll tell you what you heard, then we'll talk about the edges. It's a 4-minute clip, so get comfortable.

(Matmos - *Circle of Swords*[45])

First, we heard the chopped up and rearranged voice of Daveed Diggs from clipping., an experimental hip hop group from Los Angeles. Then we briefly heard the voice of C. Reider, a musician living in Northern Colorado. After that, we heard the recitation of the "Decree to

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[44] Ibid. 48

[45] Matmos, "Circle of Swords," 2020, track 7 on disc one of *The Consuming Flame: Open Exercises in Group Form*, Thrill Jockey, CD

Beloved Mighty Astrea" by Elizabeth Clare Prophet, taken from a recording of her and her followers.[46] Then there is a short section of synthesized speech generated by Andrew Bernstein. Finally we heard a phone call between Boris Johnson and Darius Guppy from 1990, in which they discussed beating up Stuart Collier, a journalist who was investigating and writing about Guppy. Running under all five is Nate Nelson's drumming.

In the progression of the five different uses of voice, each subsequent voice reframes the previous. Drew's razor-sharp edit of Daveed's voice turns words into mangled phonemes that overlap each other. Any semblance of what Daveed was rapping about has been obliterated and turned into a polyphonic stream of rhythmic jump-cuts and stutters. Here, the voice becomes a percussion instrument, playing rhythmically off of Nate's brushes.

In between Daveed and Elizabeth's voices, there is a very brief two-bar interlude made up of close-mic'ed mouth sounds made by C. Reider, chopped and sequenced by Drew. I'll play the last few measures of Daveed going into the C. Reider interlude so you can hear the shifting in timber between them.

The C. Reider interlude shifts the relationship between the voice and drums. Drew weaves C. Reider's non-phonetic mouth sounds into the drum's texture. Whereas Daveed's voice stands apart from the drums, C. Reider's voice becomes an extension of the drums. While C. Reider's section is short, it plays an important role.

In the Daveed texture, the phonemes come irregularly, overlapping and interrupting each other. The drums follow suit, syncopated drum fills and accents eschew the 4/4 grid, opting for a more open interpretation of meter. The regularity of the rhythm in the C. Reider section

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[46] "Mark L. Prophet, Elizabeth Care Prophet Prayers to Bind Fallen Angels," Internet Archive, https://archive.org/details/mark-l.-prophet-elizabeth-care-prophet-prayers-to-bind-fallen-angels/mode/2up

juxtaposes the freeness of the previous, giving us an opportunity to rehear Daveed's syncopation in contrast with C. Reider's regularity.

The C. Reider section has one more important role in this collage. Both Daveed's and Elizabeth's sections are energetic. Daveed's section draws its energy from the quick, syncopated edits, while Elizabeth's section draws its energy from the relentless pace of the chanting. C. Reider's section creates a lower energy, more intimate, interlude between the two.

In this section, we're able to make out the majority of the words Elizabeth Clare Prophet is saying, though following full phrases or sentences is difficult. This could be due to a few factors, first her voice is upfront, while the voices of her congregation create a sort-of human reverb around her voice. Another reason may be the way the pacing has been edited to fit the 99bpm. The editing gives it a slightly stilted, unnatural feeling that pushes and pulls the flow of the recitation.

Putting Daveed next to Elizabeth sets up a juxtaposition that creates more questions than it does answers. What's the difference between a rapper and a spiritual leader? What is different between rapping along with your favorite song and chanting along with a prayer? What about Matmos makes their purview large enough to encompass both experimental hip-hop and new-age spirituality?

Elizabeth's recitation continues until its flow is abruptly frozen on the word "brightest" from the line "Circle and Sword of brightest blue". The echo of "brightest" fades as the next voice comes in - a synthesized voice made by Andrew Bernstein of the band Horse Lords. It pulls us back into the rapid phonemic-level chops of Daveed and C. Reider. In this instance the phonemes are heard panned hard left and hard right. We can hear it as two speech synthesizers

having a broken conversation in broken language, a shift away from Elizabeth's full sentences, spoken by a group as a single voice.

The final use of voice, the recording of a phone call between Boris Johnson and Darius Guppy, is first presented as a rhythmic element. A short sample from the phone call is looped to create a constant pulse which continues under the nearly unedited phone call audio. During the phone call, we hear crowd noises - cheers, laughs - mixed in the background. The once private phone call is reframed by the crowd noises as a public event. The crowd cheers sound mocking, asking the question if people knew Johnson was willing to sign-off on Guppy beating up a reporter, why would they cheer for him? Why would they elect him as Prime Minister? What does it say about the crowd who cheers for a politician like Johnson?

While Drew created the elements of this section, it was Martin who created the arrangement of the elements. Drew and Martin work with audio in very different ways. Drew burrows into the details of a sound and creates rhythmic patchworks out of small samples, while Martin paints with a broader brush, letting longer takes, longer expanses of audio play out with more subtle interventions. Here is Martin discussing his work on this section:

Another spot that uses collage in a different way comes from the first 57 seconds of the first disc. Here it is in full:

(Matmos - *Cold Open*[47])

These first 57 seconds act as a thesis statement for the album. They set up an expectation for what the album is going to be - perpetually moving forward, with each new idea growing out of, and replacing the previous. Let's dissect the first 8 measures, then look at the rest of the

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[47] Matmos, "Cold Open," 2020, track 1 on disc one of *The Consuming Flame: Open Exercises in Group Form*, Thrill Jockey, CD

phrase. The first 8 measures give us brief moments of impacts - usually kick drums on a beat - that hem up wobbling, oozing tones. If we cut the phrase at these impact points, we end up with five smaller phrases. Let's listen to the first of these smaller phrases. I'll play it twice, with a brief pause in between each hearing.

This first gesture has a pretty clear trajectory. The sound descends, a lower sound develops then glides down as an impact happens, then slides up after the impact, ending with a zip of higher frequencies just as the gesture ends.

Let's move to the next smaller phrase. I'll again play this one twice then analyze it.This phrase is more rhythmic, if I play it again for you with a click at 99 bpm, you'll hear how each gesture lines up with the click.

The rigidity of the timing of this phrase refocuses the momentum created by the gesture in the first phrase. Here the jump-cuts every few beats create a predictable unpredictability. We know we will get a new texture, but we do not know what it will be. Here it is again with out the click track.

Now let's listen to the first two phrases back to back to hear these two micro worlds of sound juxtaposed up against each other. I'll again play it twice with a short pause in between.

The juxtaposition of the two phrases highlight the distinct qualities of each phrase. The continuous fluidity and swooping gesture of the first tees up the rhythmic choppiness of the second. The brief pause at the beginning of the second jolts us into a new sonic world and prepares us for the following fragments of sound.

Let's jump to the next phrase. After 8 measures of sounds being interrupted and replaced with other sounds, we enter a new section where a constant kick and snare pattern is developed. The pattern creates a grid. Sounds from the beginning reappear in a similar way - replacing each

other periodically. After a few measures, the sounds begin to overlap each other, creating a mural of sounds. Let's listen to the first 8 measures of this section, listen for the beat, then the progression from sounds replacing each other, to sounds overlapping each other.

In the next 4 measures, the grid becomes less reliable. Holes appear where kicks should be, then the snare briefly drops out. With the kick and snare gone, we are suspended in a swirling mixture of textures, some that we heard in the opening, and some that were introduced in the previous eight measures. Matmos arranged the textures so that the beginnings and endings of each texture are difficult to distinguish, a contrast to the intro's hard cuts between textures.

The next four measures, the last we'll examine in this section, uses the different collaging techniques we've seen so far. Listen for juxtaposition, overlapping, and a grid that feels solid, then is interrupted, then reappears.

To end this section, let's listen to the phrase we were just talking about again, then let's listen to the whole introduction.

That's all for this episode of Instrumental Objects. In our final episode, we'll look at creativity through the lens of object-oriented ontology and see where the opportunity for creativity lies.

3.3 Episode 3

Welcome to the third, and final, episode of Instrumental Objects, the podcast that examines the creative practice of Baltimore-based avant-electronic duo Matmos. I'm your host Brooks Frederickson.

In the previous episode, we examined the idea of naming a sound's source and the impact that has on the listener's experience. We discussed how Matmos names their sources and in doing

so allows their listeners to connect a sound's source, and all of the sound's cultural entanglements, to their listening.

In this episode, I'm going to lay out an argument about creativity and the affordances of digital audio. I'll connect that argument to the modern strain of philosophy called Object Oriented Ontology. Then we'll end with a look at Matmos discovering a new idea while working on The Consuming Flame, the album at the center of this podcast.

3.3.1: What is an object?

In the first episode we began with the idea that every thing is an object, and that every object has the potential to make a sound. We then dove deep into an object's sound making potential, but didn't really define what an object is.

To define objects, let's look to Graham Harman, a philosopher we heard from briefly in the previous episode. Harman's book *Object-Oriented Ontology: A New Theory of Everything* lays out his ideas around objects, their position in philosophy, and their relations with other objects. In the book, he defines an object as "anything that cannot be entirely reduced either to the components of which it is made or to the effects that it has on other things."[48] Later in the book, he simplifies the language, saying "an object is *more than its pieces* and *less than its effects*."[49]

Another way to understand this is to think of the knowledge we have of objects. We generally have two knowledges of an object: what it is made of and what it does. OOO believes that objects have a third capacity, one that is unknowable, one that is always receding away from us. Harman uses the example of water, we know water is H_20 and that it is a thirst-quencher, but

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[48] Graham Harman, *Object-Oriented Ontology*, (London: Pelican Books, 2018), 43
[49] Ibid. 53

there's more to water than that. A lot more. And as close as we study water and its effects on us and on the world, there's still more about it that we don't know. There's a center that we can never get to because objects are too deep, too complex to ever fully know.

This broad definition opens the door for almost anything to be considered an object - real or imaginary, tangible or intangible, permanent or fleeting. In Object-Oriented Ontology, or OOO, an earthquake is an object, a fishing lure is an object, a romantic relationship is an object, the United States of America is an object, a bad mood is an object, this podcast, which exists as digital 0's and 1's and is delivered to you via sound waves, is an object.

So why are we talking about OOO? What does this have to do with Matmos? I first became aware of OOO through an article Drew wrote for the journal *O-Zone: a journal of object-oriented studies*. The article, titled "What Is a Digital Sound Object?"[50] connects OOO's ideas of objects being in relation with another Object-oriented endeavor: computer programming. The ears of the computer programmers may have perked up at the Object-Oriented part of OOO. Many coding languages are considered Object-Oriented, including C++, Java, and most importantly for us, Max/MSP.

Max/MSP, or Max for short, is a visual programming language where the user creates objects, little rectangles with specific functions, which they can connect to other objects via virtual patchcords. Objects are connected together to create patches, systems that can generate, effect, analyze, and mutate sound, visuals, and MIDI data. Each object is an encapsulation of a block of code. Objects might be a filter, a list generator, a math operation, or an audio effect. The objects are a case of data hiding.[51] Users deploy the objects but cannot access the underlying code

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[50] Drew Daniel, "What is a Digital Sound Object?" *O-Zone: A Journal of Object-Oriented Studies* 1 (2014): 84
[51] Ibid. 87

that performs the object's function. Data hiding limits the user's access in exchange for stability of the system. Users are able to encapsulate a system of objects into a new object and deploy that object in other patches. Because the systems are built out of small objects that can be connected in infinite ways, Max patches are infinitely flexible, and can do anything from generate MIDI data to control complex audio video installations.

In his article, Drew sums up the connection between Object-Oriented Ontology and Object-Oriented Programming by saying,

"they share a structurally enabling metaphor common to both OO software design and OO philosophy: the object as "black box" which can be connected in ecological webs of relay with other objects, but which remains inaccessible in its interiority."[52]

As we said earlier, Harman believes objects are more than what they are made of and more than what they do, and that objects in relation can never fully know each other. Drew argues that objects in Max function similarly. They are more than the code they are made of and the function they provide within a patch, and the other objects in relation with them can only access the information they pass to and from each other but cannot access the interior of each other.

An issue Drew has with OOO is the idea of withdrawal. He laid out his objection in an interview I conducted with him.

> Harman believes in this idea there's some kind of withdrawal there's some side we can't access there's some mystical core that is inaccessible to us I always found that part with Harman, it's the sort of axiomatic thing that he just asserts but I don't see why it should be true. So for those reasons I see a distinction but you know it's also like I'm not a metaphysician you know I am a critic of art and an art maker I'm interested in the intellectual history that surrounds the way philosophy changes over time and the consequences of that for culture but I'm not someone who is committed to a particular metaphysical picture.

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[52] Ibid. 86

Axiomatic or not, I agree with Harman's idea that there is always something more, something hidden, something inaccessible in every object. In a lecture, Harman describes it this way:

> "What about objects interacting with each other? Objects interacting with each other also do not make contact with the full totality of each other. When fire burns cotton the fire does not make contact with all the properties of the cotton. The fire is relatively stupid, just as humans are. Humans look at a cotton ball we hold it in our hands, we are not making contact with all features of the cotton ball. When fire burns the cotton ball, well the fire may not be alive as we are, the fire may not be conscious as we are, but the fire is still only touching certain features of the cotton, the ones that are relevant to its own existence. So objects distort each other as well, objects translate each other as well, it's not just humans who do this."[53]

In a sense, we can only know the properties of an object that we can access. We can't access cotton's flammability, but we can access its density, its softness. Fire can't access its softness but can access its flammability. This idea of withdrawal and relationships is going to come more into play in the next section. Let's leave this section with some music from the Matmos track Polychord from their album Supreme Balloon. The chords you'll hear were generated by the Max patch Drew references in his article about OOO. He calls the patch the Just Intonation Autoharp.[54]

(Matmos - *Polychord*[55])

3.3.2: Revolutions and Relations

In the first episode, there was a technical interlude explaining the process of recording and playing back audio. Nearly all mediums work in the same way, audio is translated into some

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[53] Harman, "Graham Harman: What is an Object? | Föreläsning" YouTube, 2015, 30:58 https://www.youtube.com/watch?v=9eiv-rQw1lc
[54] Daniel, "What is a Digital Sound Object?" 89.
[55] Matmos, "Polychord," 2008, track 2 on *Supreme Balloon*, Matador, CD

type of data. For vinyl records, sound is encoded into grooves cut into the vinyl, for tape the audio is converted into a complex alignment of magnetic particles, and for digital mediums, CDs, DVD, and digital files, the audio is encoded into strings of 0s and 1s. In every case, the data is then decoded by a playback head, which takes the data and re-converts it to an electronic signal that is sent to speakers that then reproduce the sound.

I want to spend this part of this episode interrogating the relationship between the data and the playback head. At the center of the relationship is motion. Consider a cassette tape. Inside a cassette tape is a length of tape that has the whole recording laid out from start to finish in one unbroken line. In order to playback the sound, either the playback head has to traverse the length of tape, or the tape has to run over the playback head. The practical choice is to coil the tape into a tight spiral on one spool then run it over a playback head.

Of course, there are inventors and artists who reimagined this relationship between tape and playback head. One example is Laurie Anderson's Tape Bow Violin. The instrument is a standard violin, painted black, with a playback head installed where the bridge would normally be. There are no strings on the instrument. The traditional violin bow is replaced with a metal rod, which holds taught a length of cassette tape. Here's an excerpt from a video produced by the Hirshhorn Museum in Washington, D.C. of Laurie Anderson describing the instrument and its creation:

> This is the Tape Bow Violin made in 1977. And the idea with this violin was, came from editing, really. So instead of strings it has a playback head that I ripped off an otherwise perfectly good Revox Tape Machine. And, instead of horsehair on the bow, there's a strip of pre-recorded audio tape. So you play the tape back and forth over the head and it creates audio palindromes. Now, in spelling of course, God is always Dog backwards and so on. When you try to reverse audio, it's unpredictable. For example, the word Say is Yes backwards, so you can play "Say Yes, Say Yes, Say Yes" and you can create all of these kind of songs out of the raw materials, the sounds of words going forwards, then going backwards.

> It really came out of the process of recording. So you're sitting there, you're playing the violin, lets' say. Then you stop the tape machine, if you're engineering yourself like I did, then you take the tape reels and you rock the reels over the head to find the edit point. And so pretty soon I was playing / editing / playing / editing and that same gesture running something over another surface: tape over a head, horsehair over strings, began to kind of rhyme. So that was the inspiration of the tape bow violin, designed with Bob Belecki, who I worked with on many projects on sound around that time and still do.[56]

In the relationship between tape and playback head, Laurie Anderson reimagined the assumption that the tape would run over the playback head at a consistent speed and in a consistent direction. By using her own arm to drive the tape, rather than the tape machine's calibrated motor, Laurie Anderson was able to make creative decisions about the speed and direction in which the tape is played. A single sound recorded onto a length of tape becomes an opportunity to explore the resulting sounds when the tape is run over the playback head in different directions and at different speeds.

Let's view the interaction between the tape and the playback head through the lens of OOO. But, before we do, I want to introduce one more of OOO's core concepts, the idea of the quadruple object. In OOO, there are Real Objects and Sensual Objects. Real objects exist, we think, but we cannot access them. They are constantly withdrawing. What we can access are sensual objects. Instead of the idea of a table, we interact with the table as a sensual object. The other two objects in the quadruple object are Real Qualities and Sensual Qualities. Real Qualities are what make a thing a thing. A table has qualities that make it different from a birthday cake.

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[56] "Designing Instruments - Hirshhorn Museum and Sculpture Garden | Smithsonian," Hirshhorn Museum and Sculpture Garden | Smithsonian, February 28, 2022, https://hirshhorn.si.edu/exhibitions/designing-instruments/.

The Sensual Qualities of an object are what we can sense and derive information from. We can see that the table is glass, we can feel that the table is off-balance when it wobbles.

So, back to the playback head and tape relationship. If we consider the playback head to be a real object in relation with the tape, the playback head can only access certain properties of the tape. It is agnostic to the content of the tape, to the speed and direction at which the tape is run over it. It simply reads what it can read and translates it into an electric current. In that way, the playback head, the Real Object, only accesses the arrangement of magnetic particles on the tape, the tape's Sensual Qualities. If we flip the relationship, the tape becomes the Real Object, and it only interacts with the smoothness of the playback head and cannot access the fact that the playback head has any other function.

I want to look at the interaction between the tape and the playback head through a different lens. Let's consider how Laurie Anderson used her training as a violinist to reimagine the relationship between the tape and the playback head. When she said:

"And so pretty soon I was playing / editing / playing / editing and that same gesture running something over another surface: tape over a head, horsehair over strings, began to kind of rhyme."

Now, Laurie Anderson is a creative thinker. Her brain is hardwired to see the creative connections between things. I want to posit that after noticing the similarities in the gestures, she mapped the affordances of the relationship between bow and string onto the relationship between the tape and the playback head. When the tape is in the machine, the user has limited options of how they can interact with it. They can play it at a normal speed, they can rewind or fast forward at speeds faster than normal, or they can stop the machine and jog the tape manually. By moving

the playback head on to the violin and the tape onto the bow, Laurie Anderson is creating a situation that has similar affordances as her violin playing.

In creating a new situation, she unlocks new affordances that generate new possibilities for creativity. The tape is now freed from the machine, and she is in control of its motion across the playback head.

In the next section, we're going to hear an example of this exact situation happening in real-time by Martin while working on The Consuming Flame. To play us out, here is an excerpt from Laurie Anderson's Tape Bow Trio (Say Yes) from 1978.

(Laurie Anderson - *Tape Bow Trio (Say Yes)*[57])

3.3.3: Digits Controlling Digits

So far in this episode we've talked about the relationship between the recording data and the playback head as they pertain to analog mediums. If you remember from the first episode, Matmos started when Martin invited Drew to his house to see his computer where they could record music. Even though, as Martin told me in an interview, "That was sort of a lie. I was like, "I think…I have a computer, I think I know how to record sound on it." To understand why this jump to digital is so important, let's have our final, Technical Interlude.

Digitizing audio is predicated on sampling. For analog mediums, the system is continuous. As a signal comes in, it is written onto the medium without interruption or segmentation. When recording digital audio, the signal comes in and must be converted from

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[57] Laurie Anderson, "Tape Bow Trio (Say Yes)," 2002, track 1 on *The Record of the Time*, Musée d'Art Contemporain de Lyon, CD

analog to digital. This conversion is done by a chip called an ADC, analog to digital converter, through sampling: measuring the amplitude of the signal at regular intervals, then storing those values. Most modern ADCs sample sound at 44,100 or 48,000 samples per second. Some professional studios and softwares work with sample rates as high as 96,000 or 192,000 samples per second.

The samples are stored as audio files. Software on the computer access the data within the files and sends it to the computer's digital to analog converter, or DAC. The DAC then translates and interpolates the digital samples into an electronic signal that can be sent to speakers. ADCs and DACs are in any device that needs to convert analog and digital audio: phones, laptops, tablets, wireless headphones, or digital cameras.

For this episode, the big difference between digital and analog sound is the transition from a physical medium and physical playback head to a digital system of data moving from one virtual location to another.

Peter Manning's book *Electronic and Computer Music* offers an insightful look into the history and technical developments of music made with electronics and computers. Richard G. Lyon's book *Understanding Digital Signal Processing* offers a highly technical, yet accessible look into the mathematical fundamentals of digital signal processing.

With the jump to digital storage and playback, musicians can work with audio non-linearly. In analog systems, because the medium moved past the playback head, there was an inherent sense of linearity. Even with scratching on vinyl or manipulating tape, there is always a moment of transition when moving non-linearly. In digital systems, softwares can read data from any moment in the audio file instantly. Musicians are no longer bound by the physical restrictions of medium and playback head.

Digital softwares provide new opportunities to creatively rethink audio playback. Some softwares include randomizing parameters that can jump through an audio file, picking out random bits of sounds. Some softwares can sit in one moment of sound, freezing a sound in time. The software we're going to investigate is an iPad app called iVoxel.

iVoxel's tagline is: "The Singing Vocoder".[58] A vocoder is an audio device that breaks an incoming audio signal into narrow frequency bands. To show you what that sounds like, I'll take this recording of myself, and break it into frequency bands. Here is the lowest frequency band, then higher, and higher, and higher. A vocoder takes the amount of energy in each band and applies that to the corresponding frequencies of another sound.

What makes iVoxel unique is its interface. The sound file is shown graphically in a box across the top half of the iPad's screen. When users place their fingers on the file, iVoxel vocodes that particular moment of sound. If users move their fingers left or right, iVoxel follows their movements, vocoding the sound along with their gestures. Here is an example of me moving my fingers across the soundfile used earlier.

If users move their fingers higher or lower on the display, iVoxel repitches the recording. Moving toward the top of the screen causes the pitch to rise, moving towards the bottom of the screen causes the pitch to lower.

The forward / backwards and pitch parameters are similar to Laurie Anderson's Tapebow Violin. What iVoxel, and digital audio in general, offer is the ability to jump anywhere in time in the recording. Users of iVoxel can place their finger anywhere along the time axis and jump to any other point along the axis without having to rewind tape or move a needle.

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[58] http://www.virsyn.net, "VirSyn," n.d., https://virsyn.net/index.html.

Now that you know the instrument, let's hear how Martin puts it to use. The audio we are going to hear was recorded on November 23rd, 2019 in Matmos' basement home studio. Drew had been working on the basic structure of the track Cold Open, one of the tracks we looked at in the second episode. He thought it would be interesting to have Martin make another layer using iVoxel. In the audio, we'll start with Martin warming up on iVoxel, then Drew explaining the process, leading into Martin's first take. In this, you'll hear Drew say the word "comp". Comp means he's going to take Martin's improvisation and edit it by keeping the best ideas. We'll hear a bit of Martin's first take, then jump to the end of the take. A quick note, Drew and Martin had had an argument the day before and some tension was present during the session.

DREW: I just think it would interact well with my bassline

MARTIN: Well, whatever. I don't know what I'm suppose to be doing

DREW: Alright, so I'll just play and you play along and I'll comp it later

DREW: Cool, um, do you have a more, like, wild squiggle you could do along with the Mothcock at the end part?

This take didn't yield any useful material. Martin hadn't found a sound that was working for him, and Drew didn't hear anything that grabbed him. Before the second take, Martin found a better sound and took a few minutes to explore it.

We'll hear Martin warming up, Drew giving some instruction, then the beginning of the second take. I'm going to jump to the middle of the take where Martin discovers a new possibility which changes the direction of the take, and the vibe in the room.

DREW: Yeah, I think you're ready now. What to go for it again? Ready?

MARTIN: Um, yeah.

MARTIN: I just discovered something. That I didn't know before.

DREW: Yeah!

MARTIN: That you can go off the chart. Like:

DREW: Yeah, give me more of that.

DREW: Dude that was fucking sick.

MARTIN: Yeah, in all that time I've been playing that in the opera, I didn't realize I could go off, off the fucking (chart)

In the second take, Martin discovers that he can explore ranges higher or lower than he previously thought by moving his finger outside the chart that displays the audio file. This discovery yields new textures and gestures that reinvigorates the session.

Let's examine this through the lens of OOO and as a continuation of the discussion we were having around Laurie Anderson's Tapebow Violin. Ultimately iVoxel is an intermediary between Martin and the sound file. In OOO we discussed how objects in relation could only access part of each other. In this case, Martin, iVoxel, and the audio file are in relation with each other. Through iVoxel, Martin has access to the sound file, but he can only access it through the ways in which iVoxel provides. Like the tape and playback head in Laurie Anderson's case, iVoxel's limits set conditions within which Martin can create. When Martin realized the limitations regarding how he could control the pitch of the file were wider than what he had thought, he found new inspiration. After the second take, Matmos discussed how to use these new textures.

DREW: So can we do a pass where you just explore the up and down movement along to the rhythm? Give me some arcs of in and out?

MARTIN: Well it's only, it's only meaningful if you can hear that it's also speech. I mean you can hold your finger in the same place and go (plays iVoxel)

DREW: But see that sound cool as like a synth that's almost speech. Like I'm saying, that part is interesting.

MARTIN: I guess it has these vocal formants

DREW: Yeah.

This new affordance changed the direction, and outcome, of the session. It also changed Martin's relationship with iVoxel, the digital file, and ultimately the sound. It afforded him new ways of experiencing the audio file. Hearing the vowels frozen in time, rising to pure whistling tones, before descending into percussive pulses. Pitch becomes time, voice becomes sound.

In the third take, Martin further explored the textures. Drew comped this take into the final version heard on the record. Let's listen to a few minutes of this third take before wrapping up the episode.

Like Laurie Anderson, when Martin found a new way to interact with a sound, he found a new opportunity to create. And, to play on the title of one of Matmos' albums: A Chance to Cut is a Chance to Cure, I'll say A Chance to Choose is a Chance to Create.

To wrap up this podcast let's consider the ways we've thought about objects over the past three episodes. In the first episode objects became instruments. The sounds produced by machines around the Futurists led to a rethinking of what objects could be considered instruments. Matmos Continued this way of understanding the world around them with their album Ultimate Care II. We then moved away from machines and considered what Pierre Shaffer called sound objects and considered how by varying a sound one could reveal its essential qualities. We saw an example of this in how Matmos worked with the submission from Judith Zissman. Drew created multiple layers from one sound and in doing so revealed some of the sound's essential qualities.

In the second episode we looked at how the generations of composers After Schaffer kept his way of working with sound but questioned his idea of acousmatic listening. Matmos followed the lead of composers like Pierre Henry and Matthew Herbert in explicitly naming where their sounds came from. We then considered how these sounds interacted with each other when collaged. We ended the episode by looking at the collage techniques used in two sections from the record.

Finally, in this episode we introduced the idea of seeing the objects in the world around us through object oriented ontology. We used that lens to look at the work of Laurie Anderson and to dissect a moment in the recording studio of Martin drawing inspiration from the creative parameters of the instrument he was using.

The takeaway from all this is that objects appear in varied ways within Matmos' creative practice. They range from physical objects to aural objects to complex arrangements of overlapping objects from disparate sources. In each case the way that Matmos interacts with an object is connected to a historical lineage of art making and music making. Existing beneath their reputation for sampling strange objects is an artistic practice that makes their listeners

"…think about sound in the world, that makes you think about the world, that makes you think about your relationship to technology, that you think about your relationship to sound and technology."

4. Conclusion

In conclusion, working on these two projects allowed me to grow my skills as a researcher and composer. Observing Matmos while they worked on *The Consuming Flame*, and having the opportunity to work with Yarn/Wire over multiple recording sessions, has changed how I approach making and understanding music. I am grateful to have been able to work on both projects and am excited to fold the new ways of working into future projects.

Appendix A - Ableton Session Screenshots

Figure A.1 - Ableton Screenshot of Setting

Figure A.2 - Ableton Screenshot of Backstitch

Figure A.3 - Ableton Screenshot of Piecing

Figure A.4 - Ableton Screenshot of Walking Foot

Figure A.5 - Ableton Screenshot of Mitered Corners

Figure A.6 - Ableton Screenshot of Loft

Figure A.7 - Ableton Screenshot of Grain

Figure A.8 - Ableton Screenshot of Freemotion

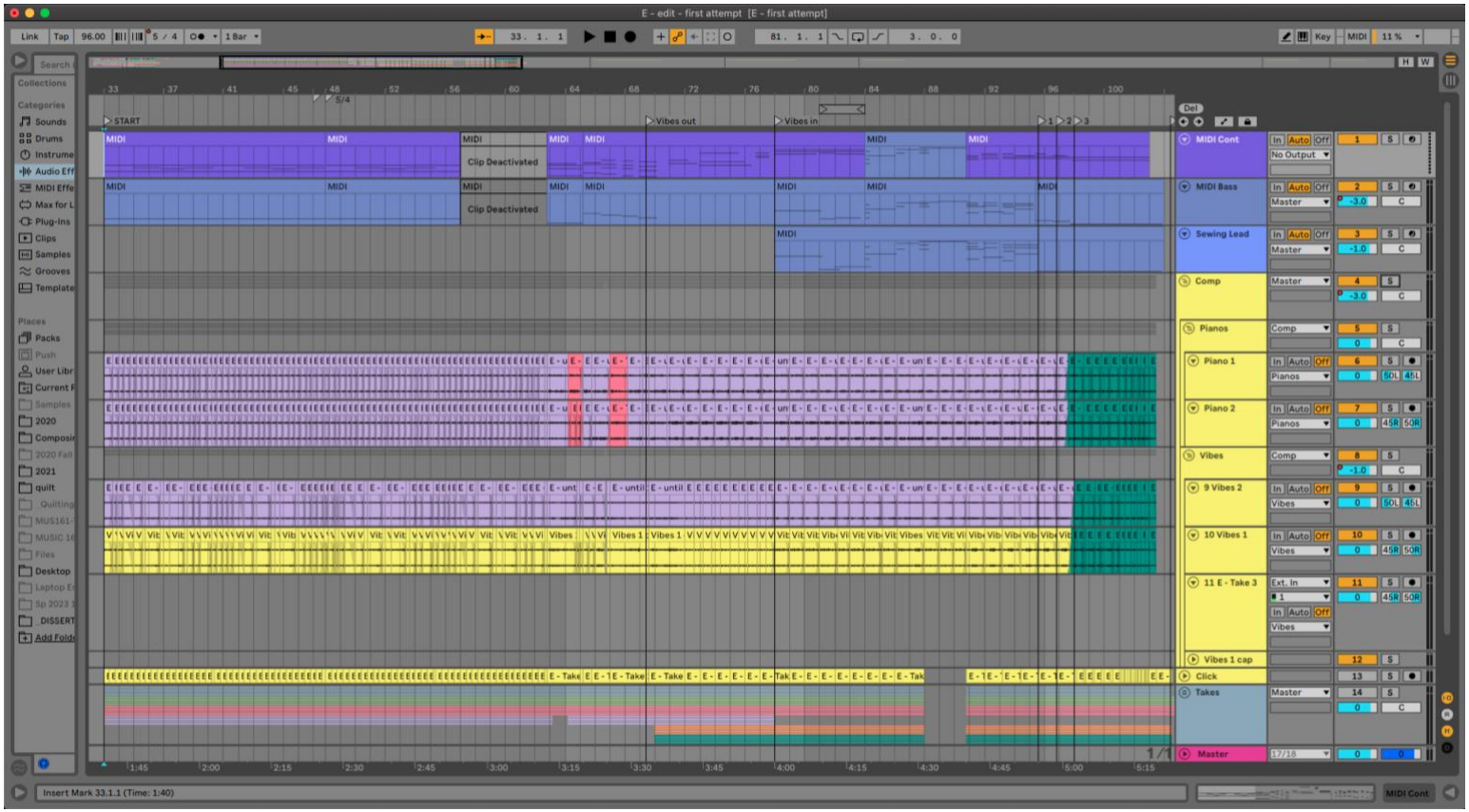


Figure A.1 - Ableton Screenshot of Setting

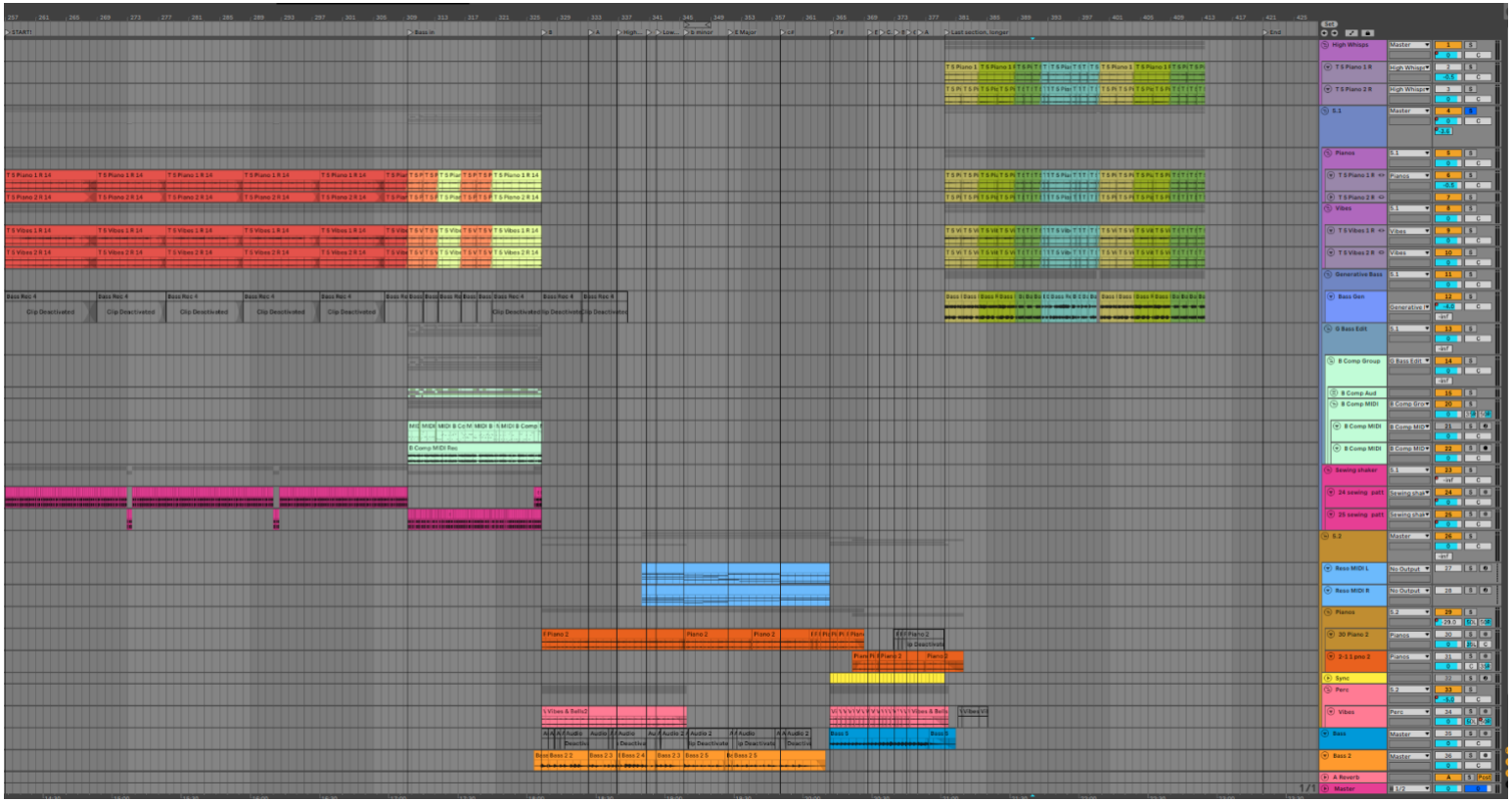


Figure A.2 - Ableton Screenshot of Backstitch

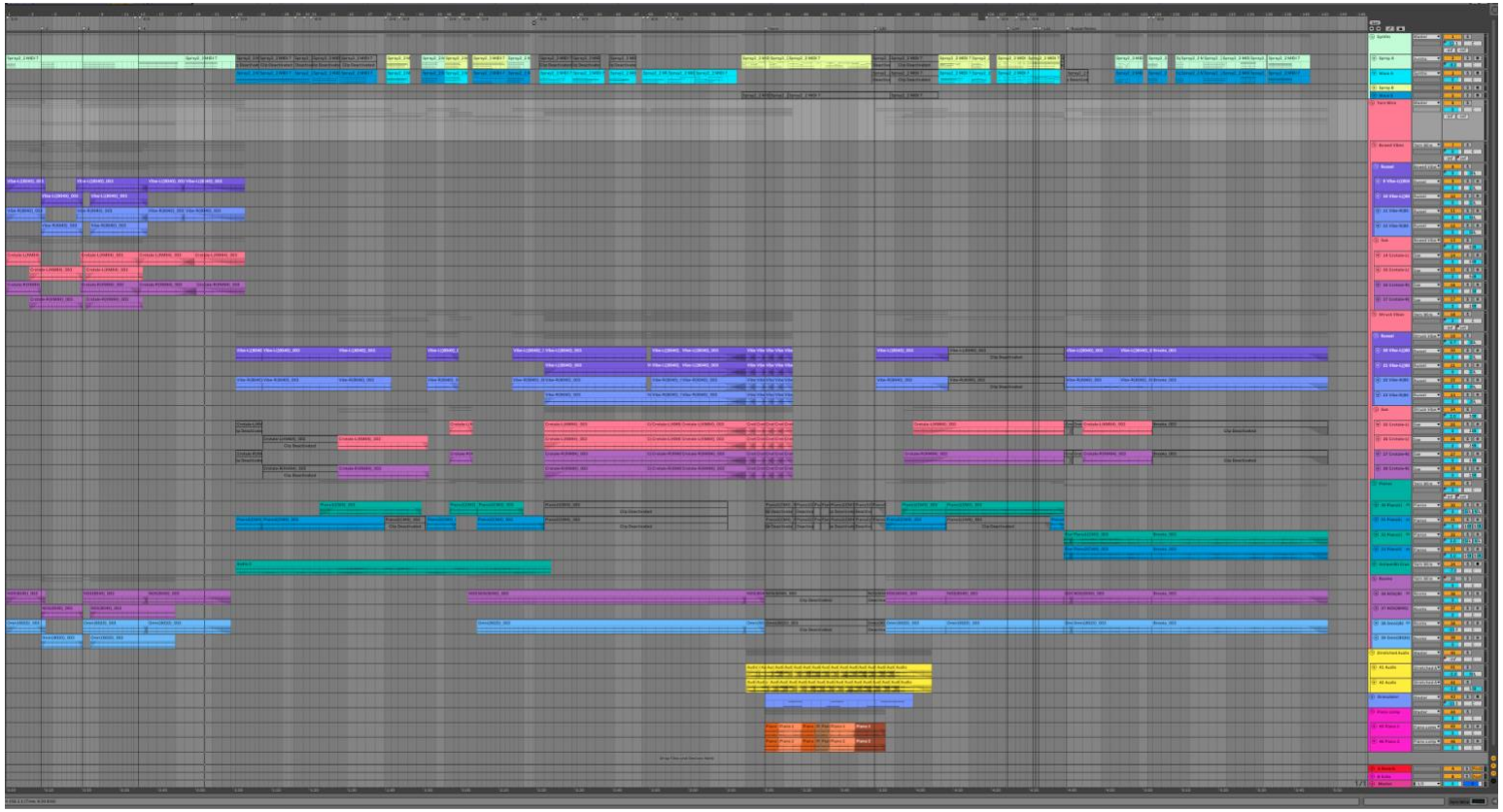


Figure A.3 - Ableton Screenshot of Piecing

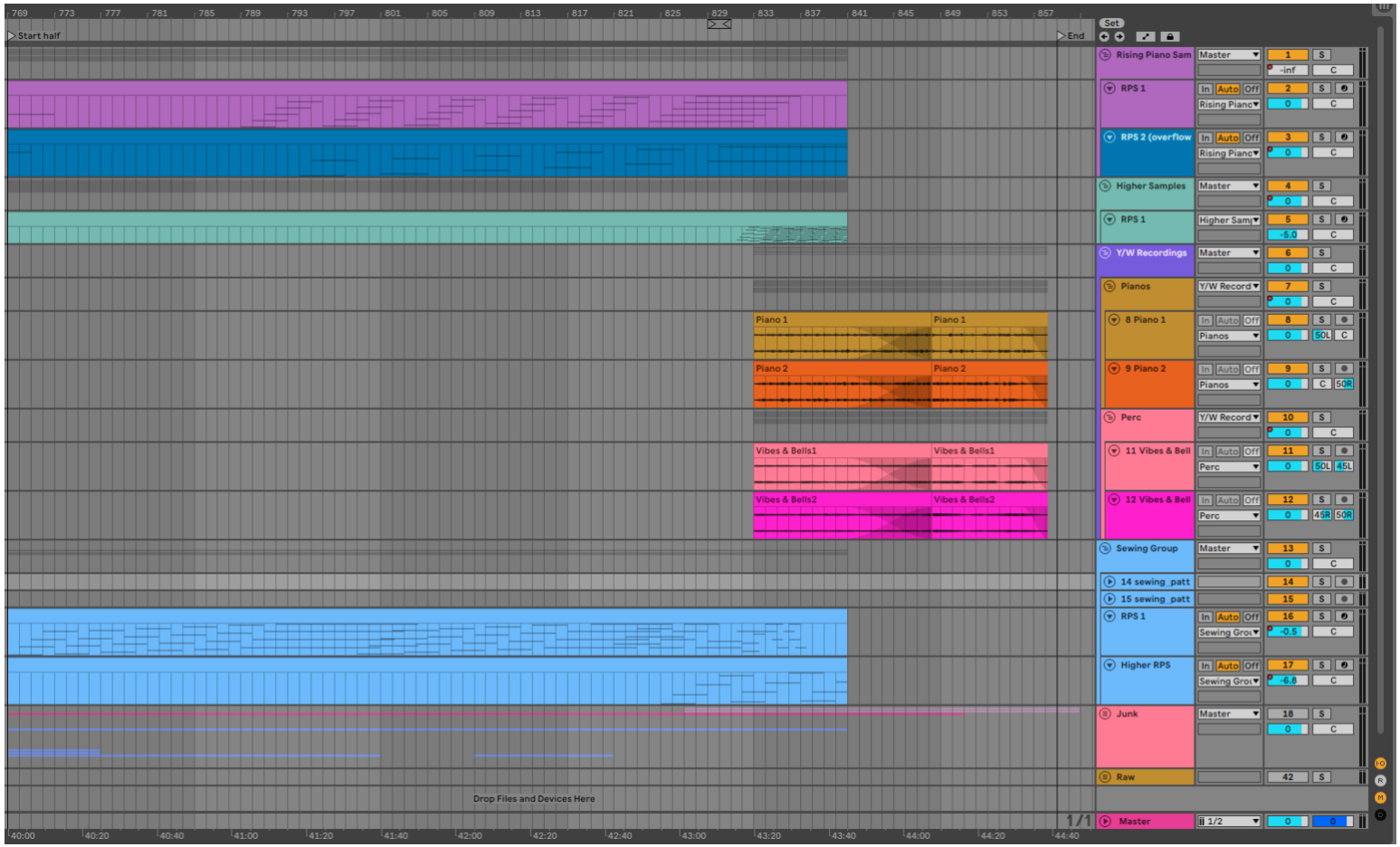


Figure A.4 - Ableton Screenshot of Walking Foot

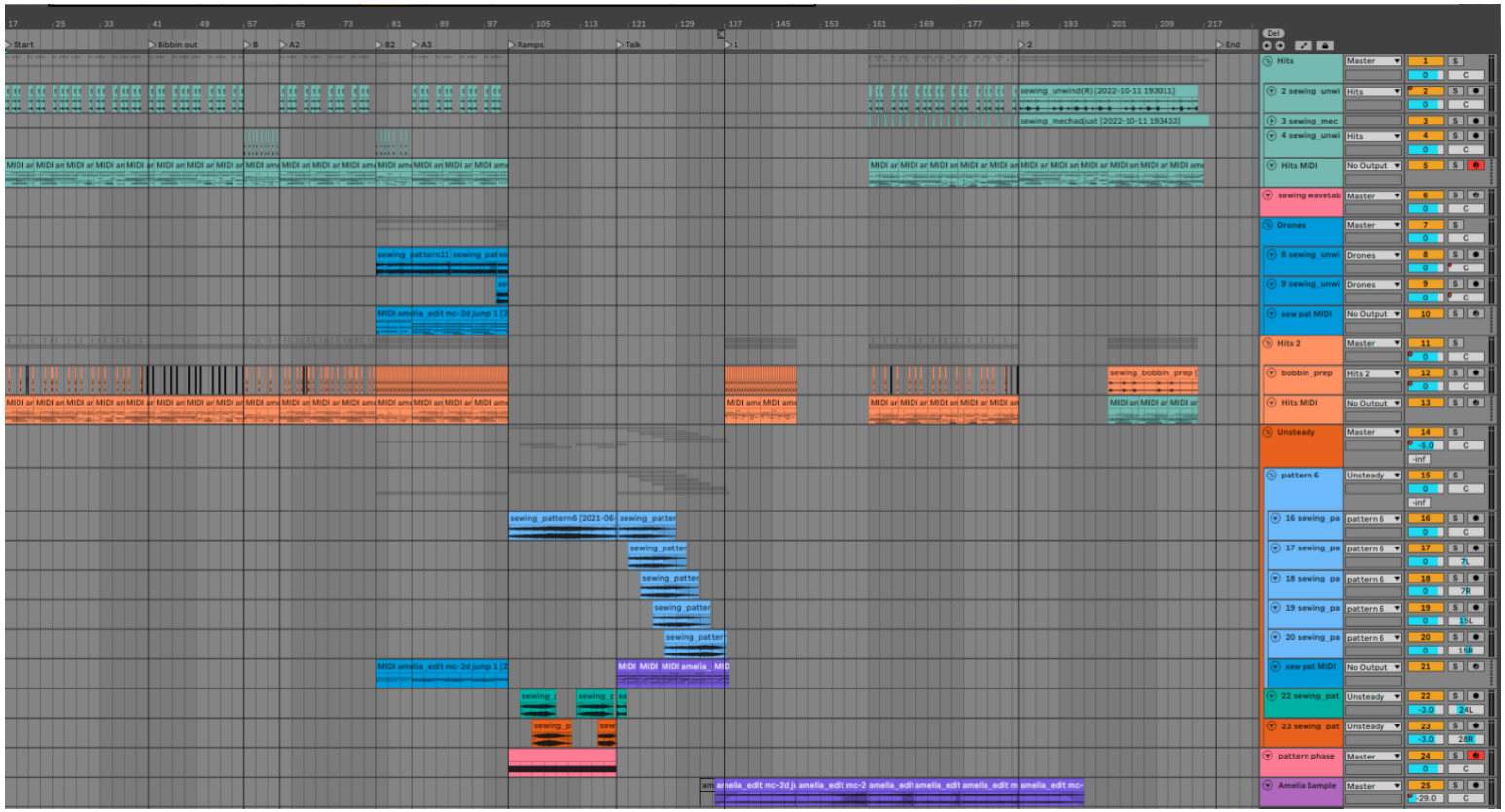


Figure A.5 - Ableton Screenshot of Mitered Corners

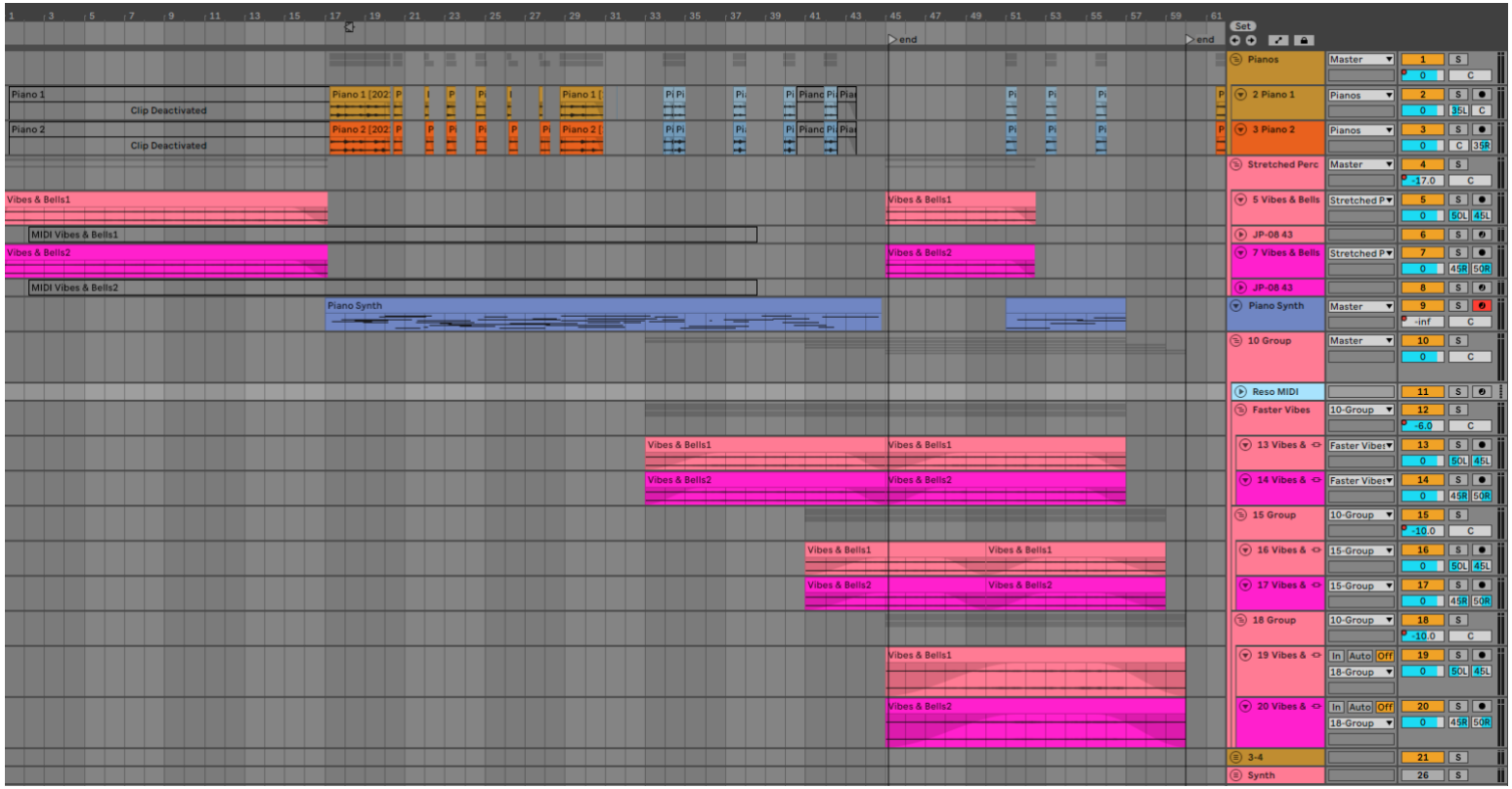


Figure A.6 - Ableton Screenshot of Loft

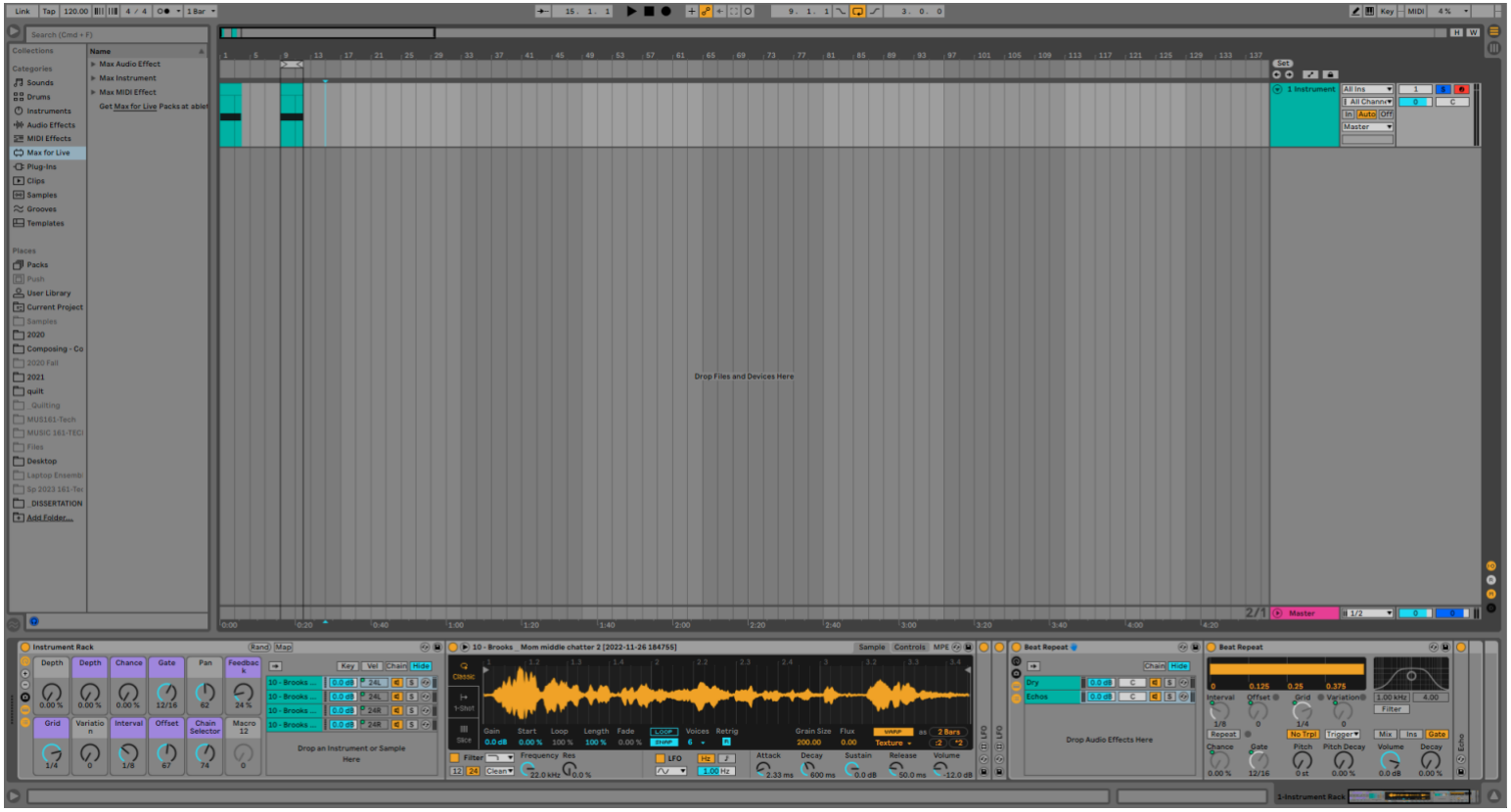


Figure A.7 - Ableton Screenshot of Grain

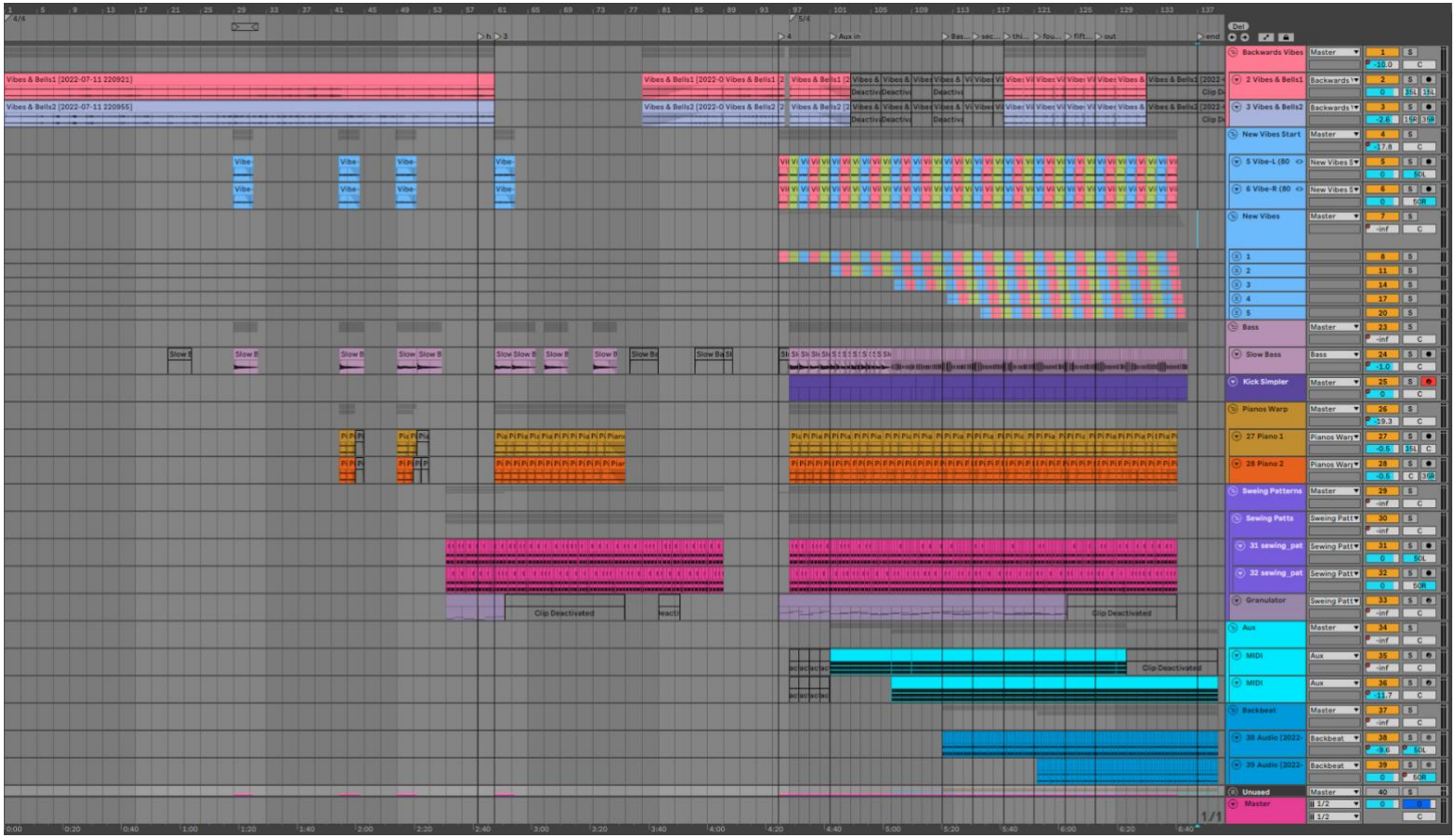


Figure A.8 - Ableton Screenshot of Freemotion

Appendix B - Yarn/Wire Recording Session Scores

Figure B.1 - Score for Quilt Analysis - E

Figure B.2 - Yarn/Wire Improvisation Instructions

Figure B.3 - Score for Synth and Duos

Figure B.4 - Score for Piano Insert

Figure B.5 - Score for Quilt Analysis - A

Figure B.6 - Amelia Score

Figure B.7 - Score for Quilt Analysis - A, Vibraphones Transposed

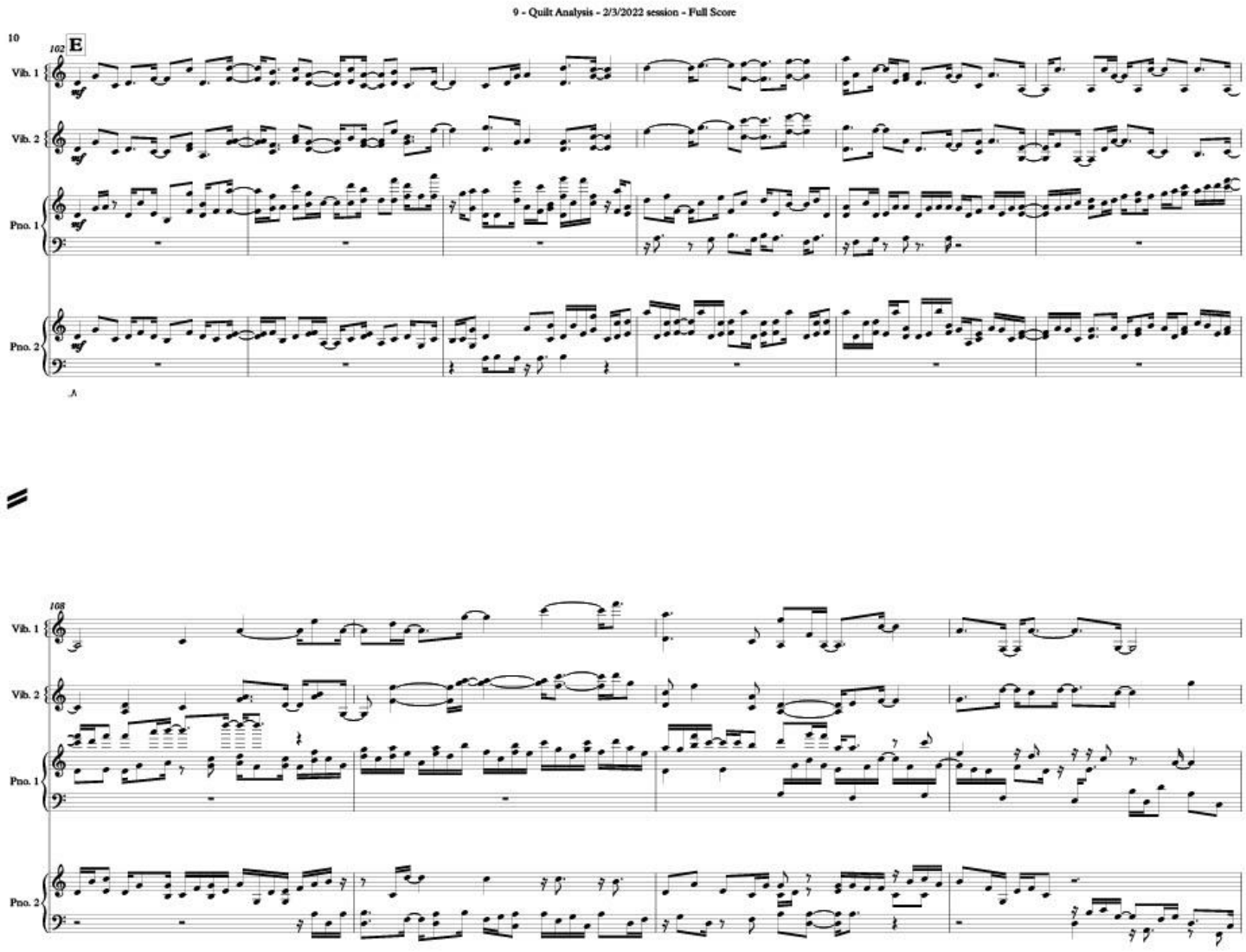
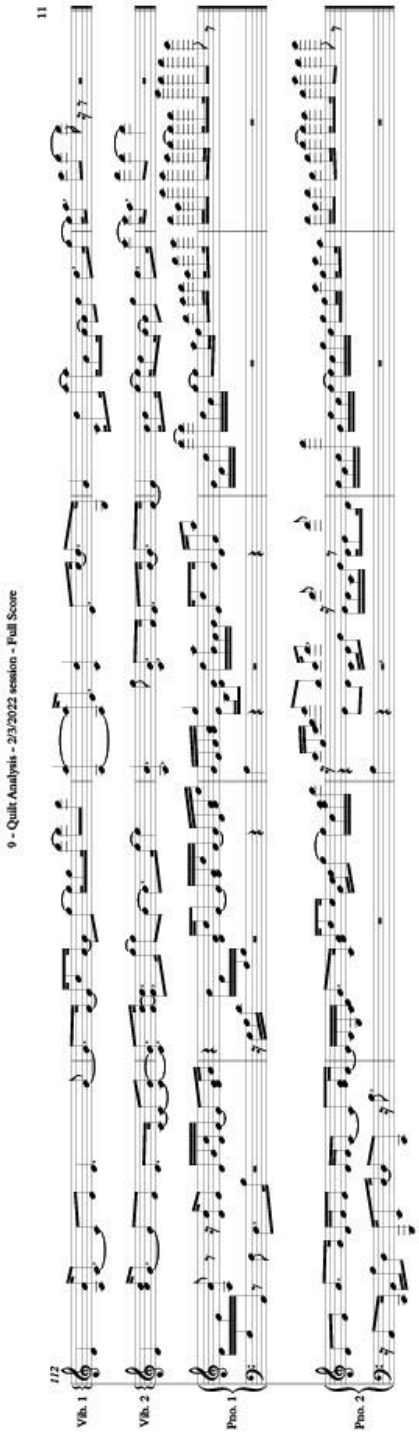


Figure B.1 - Score for Quilt Analysis - E


9 - Quilt Analysis - 2/3/2022 session - Full Score
11
112
Vlb. 1
Vlb. 2
Pno. 1
Pno. 2

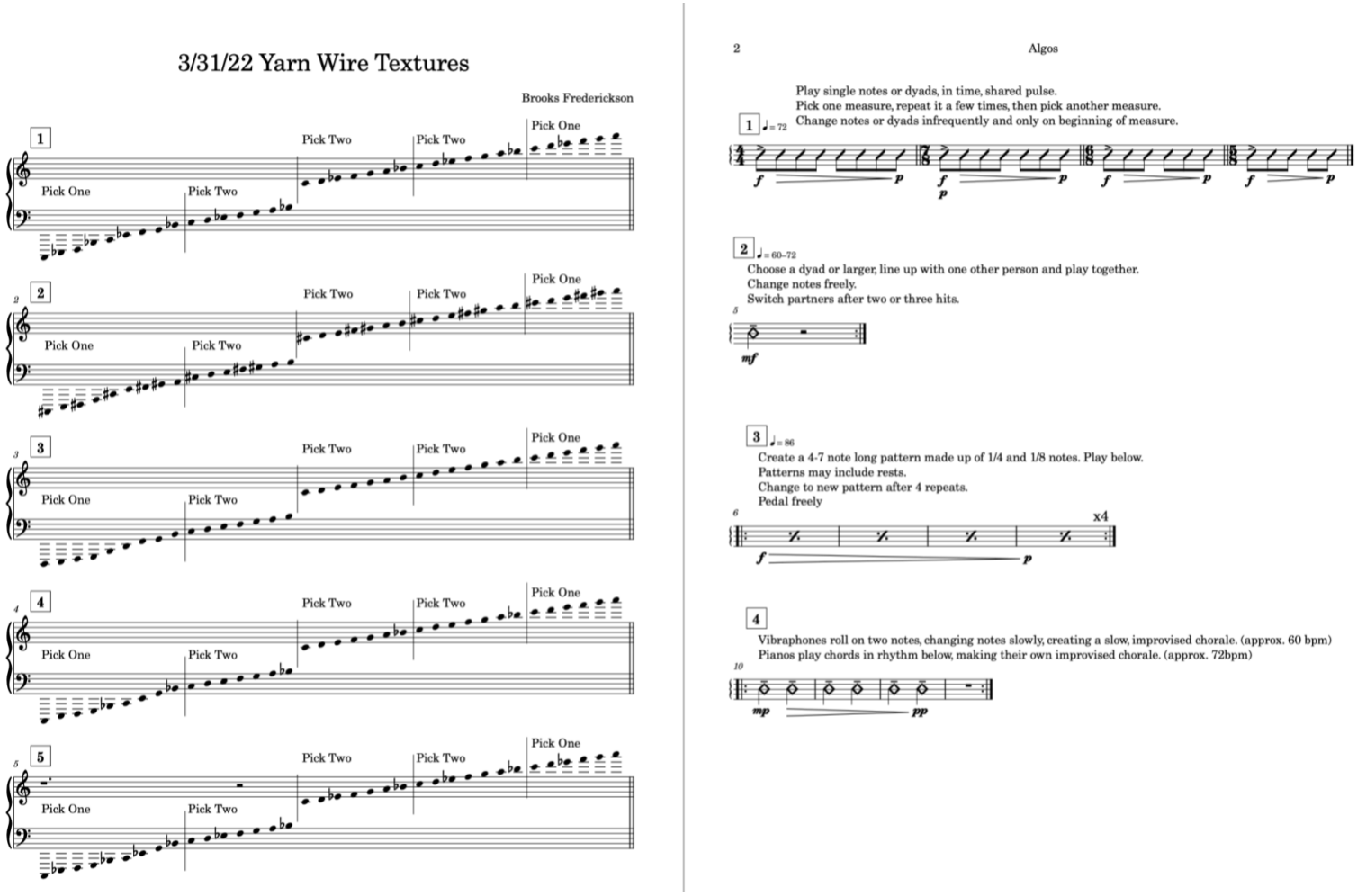


Figure B.2 - Yarn/Wire Improvisation Instructions

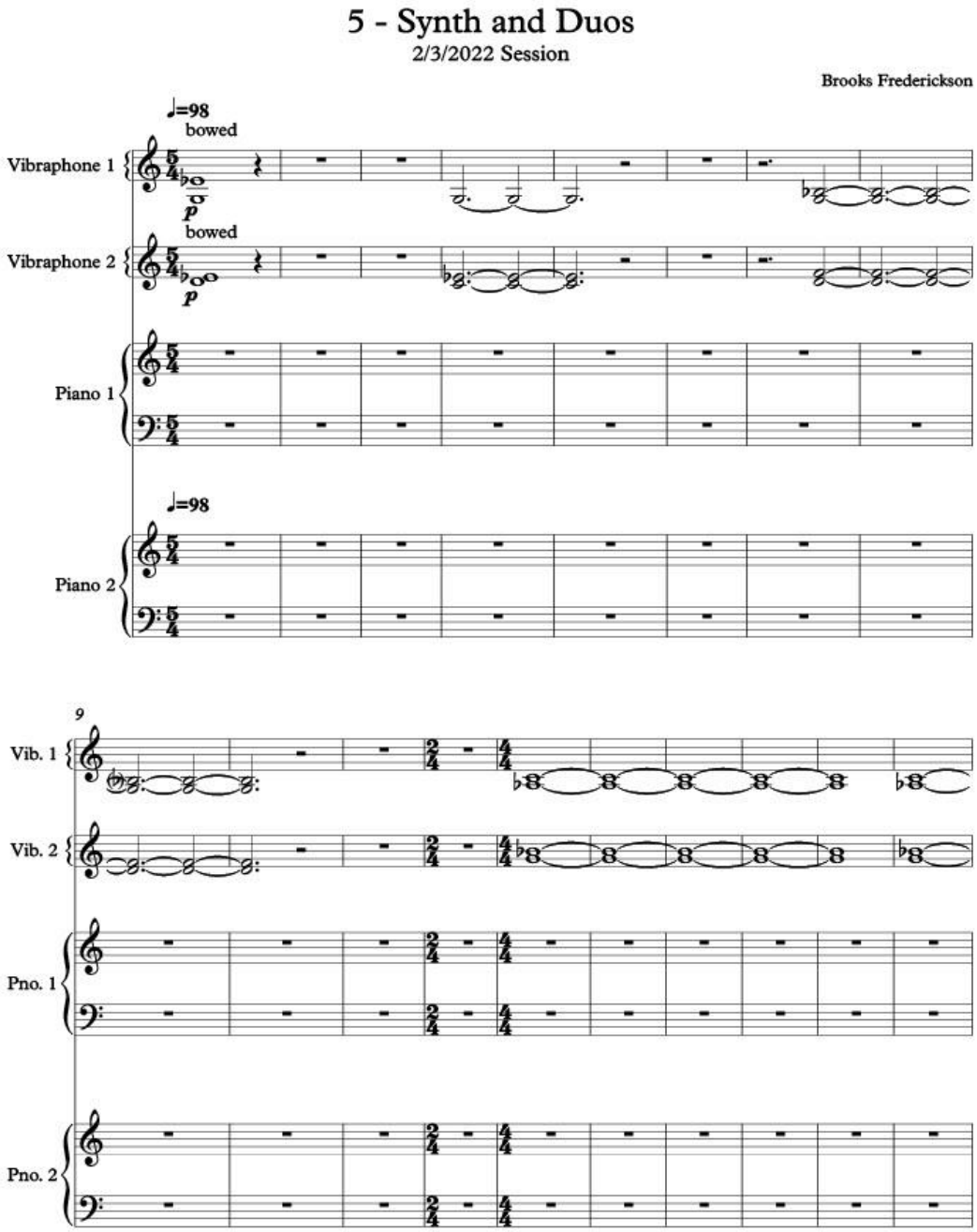


Figure B.3 - Synth and Duos Full Score

Full Score - 5 - Synth and Duos - 2/3/2022 Session

struck, med. mallet

19

Vib. 1

Vib. 2

Pno. 1

Pno. 2

p

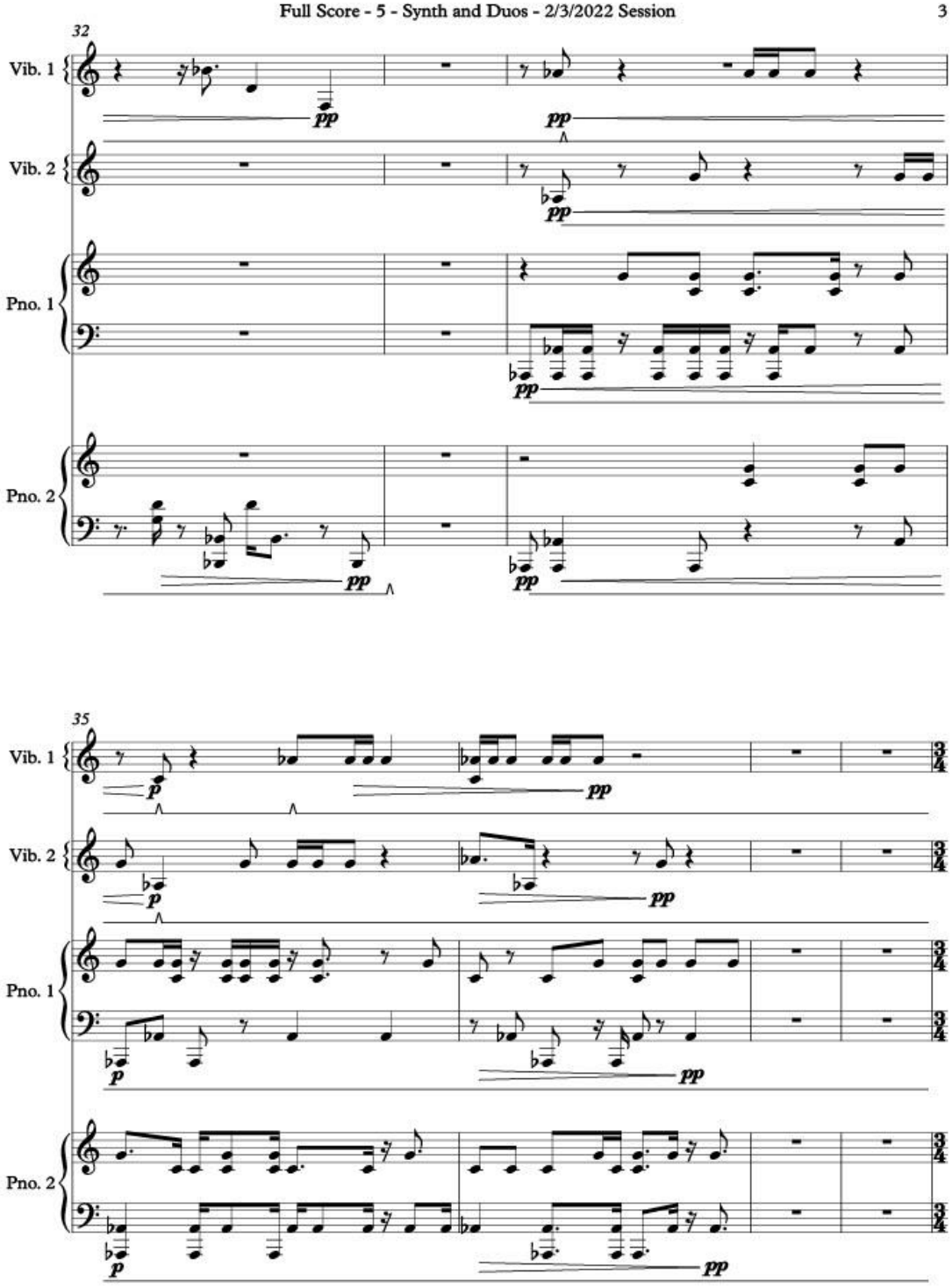
27

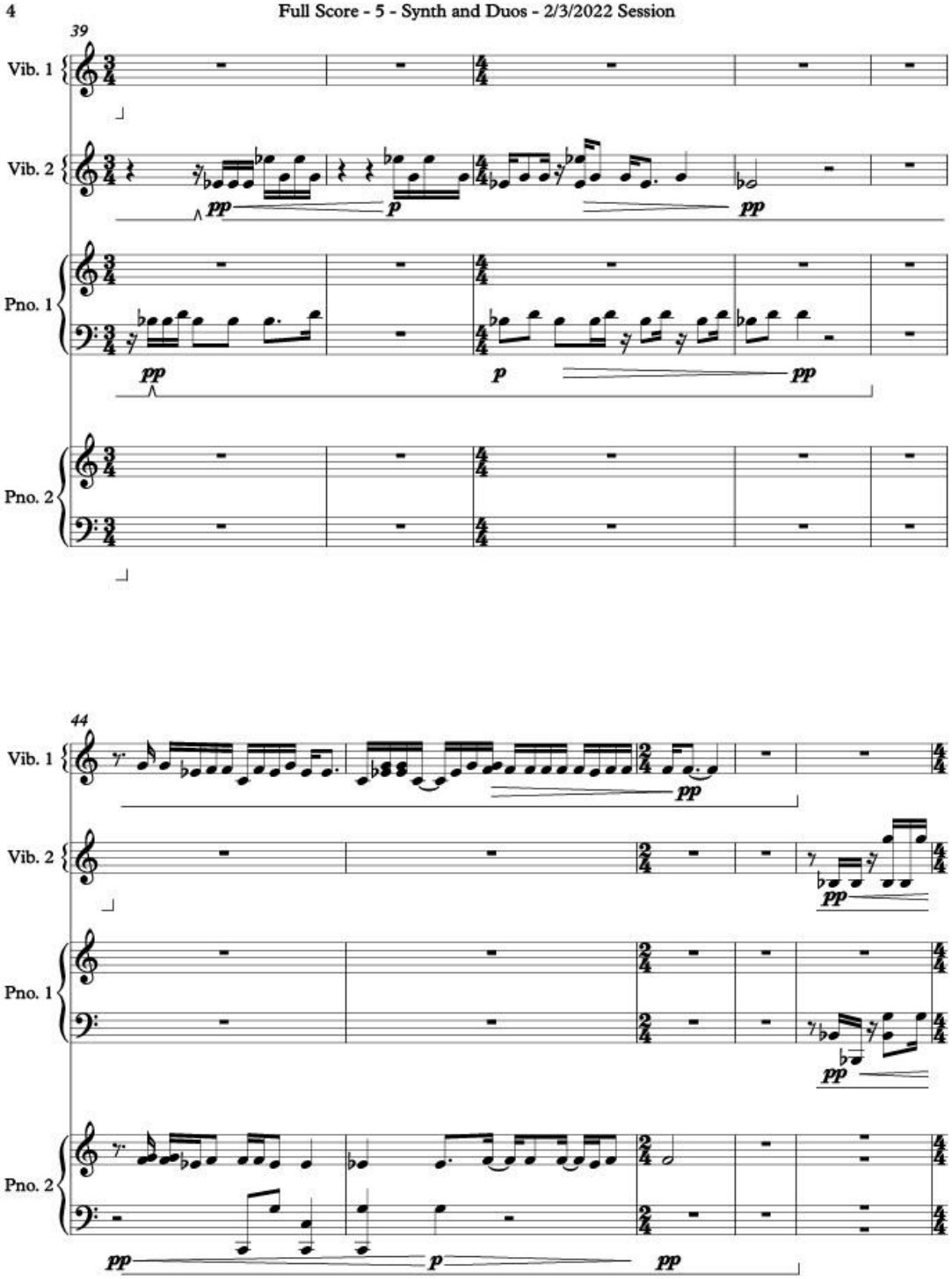
Vib. 1

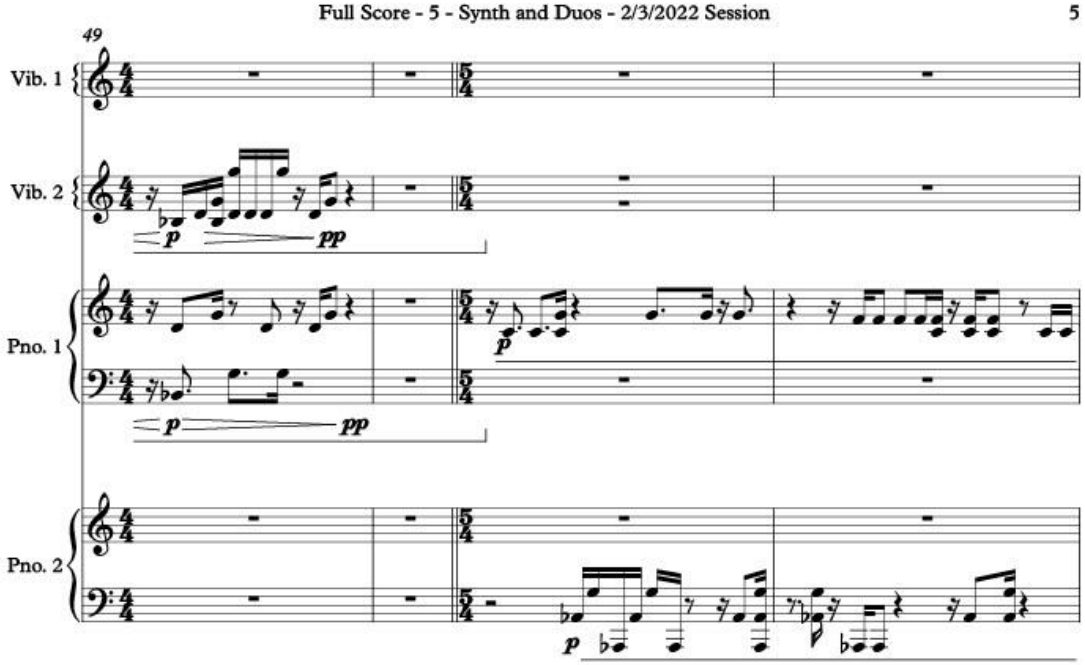
Vib. 2

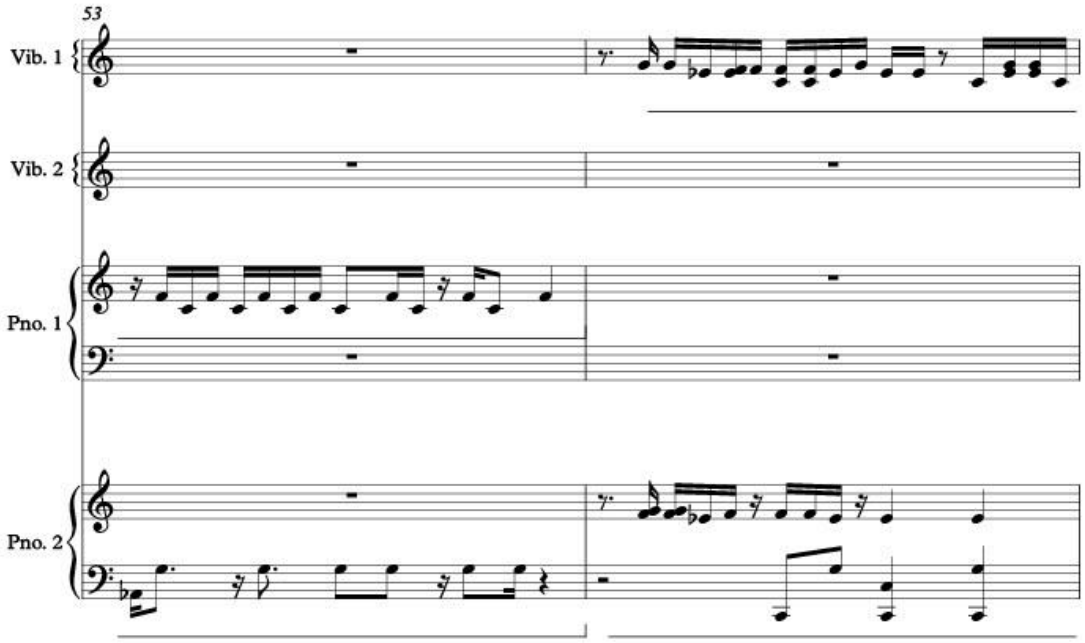
Pno. 1

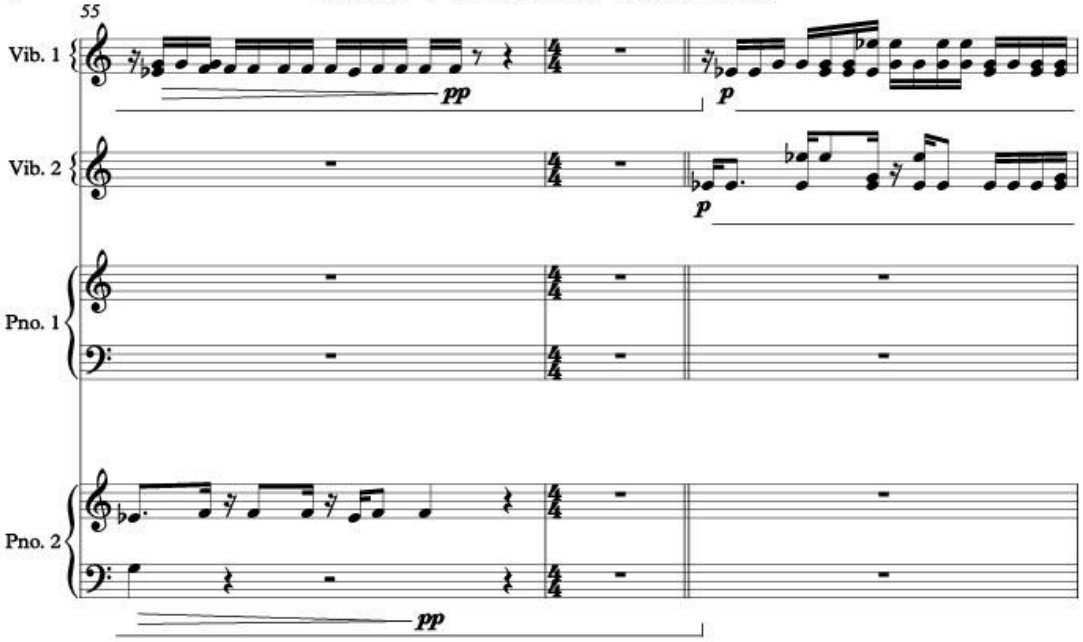
Pno. 2

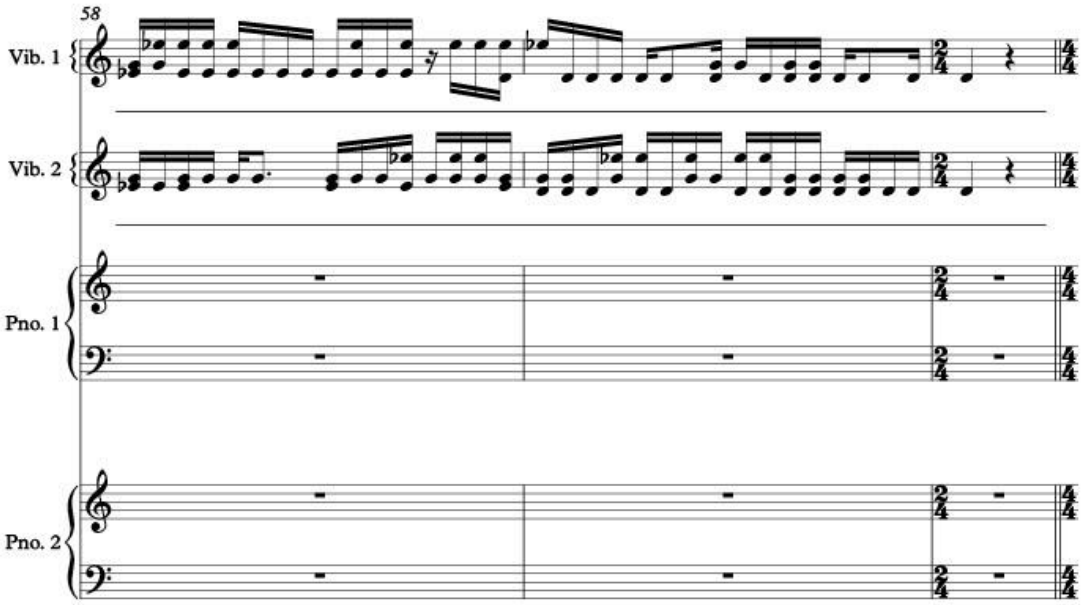

32
Vib. 1
Vib. 2
Pno. 1
Pno. 2
pp
35
p
3/4

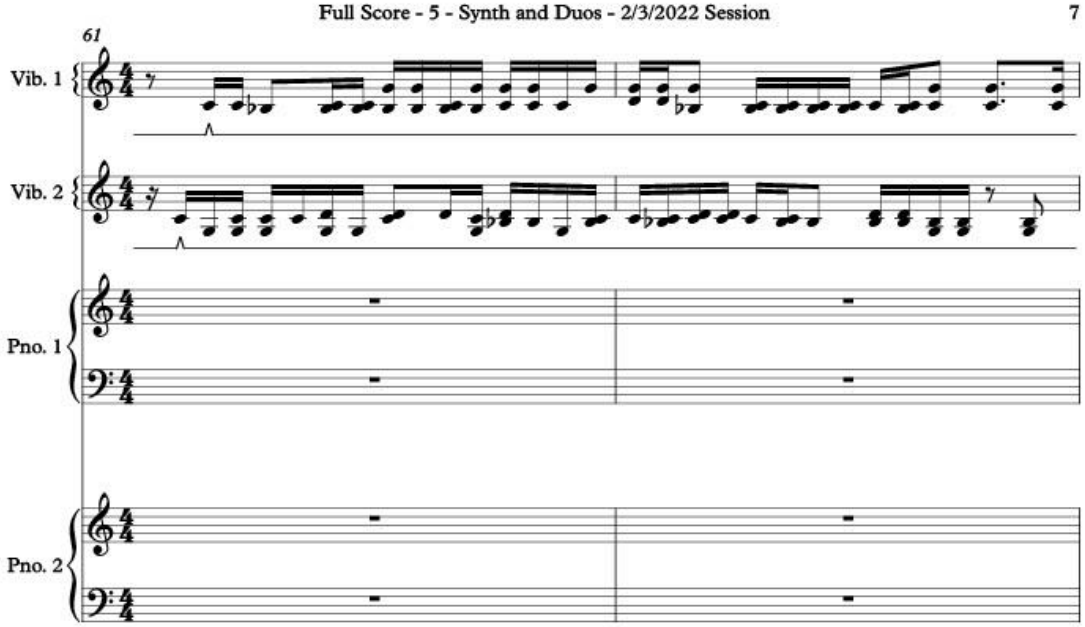

39
Vib. 1
Vib. 2
Pno. 1
Pno. 2
44
Vib. 1
Vib. 2
Pno. 1
Pno. 2

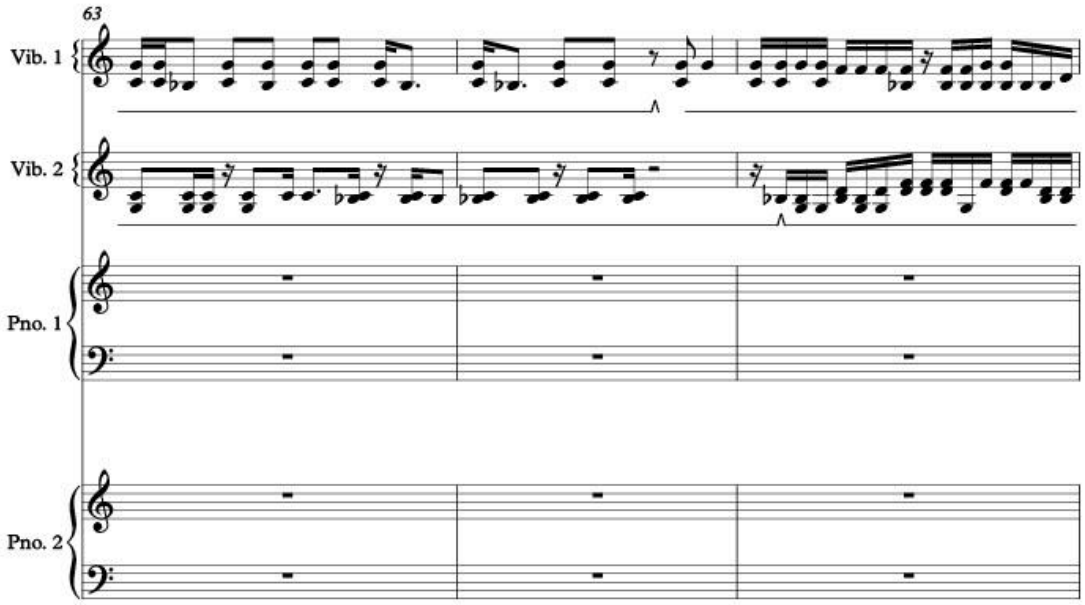

49
Vib. 1
Vib. 2
Pno. 1
Pno. 2
p
pp

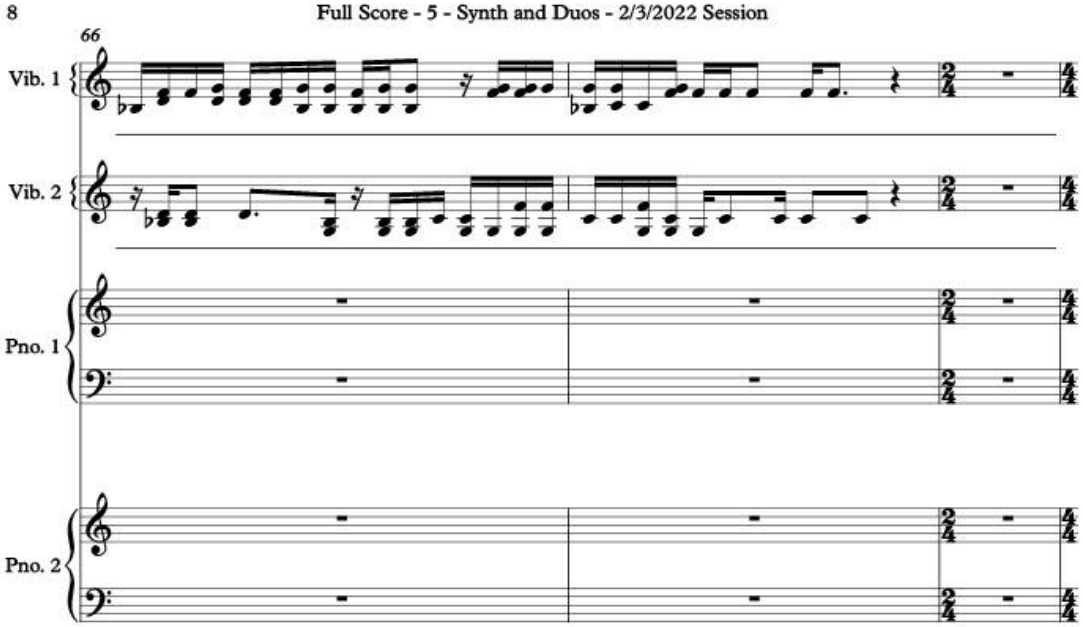

53
Vib. 1
Vib. 2
Pno. 1
Pno. 2

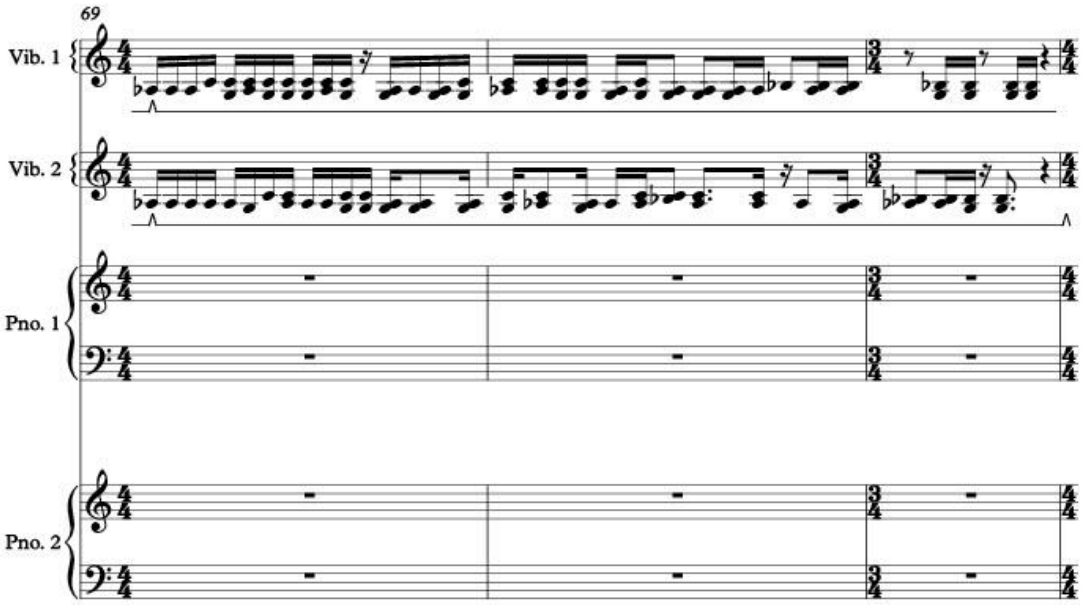

55
Vib. 1
pp
p
Vib. 2
p
Pno. 1
Pno. 2
pp

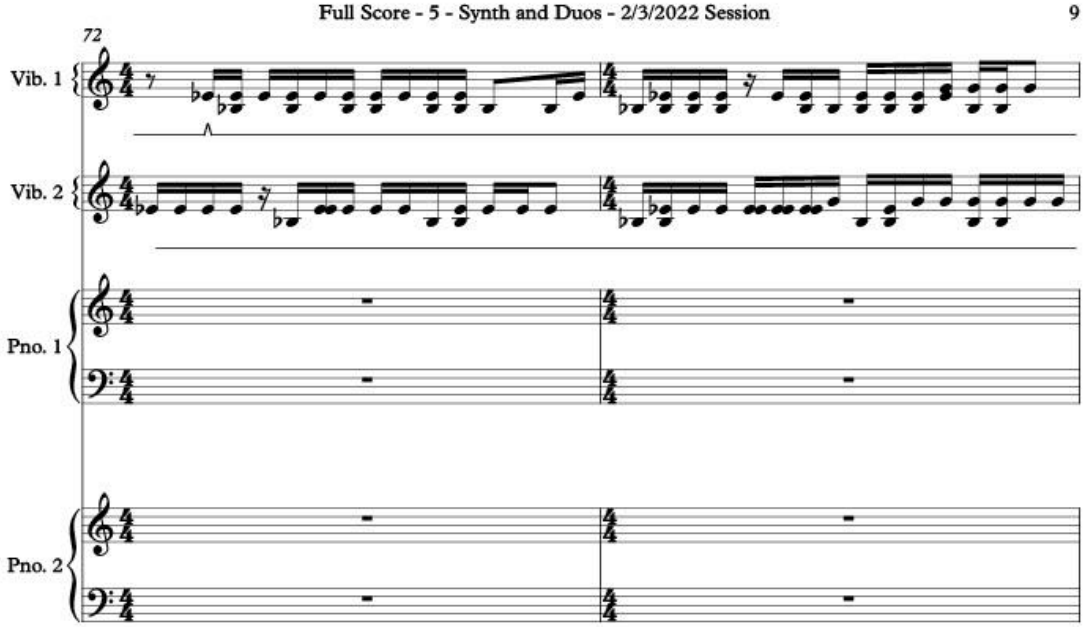

58
Vib. 1
Vib. 2
Pno. 1
Pno. 2

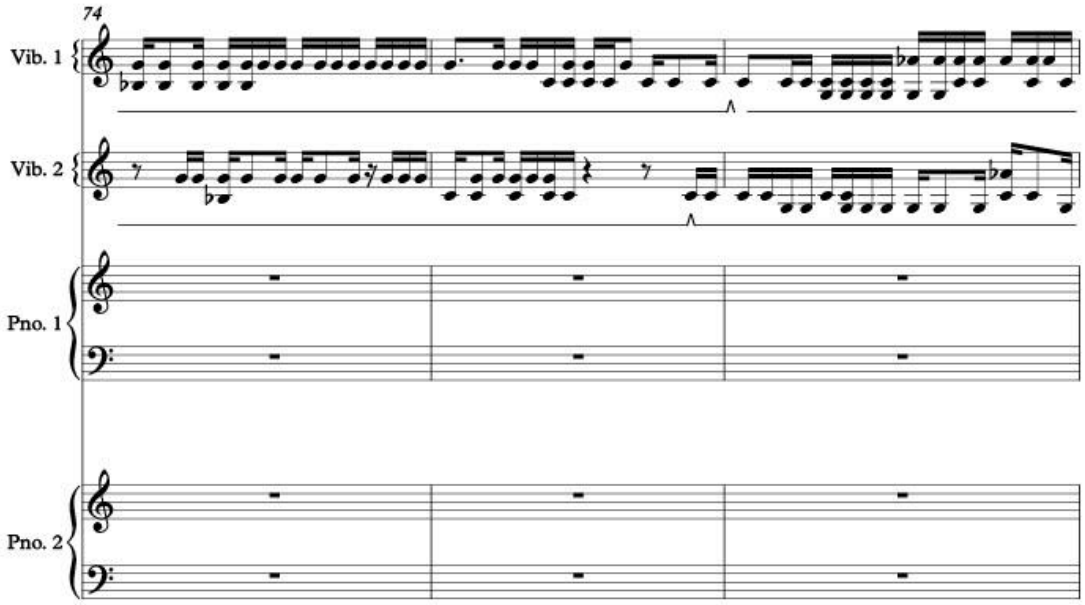

61
Vib. 1
Vib. 2
Pno. 1
Pno. 2

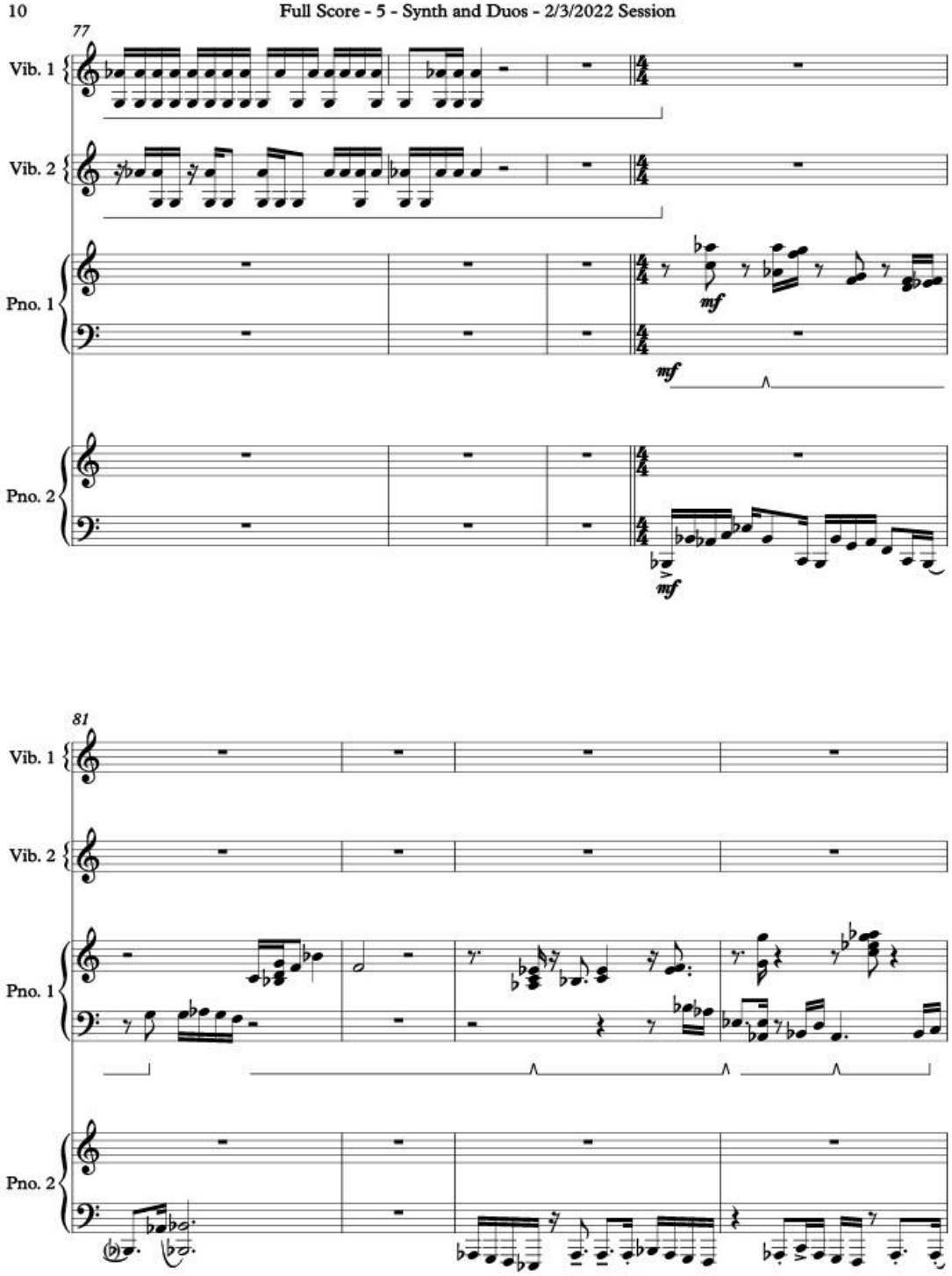

63
Vib. 1
Vib. 2
Pno. 1
Pno. 2

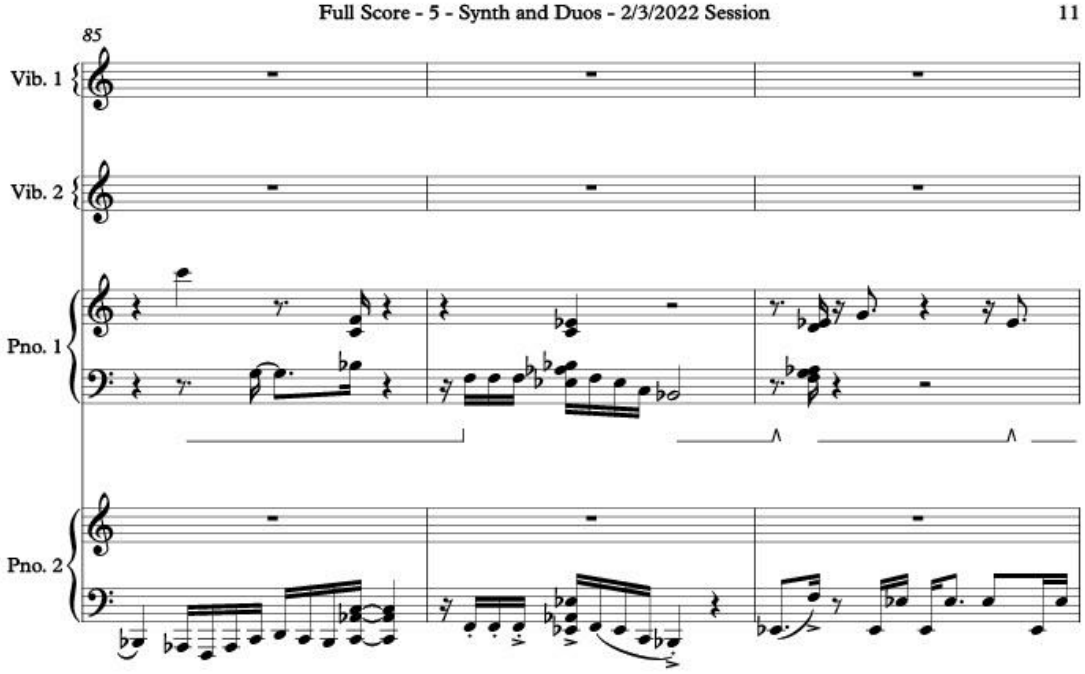

66
Vib. 1
Vib. 2
Pno. 1
Pno. 2

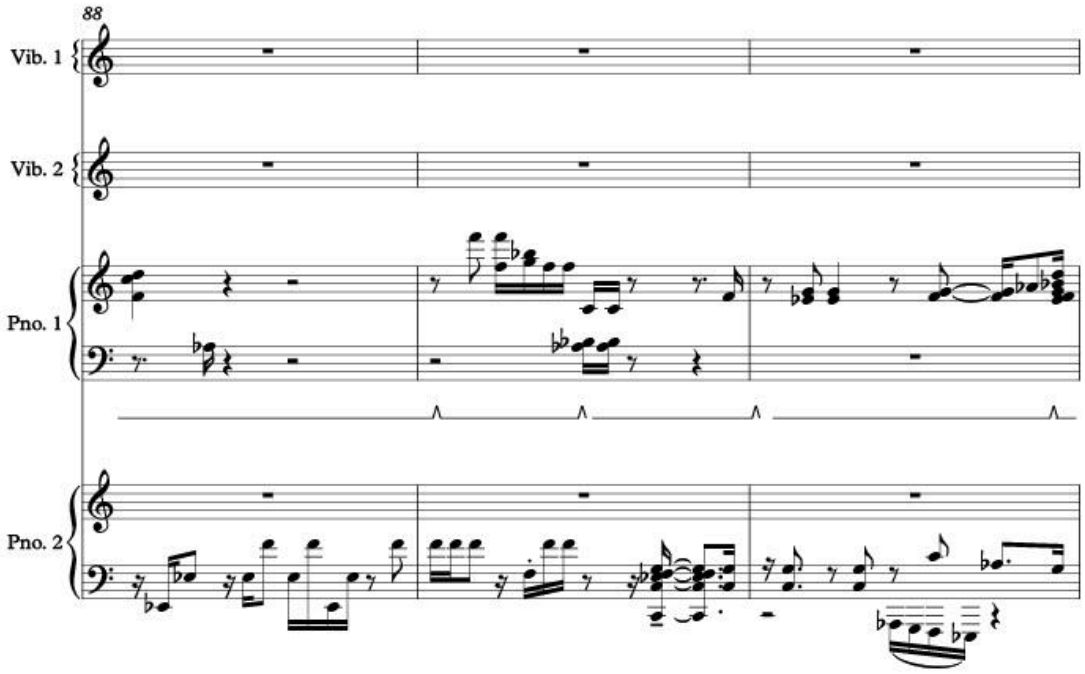

69
Vib. 1
Vib. 2
Pno. 1
Pno. 2

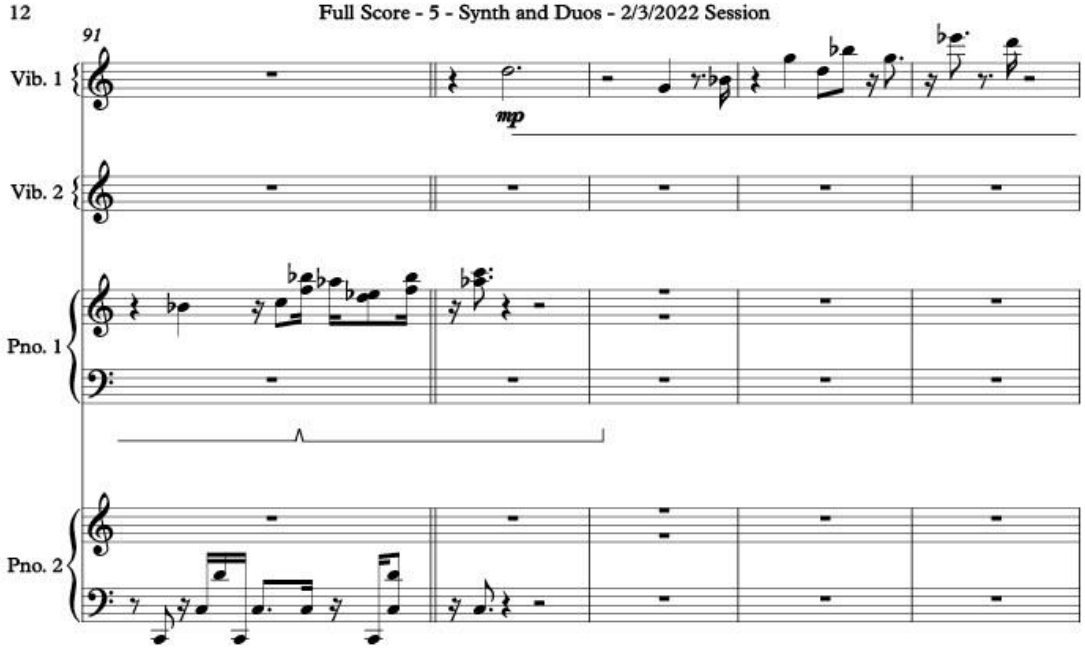

72
Vib. 1
Vib. 2
Pno. 1
Pno. 2

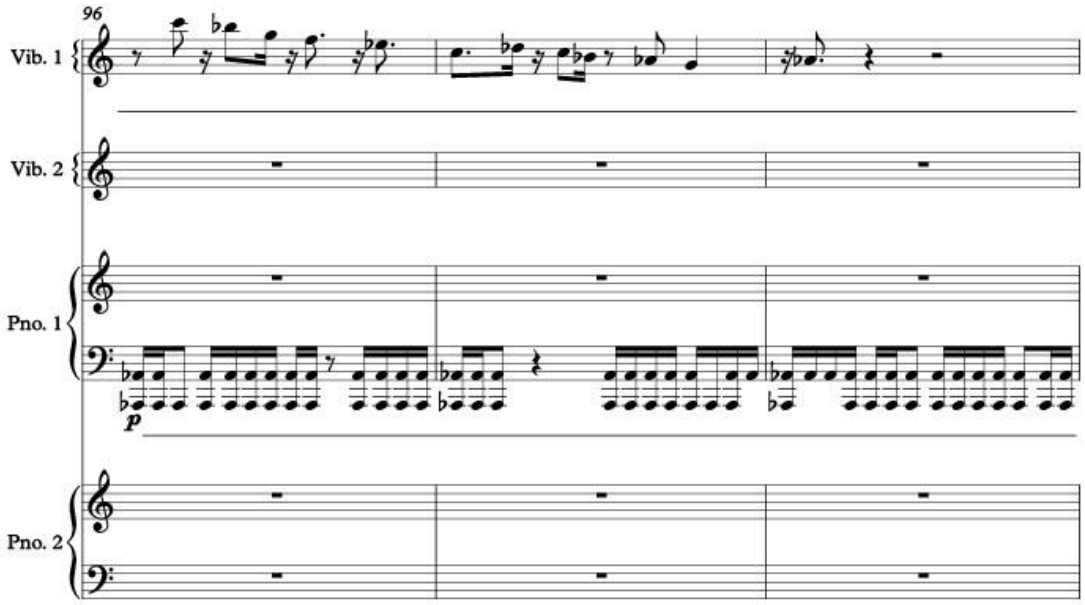

74
Vib. 1
Vib. 2
Pno. 1
Pno. 2

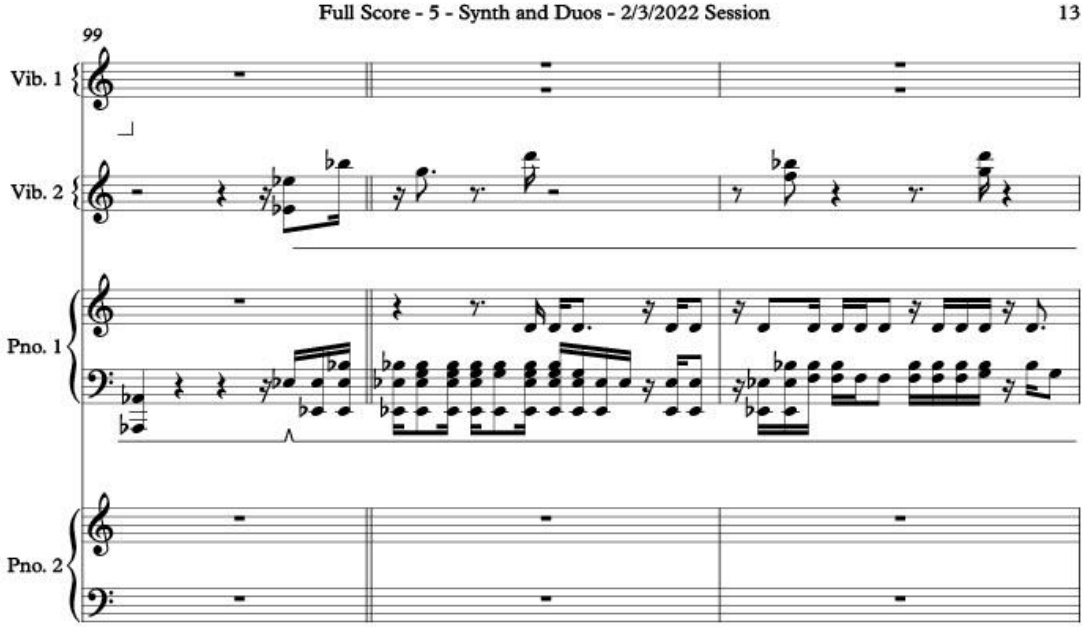

77
Vib. 1
Vib. 2
Pno. 1
Pno. 2
mf
81

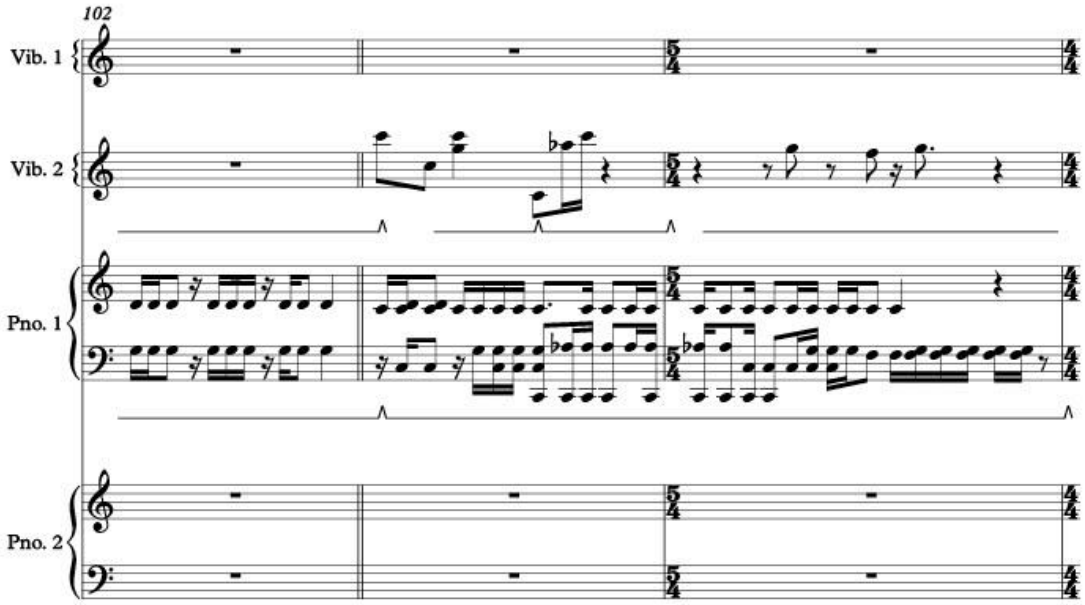

85
Vib. 1
Vib. 2
Pno. 1
Pno. 2

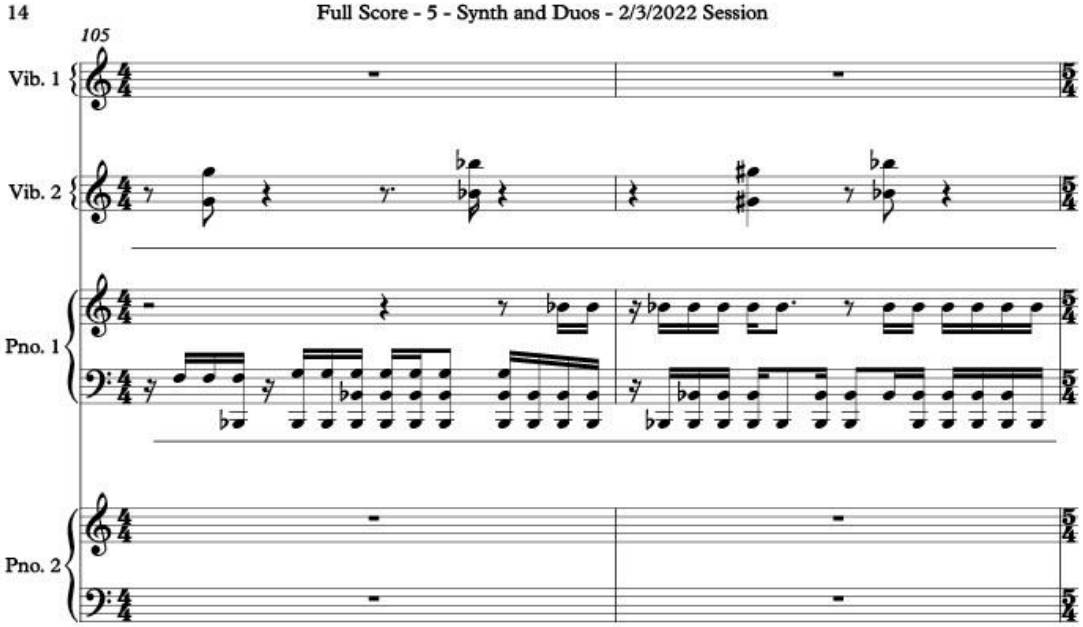

88
Vib. 1
Vib. 2
Pno. 1
Pno. 2

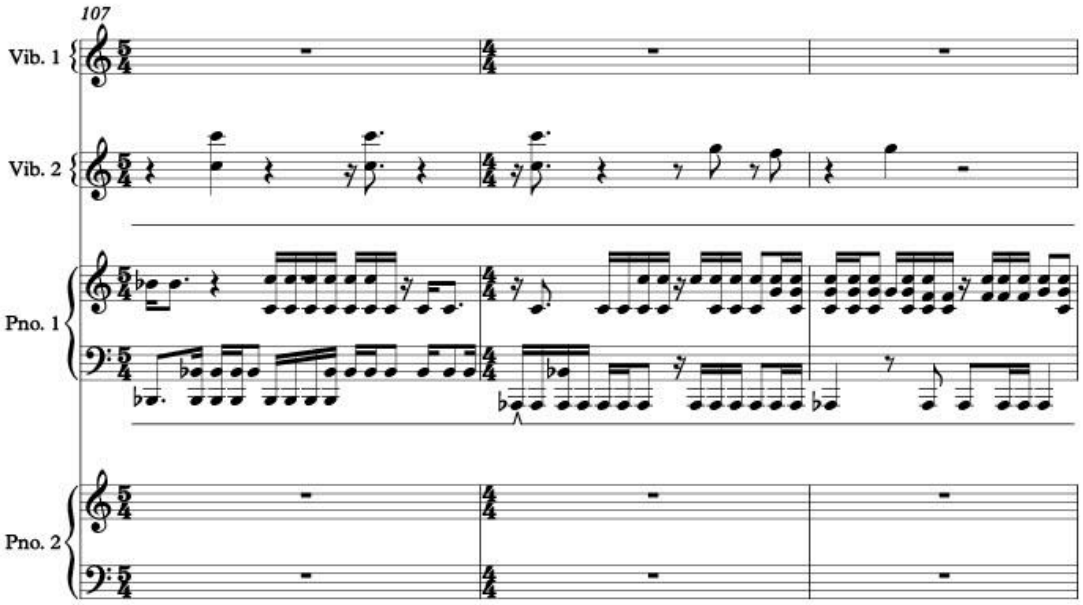

91
Vib. 1
mp
Vib. 2
Pno. 1
Pno. 2


96
Vib. 1
Vib. 2
Pno. 1
p
Pno. 2


99
Vib. 1
Vib. 2
Pno. 1
Pno. 2


102
Vib. 1
Vib. 2
Pno. 1
Pno. 2


105
Vib. 1
Vib. 2
Pno. 1
Pno. 2


107
Vib. 1
Vib. 2
Pno. 1
Pno. 2

110

Vib. 1

Vib. 2

Pno. 1

Pno. 2

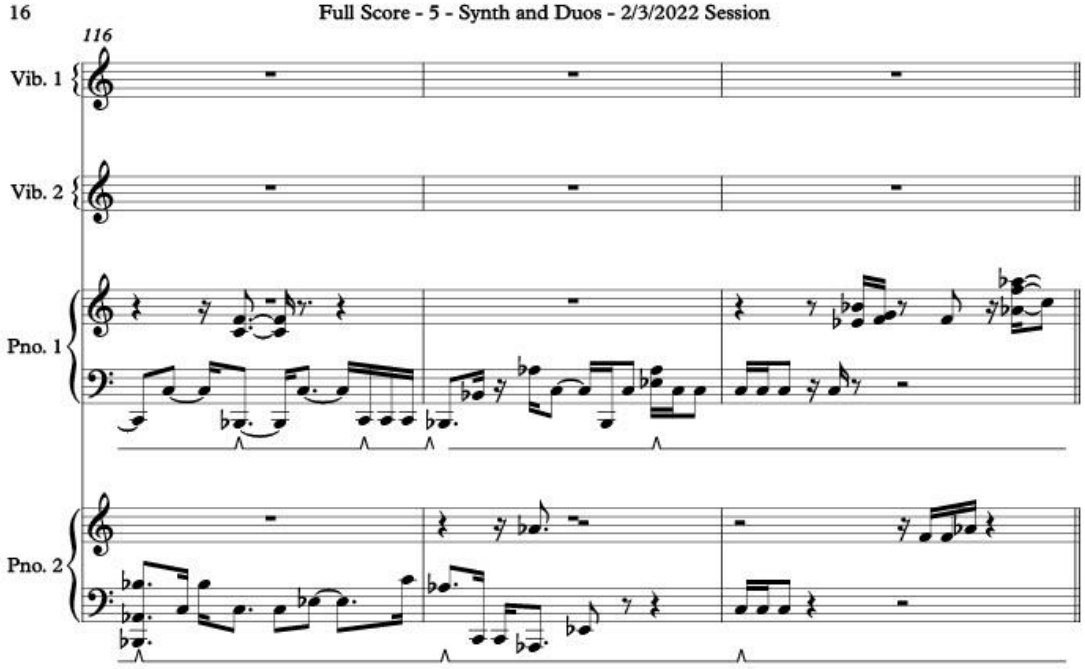
113

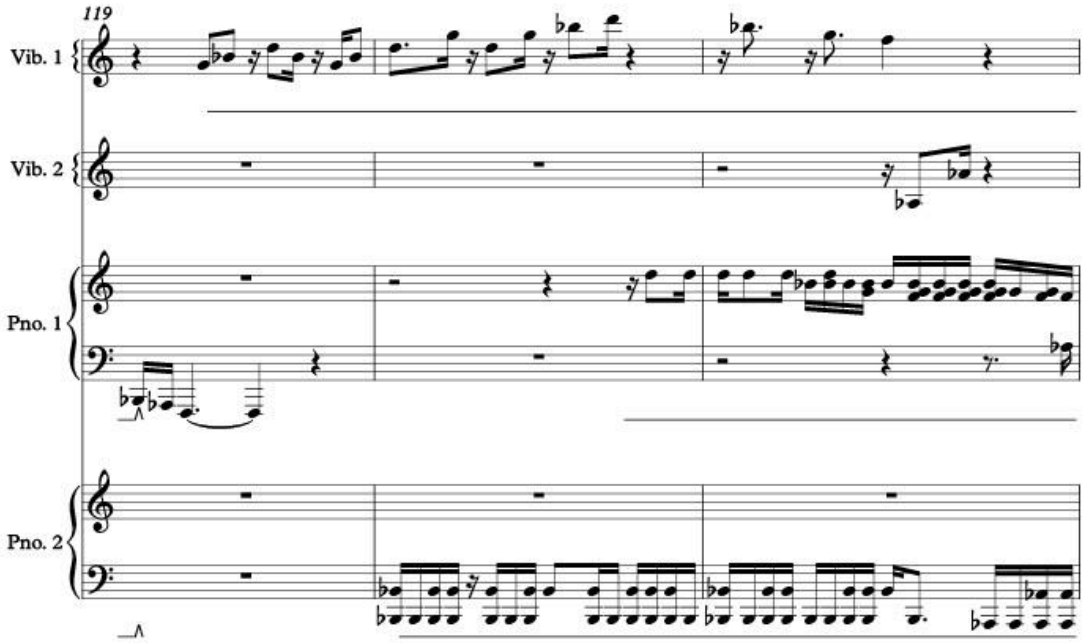
Vib. 1

Vib. 2

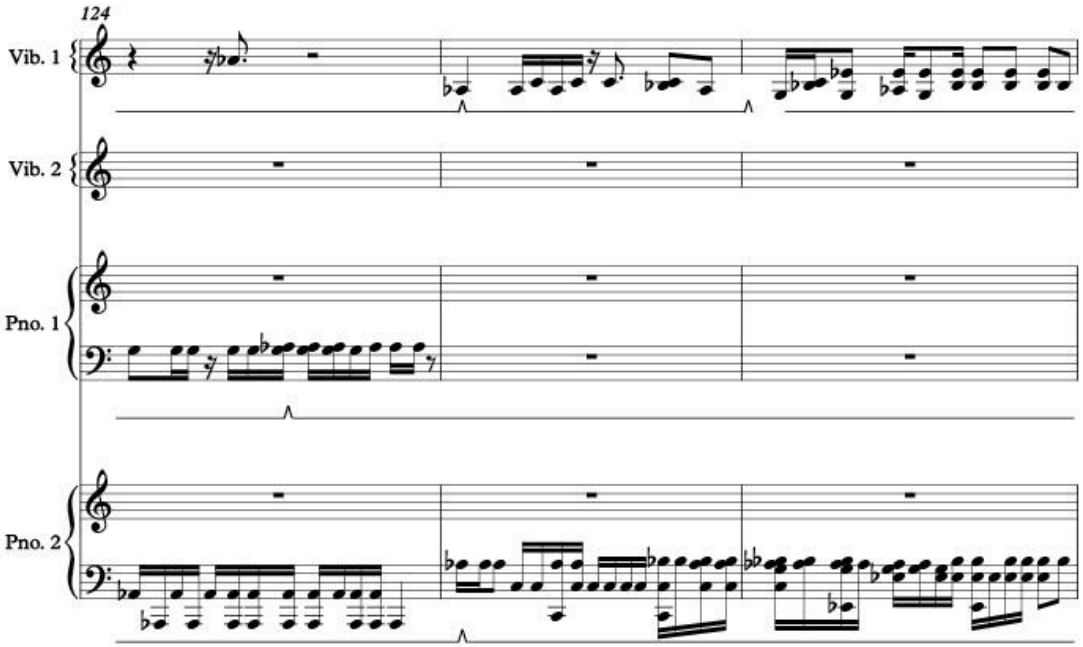
Pno. 1

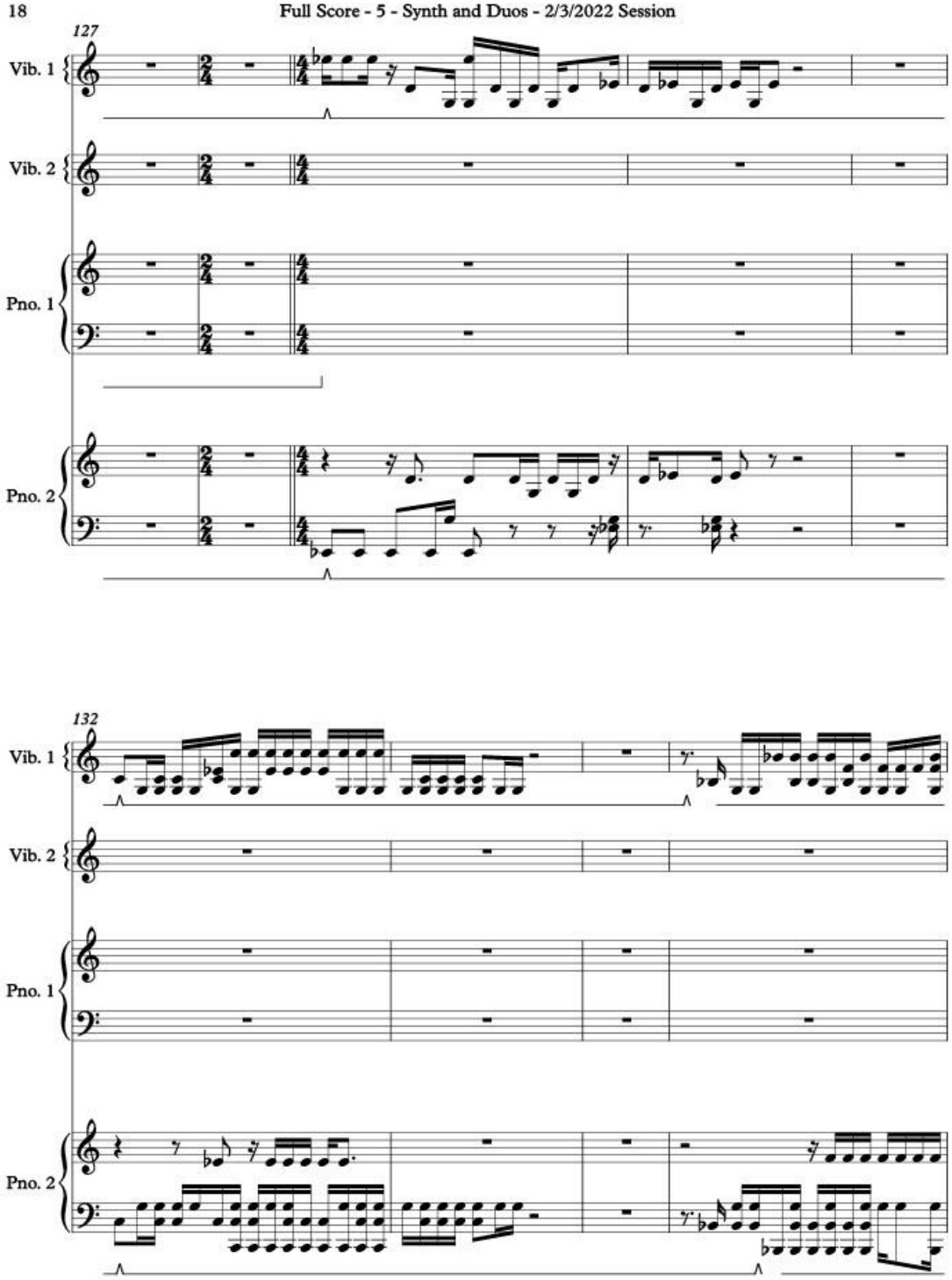
Pno. 2

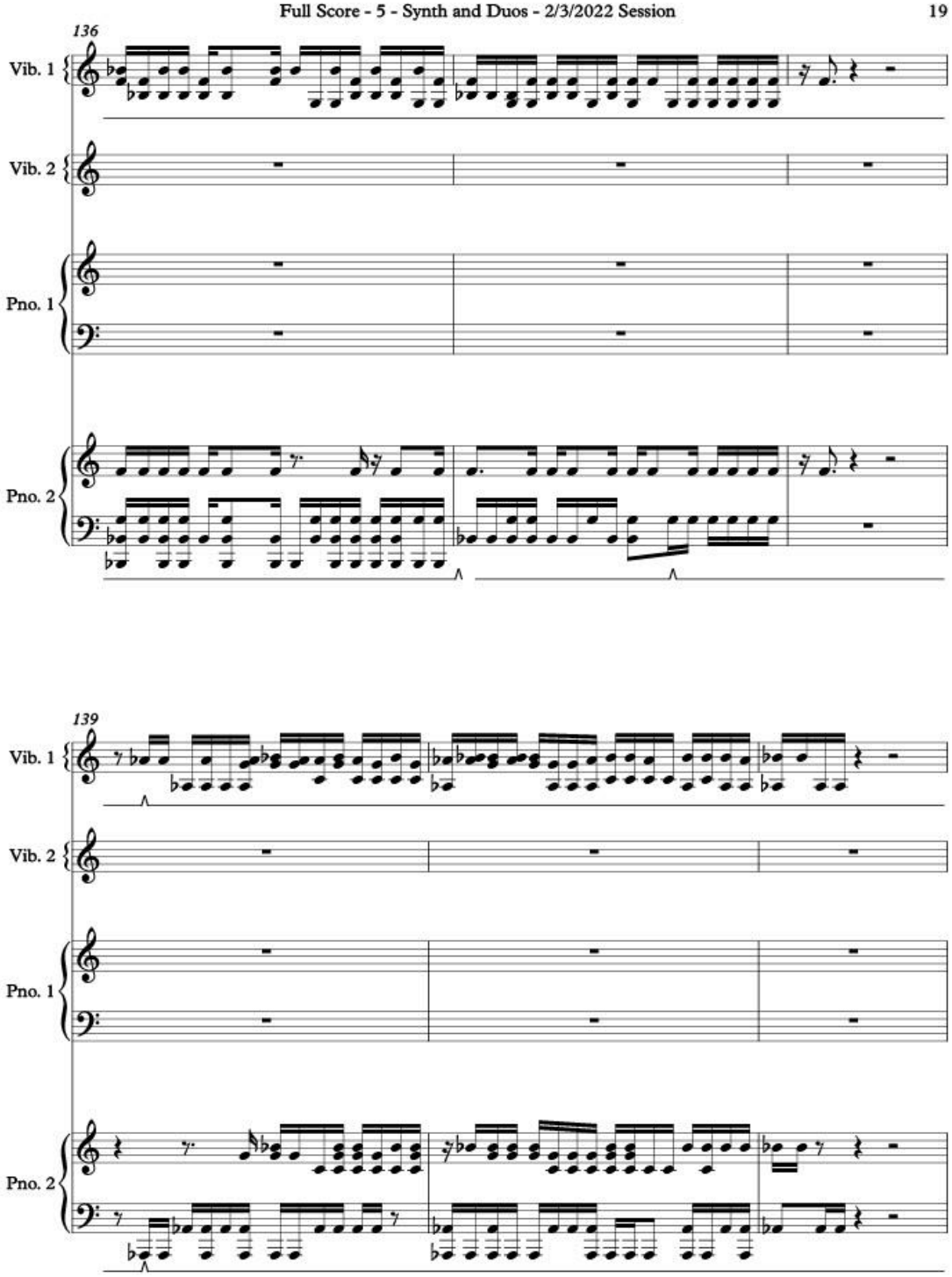

116
Vib. 1
Vib. 2
Pno. 1
Pno. 2


119
Vib. 1
Vib. 2
Pno. 1
Pno. 2

122
Vib. 1
Vib. 2
Pno. 1
Pno. 2


124
Vib. 1
Vib. 2
Pno. 1
Pno. 2


127
Vib. 1
Vib. 2
Pno. 1
Pno. 2
132
Vib. 1
Vib. 2
Pno. 1
Pno. 2


136
Vib. 1
Vib. 2
Pno. 1
Pno. 2
139
Vib. 1
Vib. 2
Pno. 1
Pno. 2

142

Vib. 1

Vib. 2

Pno. 1

Pno. 2

144

Vib. 1

Vib. 2

Pno. 1

Pno. 2

5 - Piano Insert

moving forward ♩= 96

Brooks Frederickson

Piano 1

mf lightly

Piano 2

mf clear no legato

Pno 1

Pno 2

2

Piano 1

Pno 1

Pno 2

Pno 1

Pno 2

Figure B.4 - Piano Duo Insert

9 - Quilt Analysis
2/3/2022 session

Brooks Frederickson

A ♩=96, evenly firm

Vibraphone1
Vibraphone 2
Piano 1
Piano 2

5

Vib. 1
Vib. 2
Pno. 1
Pno. 2

Figure B.5 - Quilt Analysis A

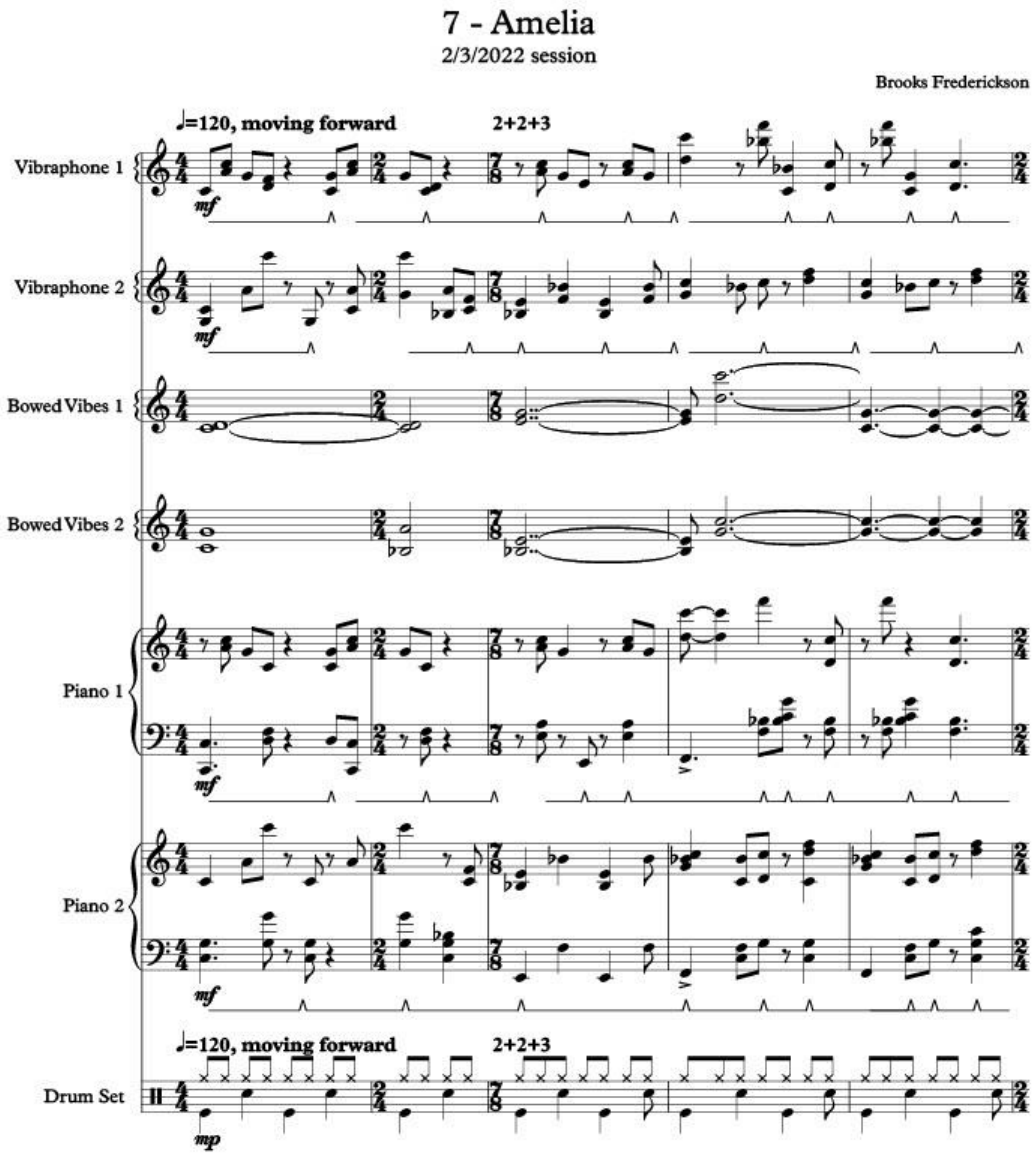
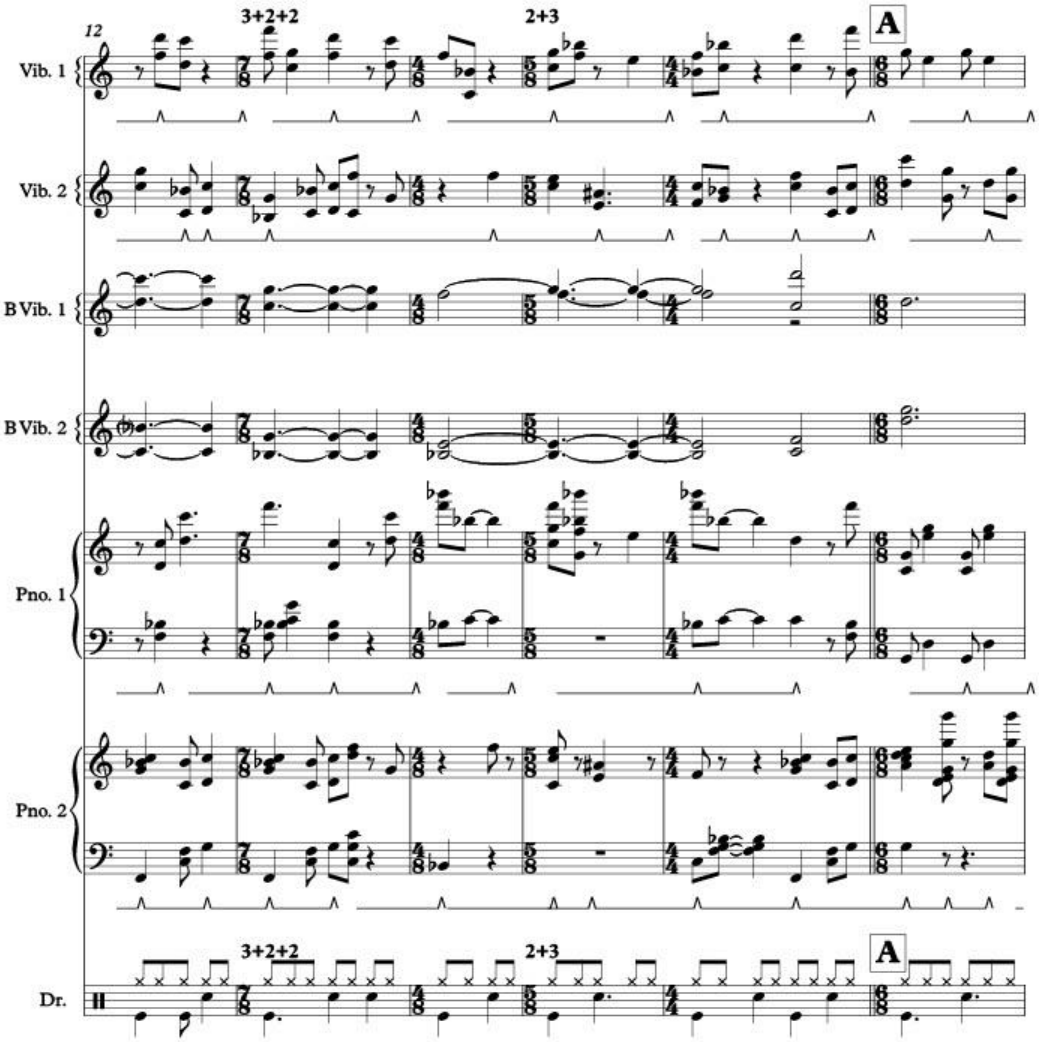
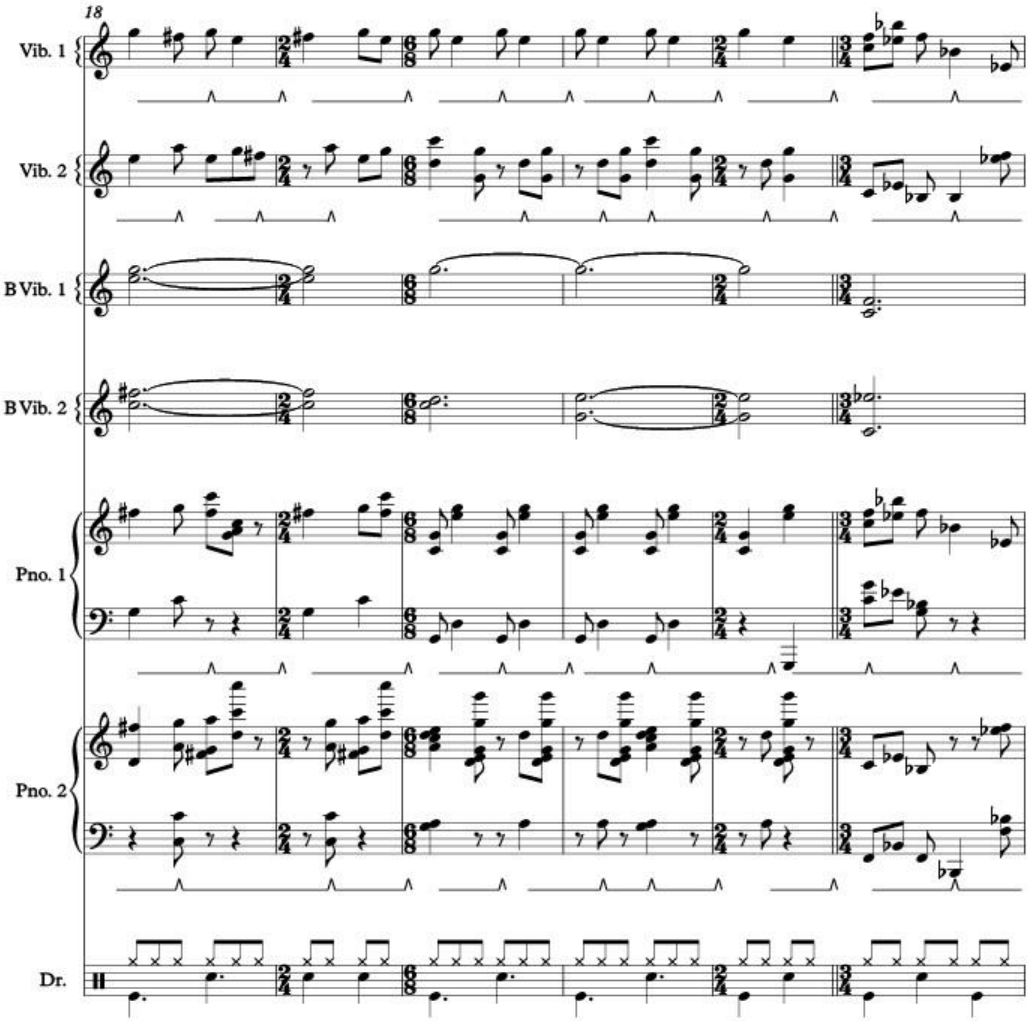
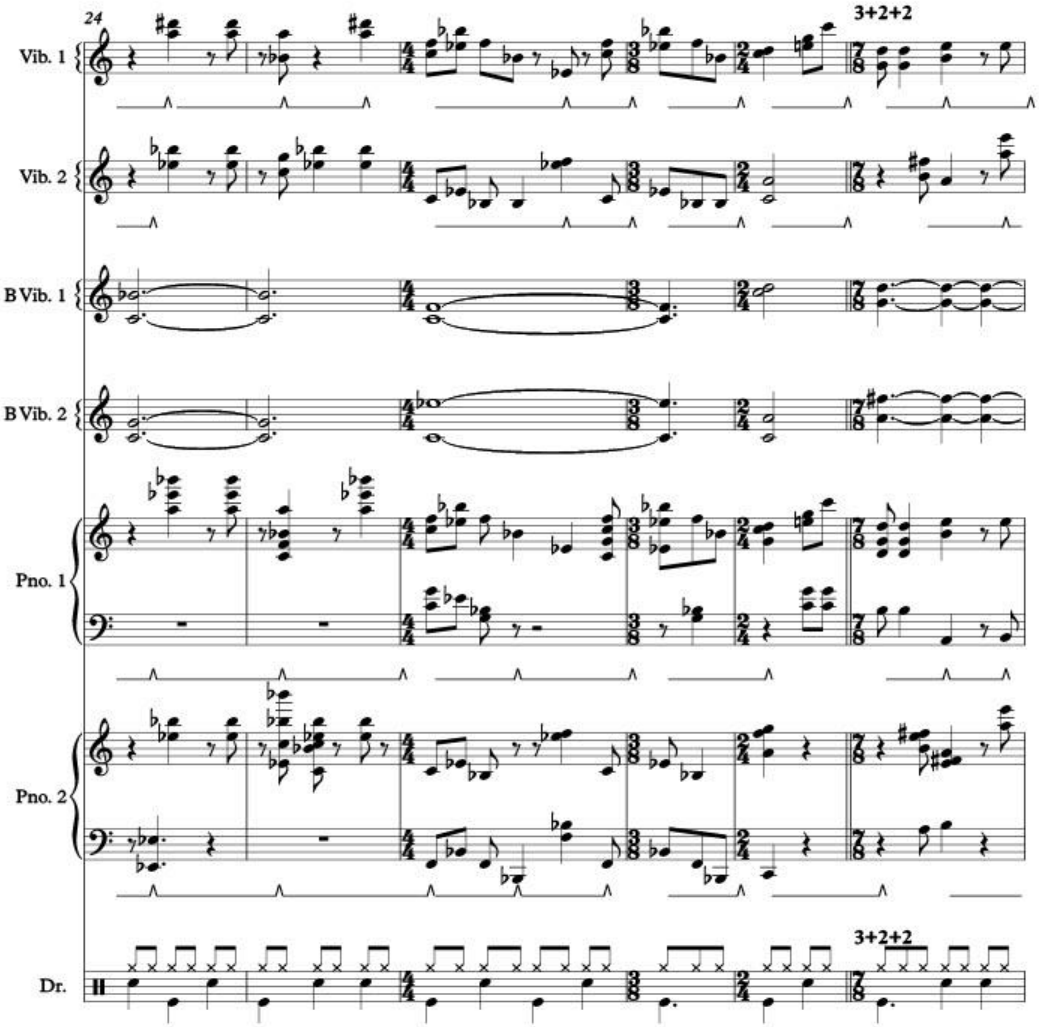
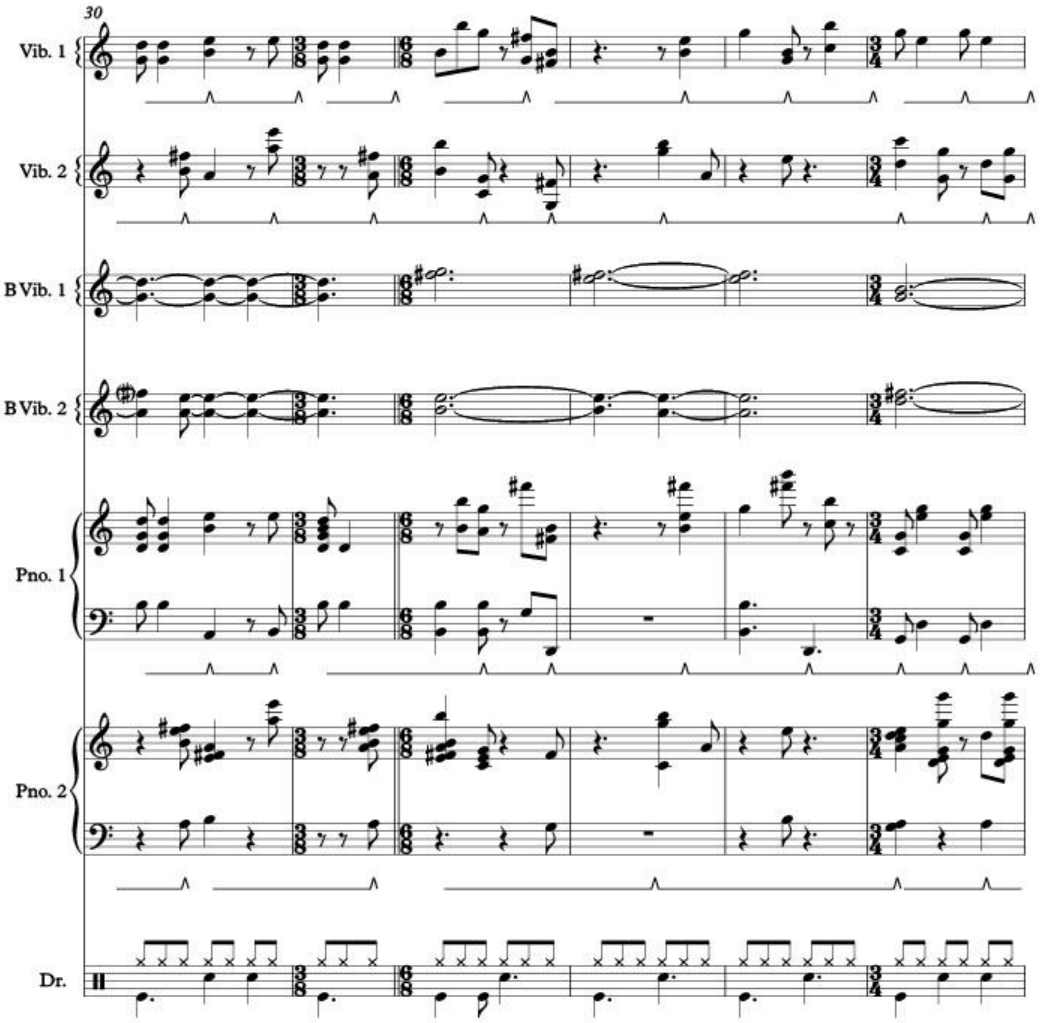


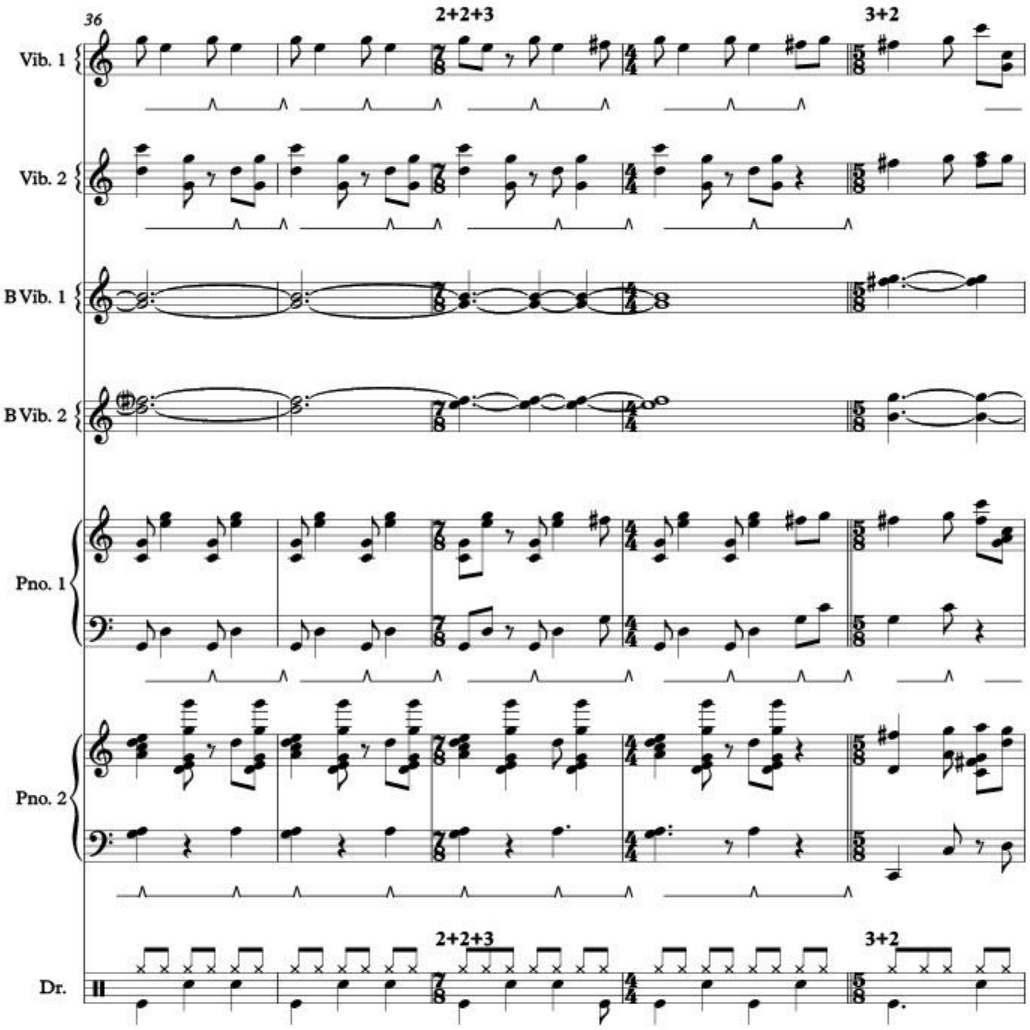
Figure B.6 - Amelia

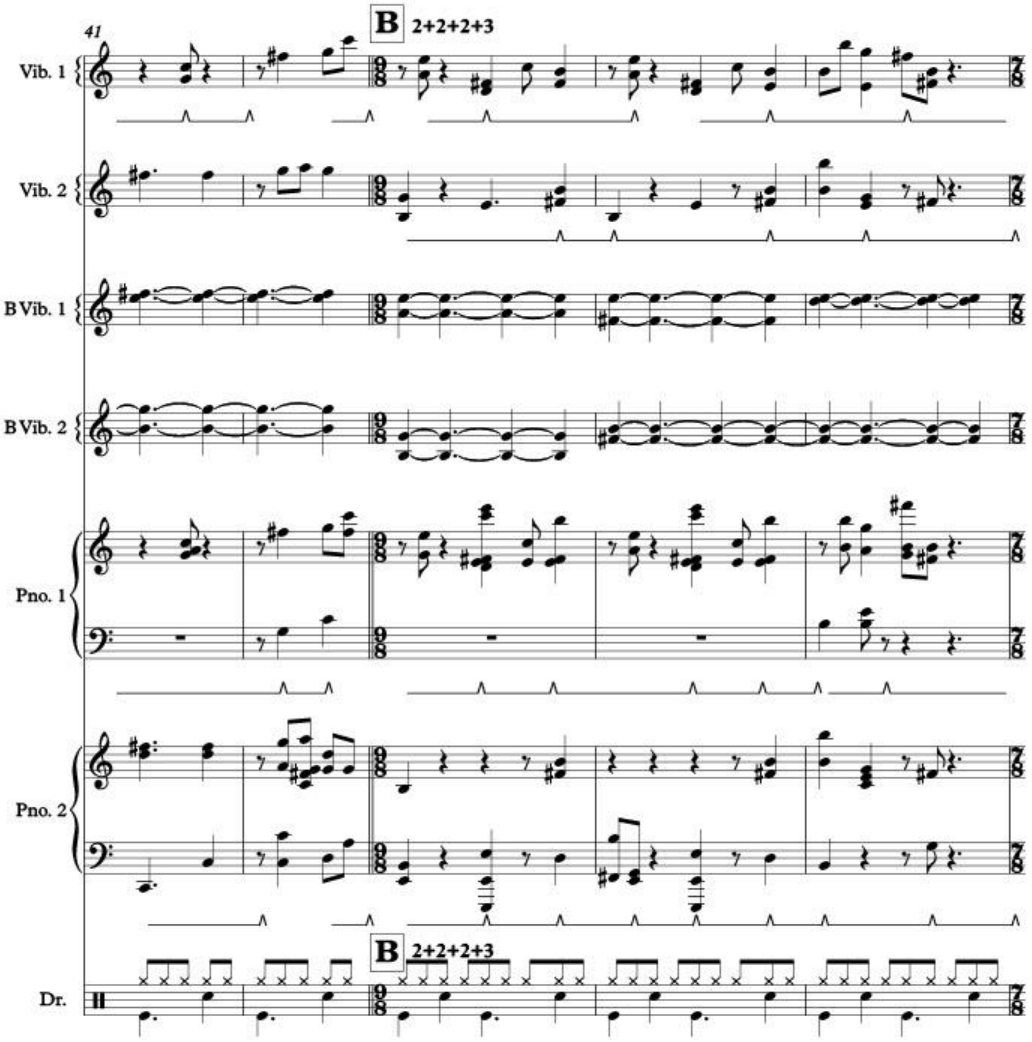

12
3+2+2
2+3
A
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
Dr.

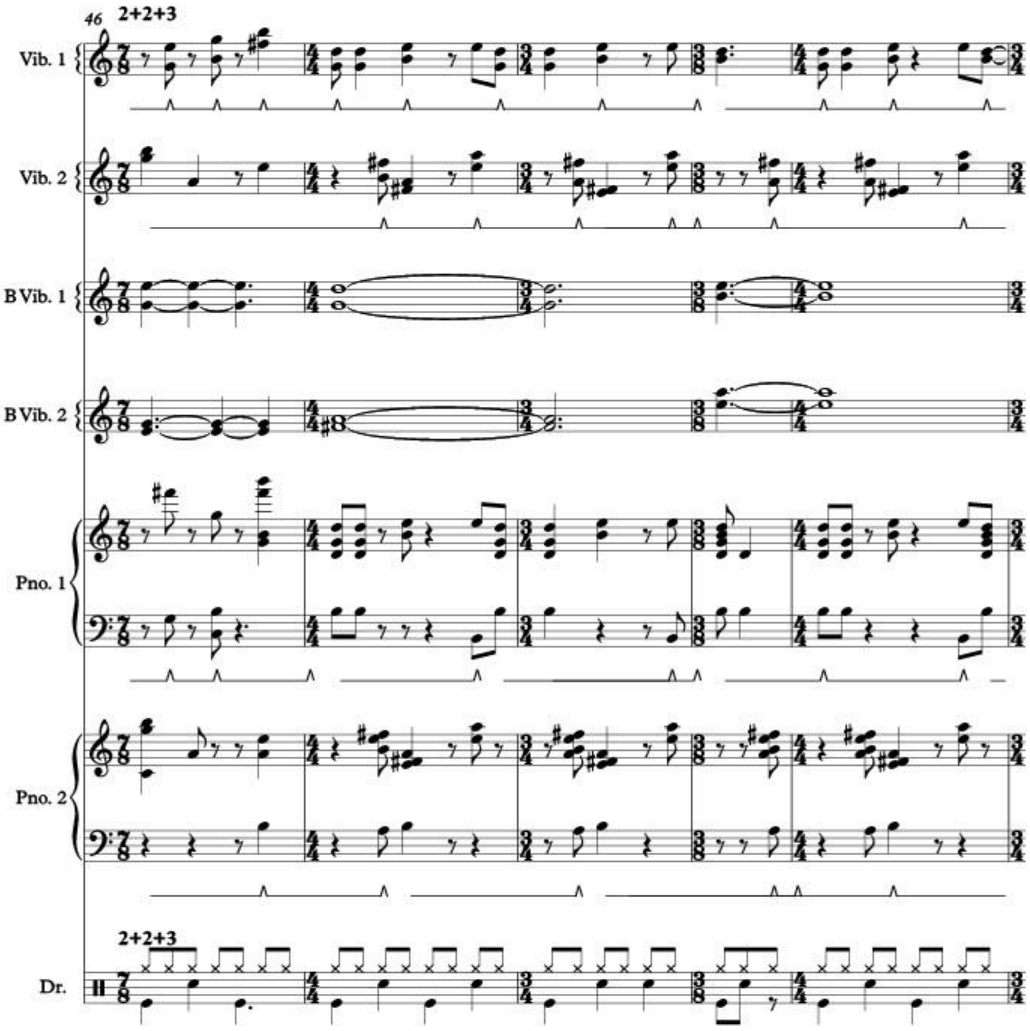

18
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
Dr.

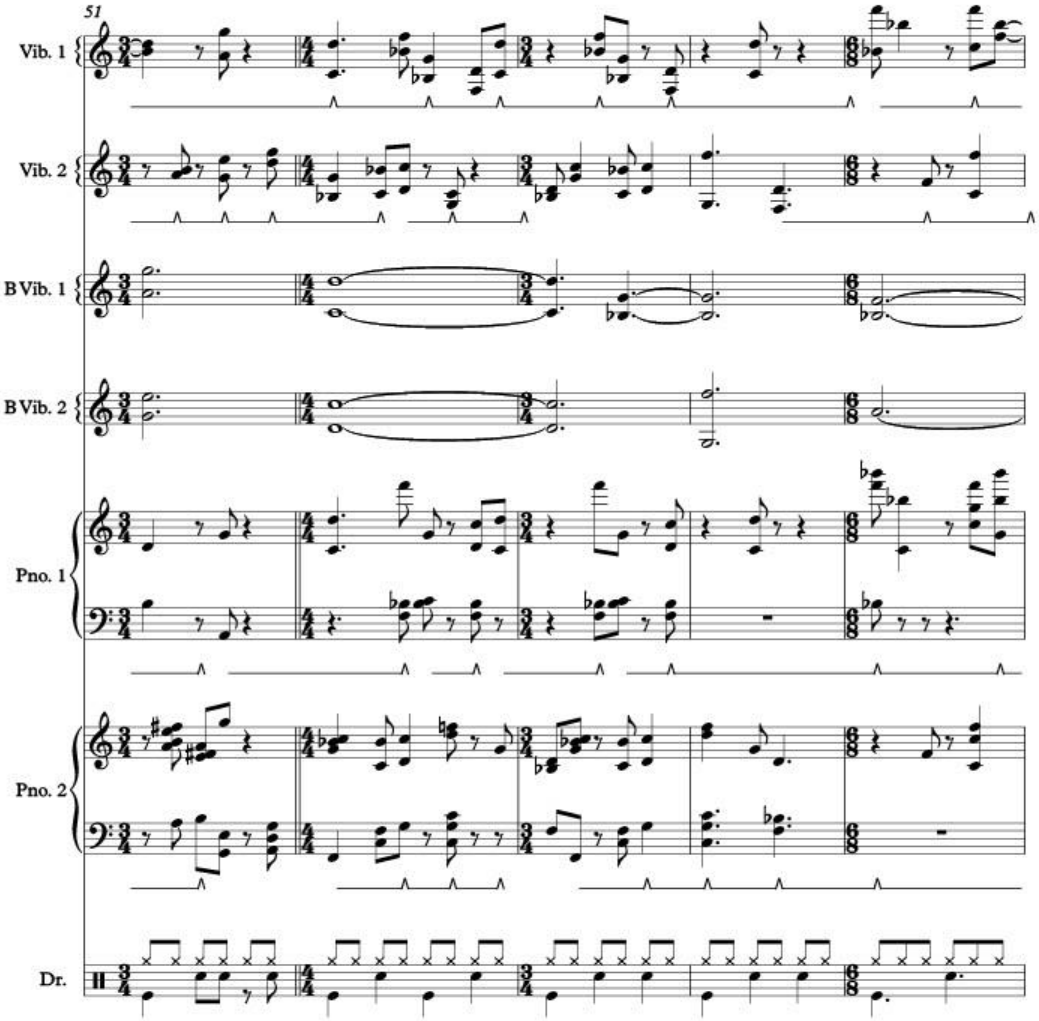

24
3+2+2
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
3+2+2
Dr.

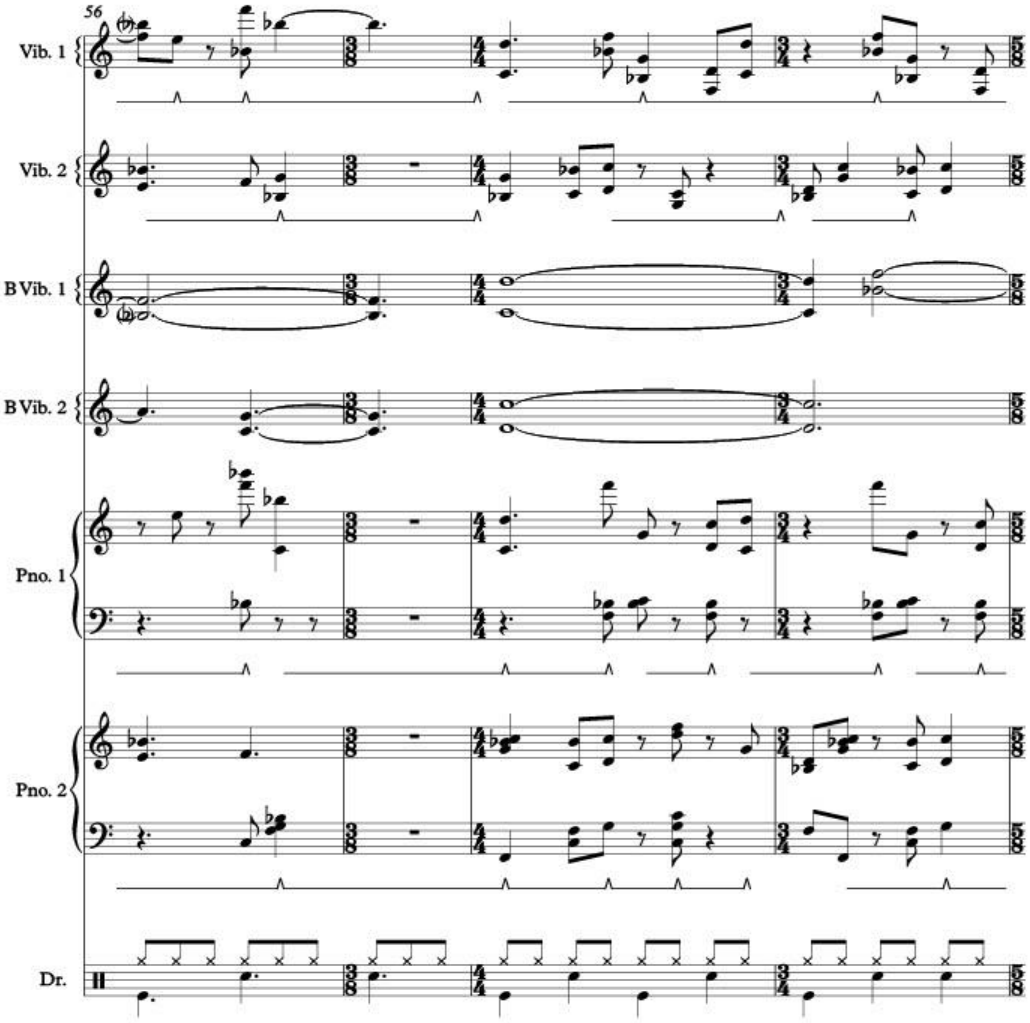

30
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
Dr.


36
2+2+3
3+2
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
2+2+3
3+2
Dr.

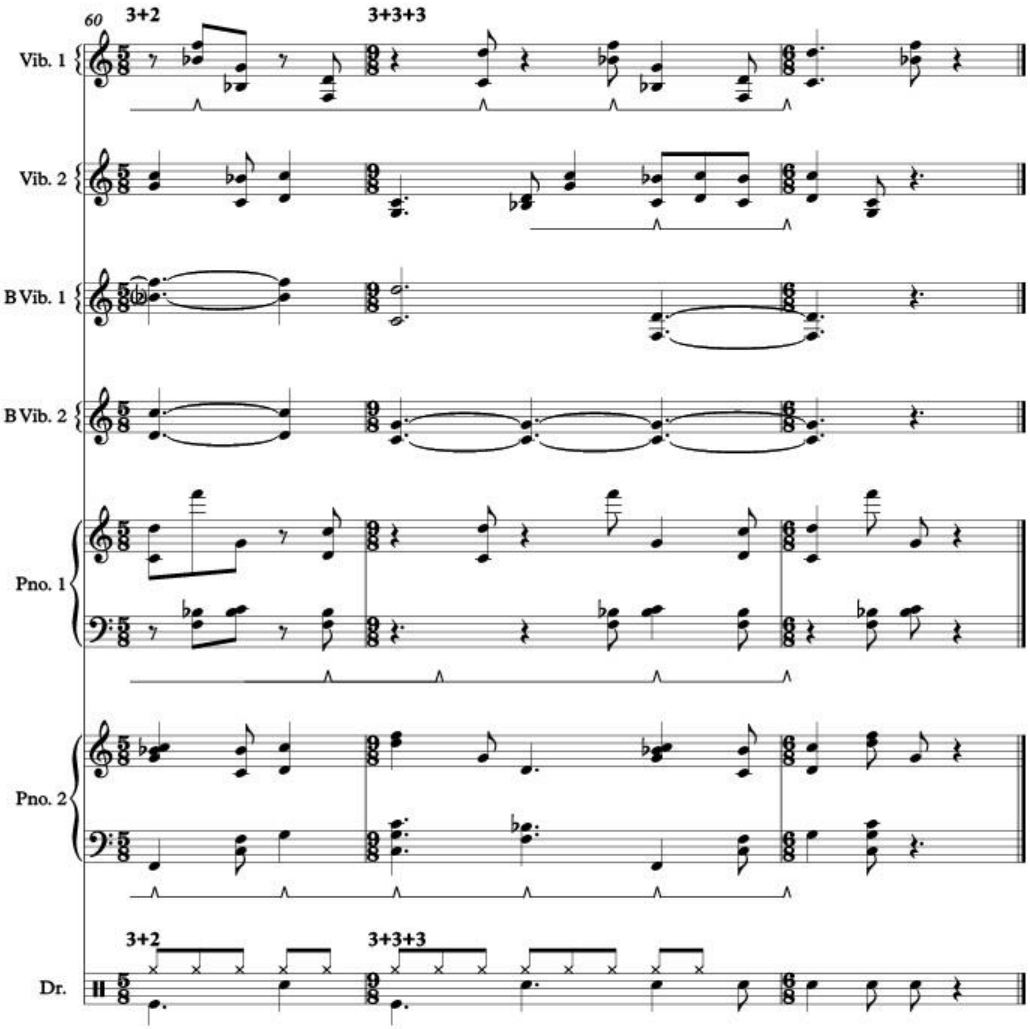

41
B 2+2+2+3
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
B 2+2+2+3
Dr.

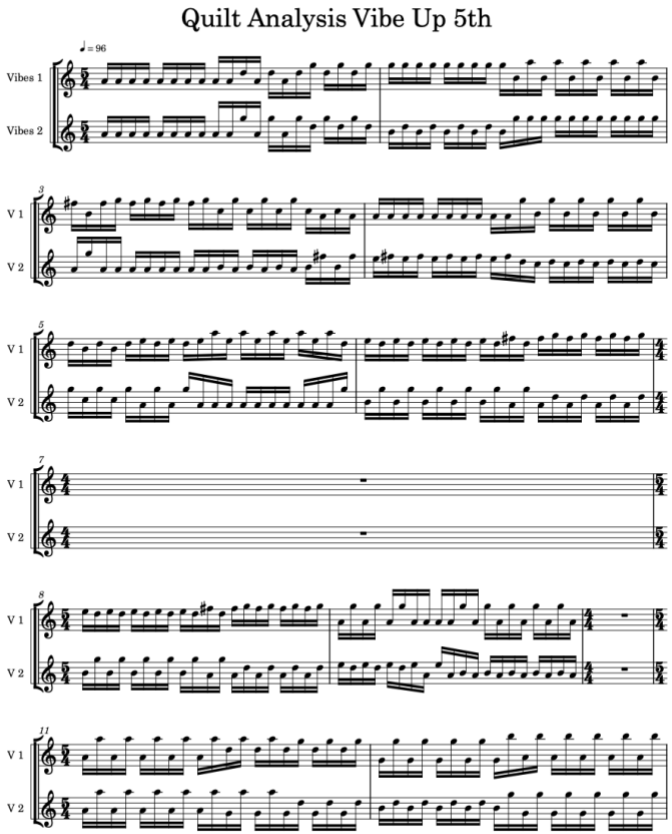

46
2+2+3
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
2+2+3
Dr.


51
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
Dr.


56
Vib. 1
Vib. 2
B Vib. 1
B Vib. 2
Pno. 1
Pno. 2
Dr.

7 - Amelia - 2/3/2022 session





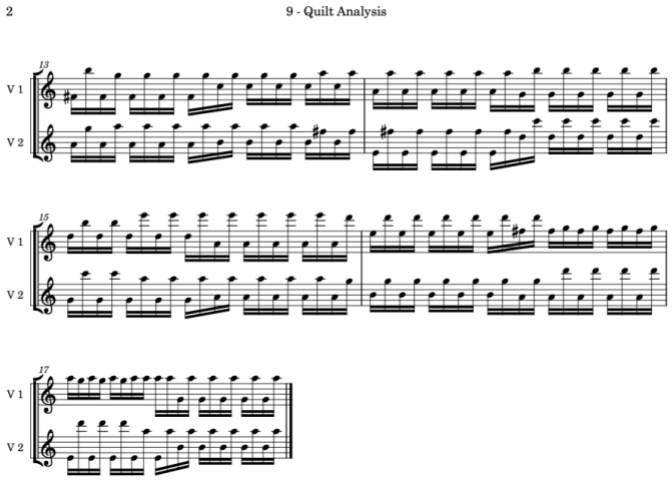


Figure B.7 - Quilt Analysis C Vibraphone Repitch

Appendix C - Other Images

Figure C.1 - Loop Jump

Figure C.2 - Simple Rhythmic Probability

Figure C.3 - Simple Probability

Figure C.4 - amelia.max

Figure C.5 - Trem Vol

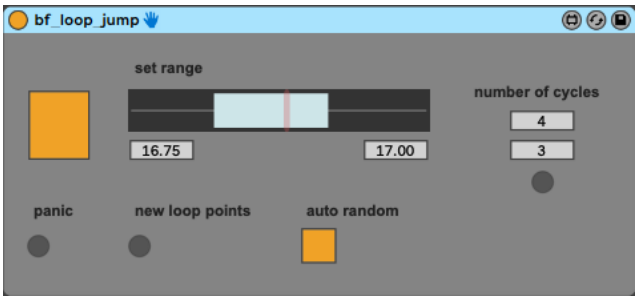


Figure C.1: Loop Jump

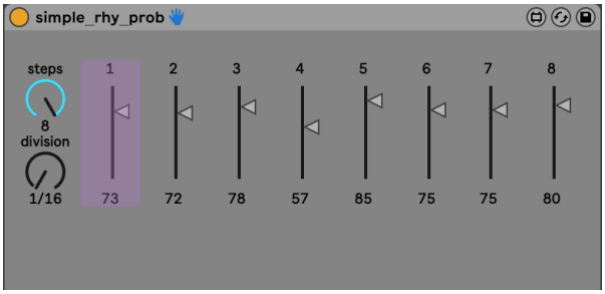


Figure C.2: Simple Rhythmic Probability

Figure C.3: Simple Probability

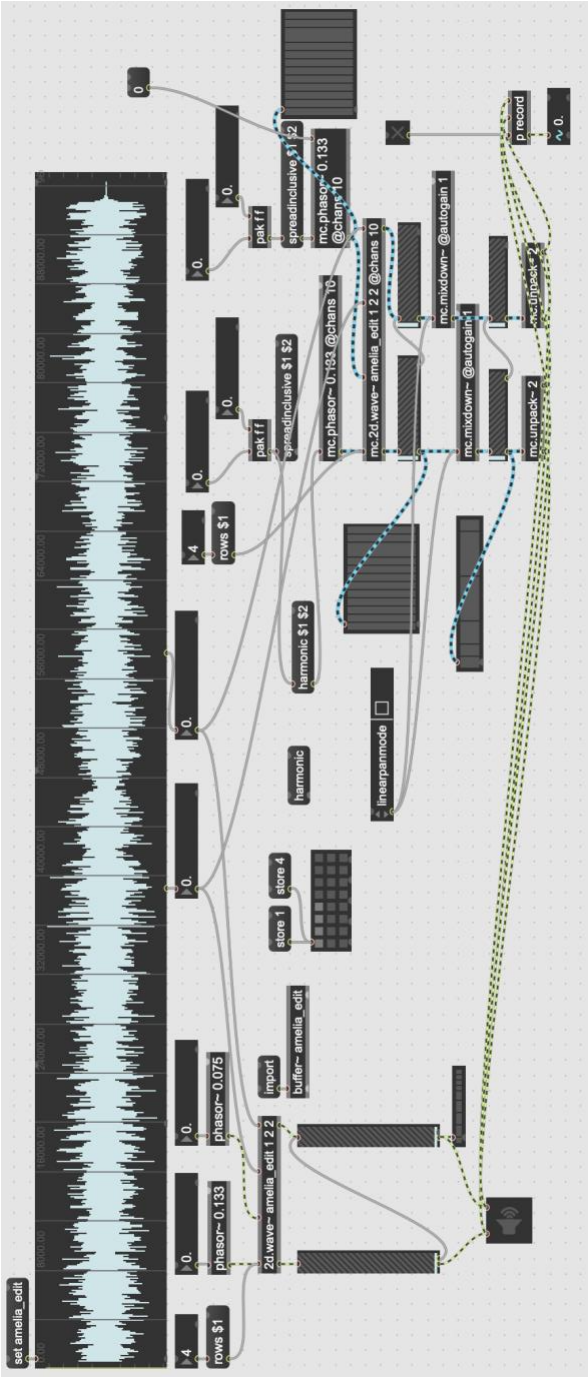


Figure C.4 - amelia.max

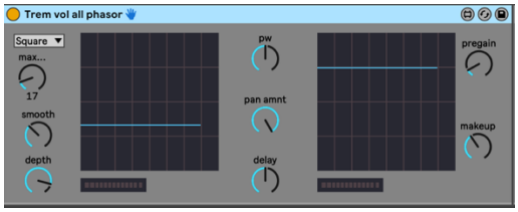


Figure C.5: Trem Vol

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Biography

Brooks Frederickson makes music, teaches music, builds interactive installations, and produces live events. He has written music for orchestras, chamber ensembles, live dance, and dance on film. His is defined by his penchant for patient harmonic motion, underlying rhythmic drive, and focused timberal palette.

He has collaborated with Yarn/Wire (*Quilt*), Stefanie Batten-Bland and The American Ballet Theater (for the multi-year residency resulting in the score for the new dance work *MonuMEntal*), The Crossing (for the interactive audio installation *Here to Hear / Hear to Here*). He has worked with JACK Quartet, Hypercube, F-PLUS, among others.

Brooks is currently a Ph.D. Candidate in Music Composition at Duke University. He previously earned his M.M. in Composition from New York University, and his B.M. from Butler University.