Rehearsal as Reflection: An Instrumental Dialogue with Oneself

ABSTRACT

This paper explores the concept of instrumental dialogue, where musicians use their practice time for self-communication through musical instruments. As they play, a musician can type out messages through their instrument to reflect on while influencing their performance of a song. This practice involves software-assisted text input methods, such as controlling a cursor over an onscreen keyboard and slow Morse code, paired with various instruments like electric drum set, electric guitar, and bass drum pedals in a one-man band style setup. The paper details the evolution of the author's novel text-input methods from 14-drum-pedal setups to multiple onscreen keyboard interaction methods to Morse code integration. The practice aims to enhance creativity and focus, allowing musicians to hold onto positive thoughts longer and enrich their practice, musical expression, and self-knowledge. The exploration concludes with a discussion of the potential of embodied Braille, the current work in progress iteration of instrumental dialogue.

Author Keywords

Dialogue, self-talk, intentionality, multitasking, reflection

1. INTRODUCTION

The roots of my instrumental dialogue practice began by pairing audio consumption with the natural rhythm of everyday activities to enhance my experience of them. I made the Mantra Mouthguard where I used computer keystrokes to play the Hare Krishna mantra syllable by syllable through computer speech on an audio transducer placed on the tongue (see Figure 1) [2]. The transducer was placed in a consumer grade rubber LED mouthpiece with the LED removed. This allowed me to type long papers while slowly feeling the Hare Krishna mantra on my tongue as if I was chanting it as many times as a monk would. As a slow typer, it worked well for my text input speed and provided a flow-like state when the perfect rhythm of chant to keystroke was found [12].

I expanded the use of audio accompanying activities with my performance "Do You Like Butter?" [3]. In this piece I mounted a computer keyboard to the top of a pull-up bar enveloped in fake buttercup flowers and had the computer ask the question "Do You Like Butter?" syllable by syllable when my chin pressed the space bar on the top of the pull-up bar. If I could perform the five pull-ups required to complete the question, then the computer would say I didn't like butter. If I couldn't make the five pull-ups, then the computer would say I did like butter. Again, I was using audio paired with an activity to enhance my experience of it, this time motivating me to eat less butter so I could lift myself more easily.

Next, I expanded from computer speech to midi music. I created a chin interface which originally was a computer mouse mounted on a neck posture corrector that captured the up-and-down movements of my jaw while chewing to play back music from a midi score (see Figure **2**) [4]. I would eat food and listen to a related musical score to affectively enhance my eating experience. I made connections like eating beef jerky while hearing cowboy music to boost masculinity, chewing a Take Five bar and playing back the jazz standard of the same name while holding a saxophone to feel cooler, and eating carrots while playing back the Looney Tunes theme song to make the carrots more appealing. I even mounted a computer mouse on a violin with an embedded mini hibachi grill so I could roast a marshmallow with a bow-sized skewer and play back the Kumbaya song by chewing as if I was seated around a campfire [5].

Figure 1. Mantra Mouthguard (2018)

2. Why I Write to Myself

During my MFA research I became a certified hypnotist, specializing in inventing my own active-alert self-hypnosis techniques. Active-alert hypnosis uses physical movement instead of relaxation to get your mind to a suggestible state, and my thesis paired these movements with computer interaction. I used everyday actions like choosing an item from the kitchen pantry, washing hands in front of the bathroom mirror, lying in bed watching TV, exercising, and practicing at my one-man band drum pedal station to trigger playback of text, images, and audio to program my subconscious [6]. By pairing subliminal text and audio with everyday activities I was able to prime my subconscious to be at a desired state for creativity, relaxation, happiness, etc.

One of the major findings of my MFA research was the COMT gene. Catechol-O-methyltransferase (COMT) is the mechanism our brains use to sweep up the extra dopamine that is floating around without a purpose. COMT works better at cleaning up dopamine for some people and worse for others [20]. The key to determining how well your COMT enzyme works is to look at the combination of valine (val) or methionine (met) on a certain rung of your DNA, rs4680. 25% of people are met/met, meaning they have a lot of extra dopamine left in their brains. All the extra dopamine in the brain of a met/met means they rate experiences as more pleasurable than val/vals or val/mets. But most interesting of all – met/mets are much more prone to respond to placebos and suggestion [15].

My DNA results show that I am met/met, part of the 25% of the population that responds strongly to placebos and suggestion. This became the key to shifting my creative practice to favor text-input over reading or listening because typing, especially in novel ways, forces me to hold words and ideas in my head for longer periods of time. Instead of rushing through a thought a noting it down through a keyboard or voice note, I force myself

to embody the idea and articulate it slowly. This boosts the overall effectiveness of the affirmation, goal statement, intentionality statement, or prayer because I am so prone to suggestion and placebo. The question driving my practice became "how can I be writing (something positive) all the time?"

Figure 2. One-button Chin Interface (2024)

3. Instrumental Dialogue

As a musician, there was a natural inclination to explore text-input with musical instruments to take advantage of my COMT gene and hypnotic training. Much of my own practice time as a musician occurs while multitasking. Instrumental dialogue allows for the refocusing of attention through the instrument using language instead of music theory. Since much of the hardware used for my MFA installation was adapted electronic drum equipment that sent signals to the computer through MIDI translation programs and MAX MSP, it was an ideal spot to begin. I had many extra pedals and drum brains lying around to organize into a novel text-input system.

3.1 Initial 14-Pedal Version

My first instrumental dialogue work was during my thesis exhibition performances in the Spring of 2021 [7]. I used 14 bass drum foot pedals in a one-man-band style circular set up to control the cursor movement across an onscreen keyboard on a computer **(**see **F**igure **3)**. For this series of performances, I used my feet to type into the text entry window of the Dymo label software program to print out a Dymo label to stick on a bottle of placebo pills or on a blank playing card to be shuffled for psychological priming. The drum pedals were arranged so each beater would contact a separate electric drum pad. Some of these pads were intended for bass drum beaters like the Roland KD-7, while others were mounted on an adapted Roland electric drum rack. Roland TD-6 and Roland TD-8 drum brains were needed to accommodate signals from all the pedals. The pedals were assigned functionality through the software Bome Midi Translator [9].

In the initial 14-pedal version the cursor would move 15 pixels in the up, down, left, and right directions. Due to cursor movement being limited to only 15 pixels per pedal push, numerous pedal triggers were required to reach the desired key. This resulted in pairing directional cursor movement with two drum pedals each, one for each foot so the cursor could reach a letter on the onscreen keyboard more quickly because of twice as many triggers in the same timeframe. Because I use a double bass pedal, this 15-pixel directional assignment was given to 7 pedals instead of eight as a double bass pedal's beaters share the same pad. Three pedals were assigned cursor position coordinates on the screen to quickly jump between the text entry window, the Dymo print button, and the onscreen keyboard as clicking in one window would sometimes disable the others. The four final pedals were assigned up, down, left, and right directional arrow keystrokes to navigate the text entry box of the Dymo software in case of mistakes. For this iteration, two extra USB footswitches were used for "select" and "backspace" actions as the onscreen keyboard program I was using at the time would not recognize simulated keystrokes from the Bome Midi Translator program. There were an additional two extra drum pedals between the double bass pedals that spun accessible motorized dice rollers full of placebo pills to charge them but did not play any role in the text entry.

Using the 14-pedal setup I was able to keep both hands free to engage with an instrument or perform other metaphorically related activities to the content I was typing. It was difficult to keep any form of consistent rhythm while playing a guitar as there were sudden stops required to select a key and print a Dymo. Though impractical, the idea of working harder to type something struck me as conceptually rich, so I pursued other iterations that streamlined the text-input ability while keeping some degree of inefficiency. In this way I was working in a way similar to ergodic literature, except instead of making the reader go through non-trivial actions to access the text, I was making myself go through non-trivial actions to express it [1].

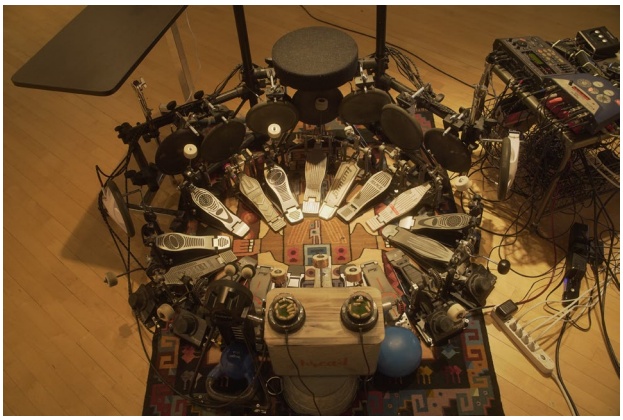

Figure 3. 14-Pedal One-man Band Setup (2021)

3.2 Three Rows Version

The next iteration of instrumental dialogue through drum pedals was more practical and more rhythmic. Instead of having multiple pedals control the up, down, left, and right cursor movements, I used the double bass pedal to control cursor movement in the left to right direction. I eliminated the multi-directional controls by implementing three drum pedals to specify the initial cursor position on a QWERTY keyboard, corresponding to either the Q row, A row, or Z row. The cursor begins at the key to the left of the initial letter and continues to the end of each row. The row of numbers at the top of the keyboard was omitted because my typing tasks did not frequently require numbers. The space and backspace keys were assigned separate pedals as they are not on the Q, A, and Z rows the cursor is active on.

The three rows iteration used an onscreen keyboard called Free Virtual Keyboard, which recognized the "select" left-click mouse command through Bome Midi Translator [11]. This allowed the USB footswitch to be replaced with another drum pedal to select a keyboard key. In this version, the pixel movement per pedal push was increased from 15 to 45, averaging two pedal pushes per letter to maintain a more

consistent rhythm when played musically. This reduced the number of required pedals to seven and enabled a single drum brain to capture the signals.

At this stage I also began assigning midi drum sounds to each of the pads. The double bass pedal (right cursor movement) was assigned the closed hi-hat since it was hit many times in a row. The bass drum sound was assigned to the pedal push that sent the cursor to the Q row as it had the most vowels and was hit more often than the others. Medium and low tom sounds were assigned to the A and Z row pedal selectors. The snare sound was assigned to the select pedal, a ride cymbal was assigned to the space pedal, and a crash cymbal sound was assigned to the delete pedal. Even though this iteration was streamlined and more rhythmic, it still caused choppy playing when accompanying guitar one-man-band style because of the pauses when having to change foot positions to different pedals in the middle of playing.

3.3 Scrolling the Keyboard

The next iteration of instrumental dialogue through drum pedals became even more efficient and rhythmic. Instead of Bome Midi Translator assigning keystrokes, I began using Max MSP and the external object 11clicks to simulate mouse interactions on an onscreen keyboard [19]. 11clicks allowed me to choreograph the cursor position over specific keys with each input signal from the double bass drum pedal. This approach enabled me to commence at the tab key located to the left of the Q row, systematically moving through each row from left to right, advancing the cursor one key at a time. Upon concluding the Z row, I included both the space bar and the backspace key before restarting the sequence at the Q row. This cut the number of necessary pedals down to two, the double bass drum pedal to scroll through the keys and one other pedal to select a key. The select feature was also accomplished using the external Max object 11clicks. Using only two pedals for text input freed others for sonic accents, enhancing the performance's musicality. Having fewer text-input pedals enabled more rhythmic playing, but it slowed down the input speed because missing a letter or key required toggling through the entire keyboard again to reach it.

The adoption of a slower scrolling technique facilitated the integration of additional instruments into my musical dialogue practice. I started utilizing my electric guitar for text input by processing its signal through a stutter pedal, which segments the audio signal into smaller fragments. For example, one strum of a chord would be broken into seven separate rhythmic signals rather than the one initial signal of the strum. The stutter pedal allowed for any style of playing because any audio signal, steady or unsteady, could be broken up to push the cursor across the rows of text. To select a key from the onscreen keyboard I incorporated my one-button chin interface (as mentioned above) [4]. This was an ideal slow text-input approach that allowed me to watch TV (when I usually practice guitar) and be peripherally aware of the placement of the cursor to slowly type out an affirmation or intention. This method of practicing guitar has been effective, allowing for the retention of numerous ideas over extended periods.

To address the issue of slowed text input caused by the scrolling method, an iteration was created that enabled reverse scrolling. This way if a key was missed or the next letter in a word was only back a few keys, I could toggle in reverse to reach those keys more quickly. This modification involved incorporating an additional bass drum pedal into the setup, to be engaged when a change in direction was necessary. When pushed, this new pedal rerouted the input signals through a gate object in Max to reverse the count. The reverse scroll method worked to allow smoother transitions and less time between keys. Even though it was simpler and smoother, I was still not happy with the pedal setup interface for long term use.

4. Morse Code Incorporation

To streamline my instrumental dialogue practice even more, I incorporated Morse code. Morse code is a series of dots and dashes transmitted through sound or light that combine to form letters [21]. This removed the need for controlling the cursor movement over an onscreen keyboard and allowed for more rhythmic playing. For this iteration I went back to using Bome Midi Translator as it was a quicker and simpler way to map keystrokes to the drum pedals [9]. I used a Morse Code Translator site to type into as it only required four keys for full morse code production – "." for dot, "-" for dash, "space" to separate letters in words, and "/" to separate words [17]. I added a backspace key as well to fix any errors. I learned Morse Code in only a few days with the help of the Morse Mania app [14].

For this iteration, I used the double bass drum pedal as the main rhythmic element with no external keystroke mapping. I added a drum pedal on the inside of each of the double bass drum pedals to represent the snare sound mapped to the morse code dash signal (see Figure 4). I added a drum pedal on the outside of each bass drum pedal to also represent the snare sound but mapped to the morse code dot signal. This is so a dot or dash played with either foot would always trigger a snare sound, keeping a consistent rhythm. In the very center of the setup was a pedal for the space bar. To the back left of the setup was the backspace key, and to the back right of the setup was the backslash key to separate words. This version was the most musical and rhythmic yet. Slowing down the morse code so every dot or dash came on a snare hit allowed me to play in rhythm, focus on the music I was playing when accompanied with guitar, and keep the message I was typing in my head as well. It drastically reduced the number of pedal activations required to type a single letter and allowed me to type longer texts more quickly.

Figure 4. 8-Pedal Morse Code Setup (2024)

I became so adept at this iteration of instrumental dialogue I began running out of ideas of what messages to type to myself. The messages that worked best with this type of text-input were short enough to hold in your head and meaningful enough to make you keep typing. These began with simple positive platitudes that were easy to conjure from memory while playing. However, I soon sought to enhance my internal dialogue as I was able to type more text in one sitting than I had previously achieved in any earlier iteration. I began looking through quote collection books I had read previously like George Seldes' The Great Thoughts and Bartlett's Familiar Quotations [18, 8]. These were convenient as I had read them digitally and left a highlighted trail of the thoughts that interested me most. Since the quote books were digital, and I had the ability to control my

computers through my instruments, I incorporated the navigation and collection of quotes via instrumental dialogue into my practice.

The navigation of highlighted sections of digital quote books incorporated another new instrument into my practice, an electric drum set. The snare pad was replaced with a KAT Percussion Multipad, which divides the pad into four separate zones, each capable of being assigned a different MIDI note [16]. Adding an electronic hi-hat foot pedal controller to the KAT gives me the 5 inputs needed to enter morse code with the KAT pad and pedal alone using Bome Midi Translator. This frees up the other pads of the electric set to be assigned to control scrolling through my highlights in quote books in the Kindle app using only the up and down arrow keys. The highlights are displayed on a computer monitor easily viewed while playing the electric drum set. The quote collection practice involves transcribing highlighted quotes from Kindle into a OneNote document for reference before starting an instrumental dialogue set. I add the typed text, the morse code, and information about who the quote was from to the information as well. I do all the navigation and transcription while playing the drums. This method musically sounds more like free jazz than rock and roll drumming, but it is still an enjoyable embodied text input

5. Future Work

The embodied nature of the quote search and transcription process prompted an exploration of text entry methods beyond using my feet. The method I am developing now is called embodied Braille. Braille is a writing system that uses dots in six cells to represent letters, numbers, and other symbols [10]. Most people identify Braille with raised bumps on a surface to enable those with visual impairments to read. I learned to read Braille visually in only a few days by using the app Braille Academy, made by the same company that made the Mose code app mentioned above [13]. I am re-envisioning it as 3D Morse code, a way to transmit text-input data with one stroke per key through memorizing the different combinations of the six cell Braille grid applied to the body [see Figure 5]. For my early experiments, I am using my electronic drum set and wearing an electronic hi-hat pedal under each arm. The hi-hat pedals under each arm are the top two cells in the Braille grid. The drum sticks in each hand hitting the snare and floor tom are the middle two cells in the Braille grid. The feet on the hi-hat pedal and bass drum pedal are the bottom two cells in the Braille grid. This setup allows for the coordinated embodied expression of language through rhythm and might lead to an even more potent reflective dialogue with the self.

Embodied Braille also presents the opportunity for new sonic experiences of communication. If the six Braille cells are assigned notes on a musical scale, say intervals 1 through 6, each letter combination would have a different tonal quality. Through practice, the listener could identify letters through their sound, experiencing communication in a new medium. This could also work through developing awareness of sensations on the body. If a person was outfitted with audio transducers in the same areas of the body that are used to input the embodied Braille (underarms, hands, feet), they could feel the subtle vibrations of each letter through their body and be able to comprehend the message that was being communicated. This could also be a new way to experience music, where rhythmic messages synced with the track communicate messages to the listener through activating the different areas of their body. These innovative methods of instrumental dialogue can convey multiple channels of information through various sensory modalities.

6. Rehearsal as Reflection

Through my years of engaging in instrumental dialogue, I have realized the necessity of balancing the creation of original content with utilizing the words of others as tools for fostering reflection. This balance requires a combination of novelty and repetition, allowing for both adventurous exploration and rote rehearsal. The practice of instrumental dialogue can facilitate these reflective moments. Often during my instrument practice, I find myself falling into mindless repetition, playing the same songs in the same manner repeatedly. A similar pattern can emerge in instrumental dialogue, where there is a tendency to type the same quote with the same piece due to the reduced cognitive load and the development of muscle memory.

However, instrumental dialogue challenges individuals to consistently push beyond their usual efforts. Recognizing what is needed for each practice session or even for an individual song is part of the enhanced reflective capacity that instrumental dialogue provides to the musician. It involves seeking something new to type, either from within oneself or from the words of others, experiencing novel juxtapositions of ideas and melodies, and learning to see the same in oneself. Heraclitus famously stated, "life is flux," meaning both our experience of art and our sense of self should be dynamic and ever-changing [18].

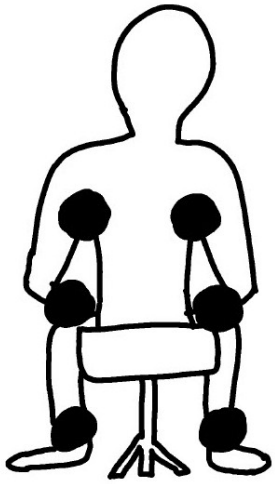

Figure 5. Embodied Braille - Man sitting on drum throne with Braille Cells overlayed on interaction points. (2025)

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