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UNIVERSITY OF CALIFORNIA SAN DIEGO

The Sound of Movement

A Thesis submitted in partial satisfaction of the requirements for the degree Master of Fine Arts

in

Theatre and Dance (Design)

by

Salvador Cazares Zamora

Committee in charge:

Professor Robert McElver, Chair Professor Stephen Buescher Professor Victoria Petrovich Professor Shahrokh Yadegari

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University of California San Diego

DEDICATION

Para mis padres, cuyo amor y apoyo no tienen final. Es gracias a ustedes que puedo perseguir mis sueños cada día y hacer lo que amo. Su confianza en mí me impulsa a seguir y nunca podré agradecerles lo suficiente. Te amo mamá; te amo papá.

Para mis hermanos, que han mantenido cuerdo y nunca dejaron que la distancia nos separara. Espero que estén tan orgullosos de mí como yo de ustedes. Los amo.

Para mi familia, cuyo aliento y cariño me mantienen a flote. Hogar es donde ustedes están. Los amo a todos.

Para mis amigos, que me han a animado y relajado. Gracias. De verdad, gracias.

Para mis compas, ustedes saben quienes son. Gracias por ser familia; no sería la persona que soy hoy sin ustedes.

Por mis tatas, a quienes extraño cada día.

We've come a long way, baby.

Love you forever.

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ABSTRACT OF THE THESIS

The Sound of Movement

by

Salvador Cazares Zamora Master of Fine Arts in Theatre and Dance (Design) University of California San Diego, 2023 Professor Robert McElver, Chair

Movement sits at the forefront of my sound designs for theatre and dance. My practices involve spatially moving sound in a theatre to create a change in space, to direct an audience's attention, and to respond to a controlled set of movement like choreography. I will demonstrate how my cueing process considers movement and how I respond to random variables that affect time and spatial trajectories. This thesis highlights my process, including the use of spatial audio, musical compositions for choreography, and designing in unconventional environments that involve movement. Example use cases include traditional and non-traditional theatrical productions, original music compositions, diegetic use of sound foley props, and dynamic cueing systems.

INTRODUCTION

As a sound designer, I take on multiple roles such as programming, mixing, and foley design. I'm exceedingly captivated by how emotional and physical movement on stage can generate sound, and how sound can re-influence that movement for new results. But regardless of my approach, I cannot consider sound without understanding the movement present on stage. I believe the time an actor takes to move, to express, or to speak resembles the pacing found in music. To this extent, I believe pacing and blocking is the same as choreography. As sound informs a dance with its musical rhythm and emotional context, so should sound inform movement on stage. For these reasons, I find movement is always at the center of my designs, whether I'm in response to it or orchestrating it.

As a composer, I like to be present throughout the rehearsal process so that I can learn the choreographer's intentions and support their movements by letting these ideas inform the composition. Most of my compositions used in theatre are intended to underscore dance numbers, and as I see how the play is being discovered in rehearsal, I like to reflect these decisions sonically. I work in tandem with the director and choreographer to create my compositions throughout the length of the rehearsal process because I believe that since a dancer communicates with sound through their movement, it's only fair that sound should respond back. Sound creates vibrations that an audience member can feel and touch. And just like an audience can be touched by sound, they can also be moved.

CHAPTER 1: MOVEMENT IN THEATRE

By emphasizing movement when I approach a sound design, I can control the pace of a show, denote information, and convey a clear emotional trajectory. Sound can move people both physically and emotionally. It can determine how performers move within a space and can inform the audience what that space is. Audience members can hear movement in a space and follow it, trusting its direction and intention.

TaxilandiaSD is a performance piece highlighting the change and gentrification of cities south of San Diego, all conducted within a moving vehicle. With an audience of no more than three members, the story is an intimate and interactive depiction of change as told by a local San Diegan. With the content of the show reflecting on gentrification and a theme surrounding local transit, the car's show route passes through areas with a high volume of traffic and several trolley crossings throughout different times of the day.

In this scenario, the movement of the car is directly related to the pacing of the experience. The cueing for the show is in response to the car's location on its route rather than a traditional cueing method where the cue calls would control where we are in a show. When movement is dictated by live traffic because the performance is held in a moving vehicle, a flexible cueing system is essential. The performer, our driver, is responsible for ushering the audience from a trolley stop, into the car ride, and out the car at another trolley stop. All the while, they are firing video and sound cues from a show computer hidden in the front seat of the car. Flexibility in the cueing system was critical as the timing of both audio, video, and

microphone cues would regularly differ due to the varying levels of traffic throughout the day. Unlike a traditional space which would give me total control of the sonic space, I had to be flexible in cue timings to account for the unpredictable movement and sounds of the outside world. Responding to an assortment of random variables was very intriguing as it was a way I had not yet considered movement in my designs. Working in a confined space also led me to reanalyze the big panning gestures I use in a traditional theatre space and how I could scale this down for use with a small audience.

Though I was not responsible for designing the audio and video content which was a series of songs, poems, and interviews mostly made by local artists, my programming of the content, with consideration of the pacing and timing in relation to the movement of the vehicle, became the core design element. With the movement of the outside world dictating pacing, I was responsible for cues firing with options for varying situations. This led to the idea that some cues had a higher priority over others. These were cues that needed to be fired at critically timed moments in order to build upon themes and moments that were integral to the experience. Additionally, we found there would easily be too much time between cues because a traffic light may have taken longer than expected, trolley crossings would occur, or any number of random traffic occurrences would unfold as we had no control of the world outside the car. To account for the motion of the world outside of the one we were creating, we had cues that could linger and held a lower priority. These cues were often fired near large intersections so that the length of a full red light would lead to no less of an experience than those who encountered a green light. The higher priority cues that followed had quick fade outs and transitions to quickly end the lower priority cues so that the performer could always sync up their text with the physical landmarks along the drive.

Alongside transitions, some moments of the ride would require louder cues during heavy traffic, and for some moments the mic needed to be lowered to prevent feedback because the car windows are lowered. In a localized sound gesture I often use in traditional theatre spaces, some sounds are positioned spatially near the screen to bring attention to specific video content. With the screen on the right side of the vehicle, and a passenger sitting on the far left side often focused on what's outside the car, they needed an auditory signal to physically get them to turn their head and look in another direction. With a moving stage and so much information being conveyed, an auditory cue panned in one direction can show intention and meaning in the words and media being shared.

When using this same technique in a traditional theatre space, I can guide an audience's focus to a specific area on stage. *Hells Canyon* is a horror play, in which we simulated the quick cuts often found in classic horror films. I achieved this sonically by creating a sound score with aggressive panning and hyper-specific localization in order to direct and move the audience's focus. In order to do this, the design team's focus was set on misdirection. Without being able to cut to sudden imagery, the design team focused on how to replicate this immediate shift without changing scenery. We realized we had to guide the audience's attention elsewhere on stage while we set up for a scare. This was done in various ways in conjunction with staging and lighting. For example, when a jump scare was to come from stage right, dialogue and staging would focus on stage left. By creating a familiar soundscape throughout the play that played evenly through all the speakers, I was able to prime the audience with a comfortable stillness. By shifting the direction of the sound to stage left along with the other design elements, I could move the audience's focus to the source of the sound. The crew or actors not in the scene could then move into place stage right. At the jump scare, sound and lights would shift their focus stage right to

accent the performer's actions. With precise timing achieved by OSC communications between sound and light, we could move the audience's focus in an instant, resembling a jump cut in a film.

In order to prime the audience and create constant tension, a recurring theme or underscoring in the play was constantly present. With speakers above, behind, and to the side of the audience, upstage of the cast and set, and far upstage above, I was able to move sound elements around the room in various paths. This could be left and right just through the audience,

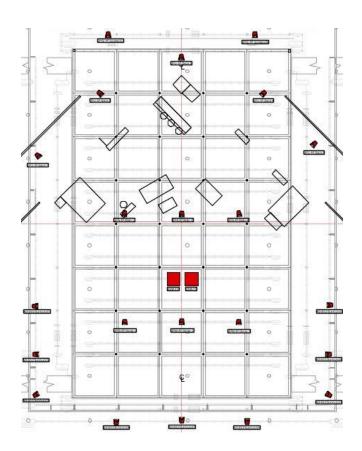


Figure 1.1: Grid view of sound plot for Hells Canyon

front to back over the audience and set, or any combination to change the sense of space. Using the sound of sustained, bowed cymbals, I would pan these in varying patterns across the room throughout the show. This allowed the audience to gain a sense of familiarity with this sound, but the changing source of the sound never let them gain any sense of pattern, and aided in destroying expectations. This would subconsciously have the audience grow anxious when they heard the theme, knowing that tension is rising, but with an ever changing motion, the audience could not determine when or where a scare would land.

Space was a strong throughline in my design for this show. Though the play is set in a cabin in the woods, the main character often enters a dream-like state before a sequence of horror unfolds. Also, the performers often leave the stage and interact with the world outside the cabin, unseen by the audience. Just like how a film can quickly cut between two spaces or even scenes, I made it a priority to emphasize where we were as well as where the audience should be looking. The audience was watching the events unfold in a cabin in the woods. We would then get glimpses of what the protagonist is feeling and experiencing, usually in a phantasmic world adjacent to reality. A world where time and movement don't function the same. This led to the design of several groupings of speakers that allowed flexibility, but also created mini systems for separate worlds. A play set in a cabin in the woods requires a certain level of realism, and horror relies on familiarity with this world all while departing from this realism. To help achieve these different spaces, a set of speakers were set 60 feet away and 20 feet above the audience to create a drastic sense of distance. Animals, wind, and other natural sounds could gently fill the room as these speakers were far and high enough that the audience couldn't pinpoint the source. Because horror also requires dynamic changes and quick cuts, other speakers were set close to the audience for sound to arrive quickly and abruptly, breaking the natural sounding atmosphere and heightening jump scares. The whole speaker system was symmetrical down the center stage line to give me the option for stereo panning in every cue. This meant that every speaker was part of

a pair, with its opposite split across the stage line, allowing for a clear distinction between left and right. This aided my ability to physically move an audience member's gaze by giving them a clear understanding of where sound is coming from.

An example of how these various groups of speakers created space can be found about a quarter into the show. In this moment, a group of men are staged in the kitchen upstage right, while a group of women are set in a bedroom behind "closed" doors, down stage left. Each group has their own dialogue, and we jump back and forth between the two conversations. All the while, funk music is being played from their radio on stage. To create two different spaces, I would play two versions of the music track. One was a normal unedited version while the other was given a low pass EQ filter to emulate the sound of music being heard behind closed doors.

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\$		Funk Music dry (headache).wav			05:07.60	00:00.00
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Ļ⁄†		fade Funk Music Radio Out	Funk	00:12.00	00:20.00	00:00.00
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[00]	60	✓ Kid's Bedroom			00:03.00	00:00.00
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[jo]	75	✓ Living Room		00:00.00	00:01.50	00:00.00

Figure 1.2: Qlab programming for Hells Canyon

With simple volume fade cues, we could traverse between these spaces easily. When the men had dialogue in the kitchen, the original music would play at normal volume and the filtered music would instantly drop to silence. Likewise, when the women had dialogue in the bedroom, the filtered music would cut to the normal volume as if we never left the space, and the original

music would cut to silence. It was imperative that the music tracks did not pause or stop so both tracks would play in sync. The sync allowed for flexibility in when the volume fades were called, as it didn't matter at what point in the song these cues were called as they stayed in sync, even in silence. This physical movement of sound in combination with effects led to a back and forth moment, akin to jump cutting in a film.

The loudest and scariest moment in this show was a "door bang" cue. A crew member was swinging a sandbag into the door from backstage, while simultaneously pressing a MIDI foot pedal. The sandbag on the door created a physical and visual reaction from the audience's perspective, as it would aggressively shake on its hinges, and occasionally props would fall off the bookshelf adjacent to the door. In order to really create a departure from reality, the MIDI foot pedal gave the crew member total control in firing the loudest sound cue in the show. A huge thud, repeatedly blasting through a giant subwoofer right above the audience's heads, in combination with the physical effect on stage in sync led for a successful jumpscare, causing audiences to scream and jump out of their seats.

Sound moving in a large space is often accompanied and complemented by visual elements to give a message to an audience, but I've also been challenged with creating work without a single visual element. *Meladi Thive and Her Words of Comfort*, an audio play by Preston Choi, was created during the height of the pandemic for the UCSD Wagner New Play Festival. With theatre spaces closed and having already experimented with "zoom plays", a fully audio experience was created to showcase this new play. By recording and working remotely with actors, I used their takes as a sort of metronome to pace myself as I recorded my foley design. I used a four mic spatial recording technique with two condenser microphones in the back left and back right of my kitchen to record room tone and create a sense of distance, and

two close mics in stereo to capture the details of diegetic noise. I recorded noises with foley instruments made of various kitchen items all while navigating my kitchen to sonically represent the stage directions while timing these actions with the actor's dialogue. Using this technique, I was able to capture a realistic recording of someone's residence that acted as a soundscape for these voices to reside in, as well as distinguish their actions and emotions by recording my movements as their diegetic noises.

In the moments where the main character was in the kitchen preparing dinner, I prepared my own kitchen space with varying glasses with water, a frying pan on the stove, and pre-cut vegetables. After some rehearsal, I was able to time my movements with the actor's dialogue to create the illusion that the voice we hear is also creating the sound of these movements into the mics. With four mics, I am able to create a visual perspective of space and denote where the performer is at and what their actions are. I used a set of close mics so that I could capture intimate sounds that would give you information about a character's emotions that an actor would typically portray visually through their facial and bodily movements. Using the close mic pair, the audience can hear details like fidgeting or pacing that, when combined with voice acting, creates a visual understanding of the character's actions and emotions. By recording the sounds of movement with a spatial recording technique, the listeners hear details in a way that emulates how actors would make these sounds on a stage. Hearing in this way gets the listener to make associations with those sounds that give context and insight into the staging and blocking of the scene.

CHAPTER 2: COMPOSITION FOR CHOREOGRAPHY

Just like my sound design, movement informs how I compose original music for theatre and dance. When composing for choreography, I take a hands-on, almost devised process. I find it important to be in the room to study the movements and staging of the scenes where these pieces would play, as well work directly with the director and choreographer on how these pieces should be composed. We establish genres, tempos, how timbres related to the text, and the movement the director wants to see from the dancers. Throughout the rehearsal process as discoveries were being made, these ideas shifted over time as did my compositions. On top of the composition itself, I also concerned myself with how we transition in and out of these moments. Oftentimes, we found ourselves in the midst of the music, as elements from my compositions help build the sounds of the world. For this reason, I also like to compose most of the pieces to be easily "loopable," usually with melodic and percussive lines in 4 to 16 bar loops. This "loop-ability" makes programming on playback software flexible by giving me the option to repeat sections of a song until the next section is ready to play and sync with what's happening on stage.

Dance Nation, a play circulating around a girl's pre-teen competitive dance team, showcases 5 choreographed dance numbers with original composition. We explore different genres, including trap, metal, EDM, orchestral, and bedroom ballads. Each of these genres was chosen to fit the dramaturgy in the scene, as well as highlight specific choreography to showcase the present emotion. Being in conversation with the director, choreographer, and the sound

designer throughout my writing process, I would observe the dancer's movements and let the emotions the movements made inspire my writing. The sharp, isolated face movements during an audition scene led to a trap beat, the aggressive flailing and teeth gnashing during a moment of rage led to a metal track, and a monologue that evolves into a group chant and ends with yelling reminded me of a drop in an EDM track. Because most of the music was written in loopable chunks, this made for easy adjustments in the length of the music, creating a quick turnaround for new versions for the team to work with in the rehearsal room. In order to make sure the songs felt like they belonged in the sonic world of the play, I shared all the individual track stems of each song with the sound designer, who was then able to repurpose and resample them in choice moments of the play.

The first song written, *World On Fire*, is a cinematic-orchestral number that showcases the two main characters of the show Zuzu and Amina. The dance is a transfer of power and balances one's failure with another's success. Given the contemporary and ballet inspired movement's from the dancers, I used two cellos in the main melody to resemble the dancers. The first cello has a naturalistic timbre resembling the trying and pure spirit of Zuzu who starts the dance solo with long graceful movements and conservative leaps. The second cello is strong and distorted resembling the ferocious ambition of Amina, who finishes the dance solo after Zuzu messes up, with strong facial expressions and large powerful bounds across the stage. While the notation of these cello melodies are the same, the difference in timbres and character dance styles clearly illustrate a transfer of power. With the natural cello melody ending when Zuzu falls, the distorted cello melody comes in strong as Amina moves into place to finish the dance.

From there, we worked backwards and decided that *Face Audition* and *Petal Dance* would be "remixes" of *World On Fire. Face Audition*, the first song in the play, is a short trap

beat wherein the whole cast dances with just their face on stage. As the script specifically asks that this audition be performed with just their faces, we set to analyze what face movements were possible. Seeing as the actors would be on a large stage and the distance from the audience could vary greatly, the choreographer found sharp face movements to be the most readable movements in this moment. Quick cuts and changes resembled the idea of sampling to me, and so I re-sampled the ending of World On Fire. I "chopped and screwed" the main piano chords, added a beat, and sped the whole thing up. The result was a fast paced hip hop track with clear downbeats for the performers to follow, but also familiarizing the audience with what has now become our main theme. *Petal Dance* is a bedroom ballad composed of a simple strumming guitar and violin, and follows after a monologue from Zuzu. Zuzu shares with the audience her feelings about her crush and briefly compares his dandruff to falling snow. With the violin playing the main melody found in *World on Fire*, and some accompanying guitar chords, a small chime melody was created to highlight the movement of these dandruff flakes. The marimba-like chime in this song cues stage crew members to drop white pedals onto the stage from the grid above, as Zuzu dances a heartfelt contemporary duet. She dances and twirls in the dandruff snow as the song fades out and leads into the next scene.

The next song, *Sexy Robot Babies*, is one of the most intense moments in the play. The director, wanting this to be a loud, fierce piece and the choreographer, wanting to showcase intensity and aggression, led me to create a metal track as the choreography presented a moshpit-like feel. Starting with a groovy bass line to start building upon the word "sexy," the track soon adds distorted guitar strums as accents to prepare the audience for the intensity that is soon to arrive. The dancers, who were just doing ballet warmups, begin to twitch and their movements start to become compulsive. They jolt and react to the guitar strums and begin

shifting from their ballet rhythm to the "four on the floor" beat. Departing from a conservative classical dance position, the dancers began touching themselves and exaggerating their movements by elongating their reach and shifting between fast head rolls and slow body rolls. After the initial scene is set, the track is interrupted with a loud heavy metal scream and the beat drops with heavily distorted guitars and loud drums. The stage directions continue, describing the girls as "bloodsucking robots who want to destroy the world" who have grown sharp fangs. The dancers showcase this by jumping ferociously and flailing on the down beats, gnashing their fangs wildly at the audience on long sustained notes in the guitar melody, and aggressively headbanging throughout. Turning the intensity up in an instant, the performers were able to "transform" on stage and justify their wild behavior. This track goes on for about three minutes, all the while the performers are flailing about, hissing, and running around headbanging aggressively. The track ends with a final build up and a long sustained guitar note that turns into amp feedback. This allowed the dancers to gather into their next formation from wherever they were on stage with enough time to finish their movement. As the feedback fades out, the lights shift and the next monologue ensues.

The final song, *The Final Moment*, is a lush EDM track that serves to underscore the final monologue that closes the show. Beginning with a warm bass pad, sustained horns as atmosphere, and vocals washed with reverb to obscurity, the track starts as the stage directions read "the earth starts to shake". In this moment a character begins a monologue and as the first part of the song continues, more characters join in. The drums come in with a driving rhythm to act as a metronome for the cast to follow creating anticipation for a buildup as the group chant continues. This first part was on a loop to provide ample time for this section of the text to be completed, and when the text ends with the cast screaming "PERFECTTT", the song is cued

forward into a EDM breakdown, resembling the drums used in *Sexy Robot Babies*. With the song in a loop, or vamping, the stage manager can call a "devamp" cue, which breaks the loop on command to time a musical drop with actions on stage.

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Figure 2.1: Qlab programming for Dance Nation

In the breakdown, the drums come in full force as Amina leaps on stage and begins dancing with heavily expressive contemporary movements. After a few leaps and a pirouette, the breakdown returns to the same beat and the dancer stops moving and begins the second part of the text, the final monologue to end the show. Through the monologue, the reverb is slowly lessening on the overwashed vocal track and its clarity grows at a snail like pace. With the tempo having been established earlier, the dancer was able to finish their lines right in time for the lyrics to be fully distinguishable, acting as a riser to build tension before the last drop. With another devamp cue, the stage manager cues the final moment in the show. The dancer began spinning energetically while lush vocals cut into accenting her peace and power. The piece ends with a final hit of the drums and the lingering reverb tail of the vocals while the dancer gnashes her fangs one last time at the audience before a full blackout.

In opposition to having stage managers call cues to advance a section of a song forward, I've composed while incorporating subtle sonic cues to give a perfect synchronization between projected visuals, choreography, and my composition, with a single call from the stage manager. *Everybody* is a play circulating around the ideas of death and resolving with the sentiment that nobody will ever truly know what the experience of death is until they experience it themselves. A truly contemporary play, the context in which the play can be designed can be rooted in any aesthetic. Our production, directed by Daniel Jaquez and designed by a mostly latinx team, took on a subtle latinx aesthetic. Though the set did not actively portray this, my rendition of *La Danse Macabre* did. The second to last scene in the play, a "skeleton dance" unfolds giving the audience a visual and sonic depiction of the journey to the afterlife. Subtly inspired by Dante's Inferno, and more specifically the Aztecs' belief in the 9 trials of the underworld, the dance shows Death moving through each of these trials in order to achieve a "restful death". With an animated projection cast across the set, the character of Death took on a solo dance, responding to the music and projections to create our narrative.

The main rhythm of the piece was inspired by latino hip hop beats while incorporating staccato strings for the melody. We begin on a blank stage, with the sound of a heartbeat pulsing in time with LED lights lining the stage. Through a door on stage, Death enters through a literal cloud of fog, seemingly trying to get their bearings. The projection, having been portraying a fog-like texture, shifts into a light blue wash as Death begins dancing to the heartbeat rhythm. A dog barks, and the sound of a river floods the stage, leading Death to search for the source of the bark all while interacting with the stage as if they're in the river. The next section starts with a

soft violin intro mixed with the sounds "rocks slamming people to death" These rock sounds come in on the second beat of each measure, giving Death a steady accent to react to. Accompanied with a projection of a jagged mountain edge emerging, that was pre-timed to my composition. Death makes a sudden jolt in their choreography as if being struck by these rocks. As well as giving Death an accent to hit, these rock smashes start four measures prior to the beat dropping, giving them notice of where they should be in the choreography. Given that Death is performing outward to the audience, they are not aware of the projection happening behind them. So though the projected video was timed to my composition, Death needed clear auditory signals that the projection was changing scenes in the background. For example, the song continues with the beat drop and as our rocks disappear, it's replaced with howling wind two measures before arrows are projected behind Death. In a similar manner to the rocks, the sounds of arrows whooshing come in, with Death reacting in perfect unison as they're struck. This, however, is a more dramatic example as not all of the trials we were trying to depict had strong differences in their sonic characteristics. Though we agreed on a subtle visual shift for the audience, the choreography still needed to vary and so Death needed a sonic cue. As I mentioned earlier about my tendencies to make my compositions "loopable," I was able to give Death the cues they needed by changing timbres by recontextualizing the violin melody for a different instrument, such as the piano to replace the melody when the stage changed.

Contextualizing the role of movement in my sound designs and compositions is intrinsic to my process. Movement can be rehearsed and choreographed to invoke emotion in an audience, and it can be a random factor in a space to respond to. Moving sound in a space can cause an audience to physically move their head and direct their attention, giving them information with intent and reason. Analyzing movement in the rehearsal process can be reflected in my

compositions, and leads to punctuated choreography that responds to my composition's tempo and motifs. This movement of sound is the sound of movement.