Translating Transformations: Object-Based Sound Installations

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In the past century, electronic music has positioned sound away from the visibly performing body and within the exclusive realm of the auditory. Through the process of recording, the sonic event can be both temporally and spatially dislocated from its visible counterpart, and this has greatly impacted the relationship between music and performance. Many critics and musicologists have explored the ways in which this condition of reproducibility affects the live performance of electronic music. Instead of investigating the specificities of the traditions of performance in regard to the stage, I am interested in exploring the ways in which the performance of electronic or studio-based composition plays out in the less-traditional art form of sound installation.

The specific sort of sound installation I discuss here has not, to my knowledge, been categorized. I am not particularly interested in the idea of assigning categories, but for the sake of discourse, I will describe this type of installation as an object-based sound installation. I would typify the works that fall under this heading as those that engage an audience by actuating a visibly present object. My intention is to describe how these object-based sound installations exist in a linkage between sight, sound and body in dialogue with the history of electronic music and more specifically the ways in which these installations translate the transformative powers of the sound studio into visibly embodied articulations. In order to convey this idea, I begin by broadly outlining a brief history of listening in the West; then, in the second half of this paper, I outline specific examples of installations that engage this history through the nature and form of their content.

The Distillation of Listening

Over the course of the past decade, a number of texts have emerged that investigate and historicize contemporary modes of listening. I am thinking specifically of Jonathan Sterne’s Audible Past [1] and Emily Thompson’s Soundscape of Modernity [2]. These authors, among others, point to modernity’s rationalization of the senses and the subsequent impact on listening, technology and the West’s understanding of the sonic. Historically, one can trace this rationalization of the senses to antiquity, when Greek philosophers separated the senses into five discrete categories [3]. This concept was reinvigorated in the Renaissance through the philosophy of Descartes and his contemporaries, who conceived of these perceptions as mechanisms of the body from which the mind can gather an understanding of the world [4]. In the modern era, the technology of sound recording, transmission and synthesis can be understood as emerging from the historic distillation of listening as a discrete category of perceptual experience. As Sterne states: “During the Enlightenment and afterward, the sense of hearing became an object of contemplation. It was measured, objectified, isolated, and simulated” [5].

Along with other cultural factors, this objective understanding of sound through the lens of Western science and philosophy contributed to the birth of absolute music in the Romantic era. Absolute music was considered to be autonomous, internalized and separate from the worldly and was positioned in opposition to program music, which was considered to be narrative and therefore of the world. It is important to note that these cultural constructs of musical form both enabled and were enabled by the concept of listening as a separate sense. The rationalization of perception laid the groundwork for an understanding of listening that transcends the visible world through the gateway of sonic purity. In this regard, the absoluteness of music is interwoven with the idea of listening as a distinct perceptual experience.

Coinciding with this concept of absolute music, and similarly related to a rationalization of the human body, was the development of automated musical instruments. These instruments mimicked and extended the actions of the human body through the use of mechanical technology. Automated instruments date back to antiquity but rose in popularity in the late 19th century as new developments in technology and production increased [6]. These instruments removed the performer from the performance of music, replacing the instrumentalist with a mechanical, material object, and in the process circumnavigated the performer’s mediation between the composer and the heard composition. The automated instruments also manifested an exacting clockwork performance, one that could be reproduced again and again without the intervention of human interpretation or error.

The same cultural circumstance that gave rise to both the performerless reproducibility of automated instruments and the aural-centrism of absolute music led to the possibility of recorded sound. It is crucial to note that electronic music and the sound studio emerge from this history as the ideal, absolute, rationalized “nonplace” that focuses attention away from the other senses and into the domain of the ear. It is within the hermetic seal of the recording studio that the idealized hege-mon of the heard is made manifest through the technology of sonic reproduction.
The recording studio yielded a sensation of command over nature in new and powerful ways. More specifically, the studio allowed for the manipulation of the most fundamental building blocks of how we experience sound. The composer is able not only to synthesize content away from the world but also to change the sonic event through transformations of space and time. These manipulations unfold in ways that appear to transcend our corporeal limitations, outfitting the studio practitioner with tools that simulate a material control over nature. For instance, with the advent of recorded sound, we are able to start and stop events in time in unnatural and physically impossible ways. Time can be reversed, slowed down, sped up, cut up and reordered. Similarly, physically impossible spatial environments can be created through the use of reverb and echo; alternatively, by adjusting volume between sources, the simulation of unworldly relational proximities can be established. In many ways, these transformations can be understood as fantastic extensions of our corporeal selves in pursuit of a pure sonic reality that transcends the physical world. Absolute music is thus inextricably intertwined with the fabric of the sound studio.

A formal investigation of transcendence of the worldly can be plainly recognized in Pierre Schaeffer’s *musique concrète* of the 1940s. Through the use of the studio techniques outlined above, Schaeffer worked to create a philosophy of music that functions as a complete dislocation of listening from the other senses. Schaeffer’s *objets sonores* (sound objects) were meant to be heard not as referential signifiers but instead as sounds unto themselves, divorced from the context of visual meanings [7]. *Musique concrète* moved the act of composition into the studio and in so doing complicated the traditions of music, especially in regard to its performance. Schaeffer and his contemporaries were confronted by the fact that works created in the idealized neutrality of the recording studio were difficult to situate outside of the studio environment. To “perform” these works often simply involved placing speakers on a stage in place of human performers. The speakers acted as visually static objects that exactly reproduced the previous actions of the composer.

In an effort to extract listening from the other senses, modernity distilled the concept of absolute music into the idealized form of absolute sound. Polemically prescribing a distinct success or failure of this inclination seems less important than addressing the sustained impact of the questions that it raises. Recording technology and the modernist approach to absolute listening have created a diverse range of response within the disciplines of music and sound art. In the second half of this paper I explore what I understand as a distinct reaction to this history: the emergence of object-based sound installations meant to translate the tools of the recording studio into a visible, bodily presence. I do not advocate these works as the solution to the modernist problem but rather note their delineation of a specific set of questions with which to investigate the conditions of sound-making in relation to the experience of contemporary listening.

**PENDULUM MUSIC**

For the first example, consider Steve Reich’s *Pendulum Music* (Fig. 1), composed in 1968. Reich’s score describes the piece as follows:

> 2, 3, 4, or more microphones are suspended from the ceiling by their cables so that all hang the same distance from the floor and are all free to swing with a pendular motion. Each microphone’s cable is plugged into an amplifier which is connected to a speaker. Each microphone hangs a few inches directly above or next to its speaker [8].

The performance begins with the performers each taking a mic and pulling it back like a swing; all then release each one in unison. The performers then carefully turn up each amplifier just to the point at which feedback occurs when a mic swings directly over or next to its speaker. Thus, a series of feedback pulses are heard that may all occur in unison depending on the gradually changing phase relations of the different mic pendulums.

Performers then sit down to watch and listen to the process along with the audience. The piece is ended sometime after all the mics have come to rest and are feeding back a continuous tone, as performers have pulled out the power cords of the amplifiers [9].

This piece is clearly not an installation as such. It is a composed score that calls for a series of specific actions from a group of human performers to a seated audience. However, I wish to start with this composition because it can be easily understood as a work that combines the tools of the sound studio with the conventions of performance in a way that leads toward the idea of object-based sound installations. Also, the performers appear almost inconsequential to the work; as the score explains, they trigger the piece and then retire to the audience as the work unfolds.

In this performance, what we see is inextricably tied to what we hear. Reich takes a single condition of sound technology (feedback) and combines it with a single condition of physical motion (the swinging pendulum). Either of these conditions would be extremely familiar to most anyone who has ever seen a mechanical clock or attended an amplified concert. Through an intentional didacticism, the two culturally prevalent conditions converge, and the audience quickly becomes aware of how the piece functions through the process of its unfolding. This extremely intentional visual didacticism is important in the wake of modernism’s separation of the senses. In order to be understood, the process is to be watched as well as listened to.

The idea of *watching* microphones and speakers as opposed to just listening to these speakers problematizes modernism’s idea of absolute listening by embracing the visibility of motion. The same speakers that statically rested on the stage of Schaeffer’s absolute music are dynamically repositioned and perform through embodied movement. Instead of reproducing pre-composed sounds, the work transforms sounds into instruments that produce unique feedback tones based upon their physical forms (shape, weight, size, etc.), as well as on their relationships to the material aspects of the microphones and the acoustic resonance of the performance space. The speaker/microphone/space interaction becomes an instrument of sorts, albeit an instrument that is (almost) visibly devoid of the bodily presence of a human performer.

Through the motion of their interaction, the microphones and speakers transcend instrumentality in the conventional sense and can be better understood as gestural performing bodies in and of themselves. This is strikingly similar to the conditions of the automated musical instruments that predate recording technology. For instance, the instruments produce sound through visible motion in the absence of a human performer. The performers clearly instigate the piece but quickly depart the stage to focus audiovisual attention on the body of the instrument. Like the player of automated instruments, the performers require no training or musical skill; simply dropping the microphone and adjusting the volume are reminiscent of winding the spring on a music box or cranking a pump organ—basic actions that any novice could perform. Just as with
an automated instrument, the apparent motion and causality of the sound-producing object is simultaneously seen and heard. Even the pendular motion directly evokes an antiquated, mechanical, clockwork device, further tying the work to a mechanical past.

However, *Pendulum Music* does not simply mimic the automated musical instruments of time gone by. It is important to note that the repeatability of the composition is, by intent, *not* exactly reproducible in the way that automated instruments generally are. Each time the performance occurs, it will sound slightly different, depending on a whole host of worldly factors. In this way, *Pendulum Music* passes through the lens of automated instruments by engaging an imprecise mechanism that depends on physical laws. Visually revealing the undoing of reproducibility through the mechanization of the very tools of reproducibility is a clear departure from the modernist ideal.

In an effort to bring the transformative tools of the recording studio into a performance setting, *Pendulum Music* positions the technology of the sound studio against the history of automated instruments and more generally against the history of performance and reproducibility. Reich eventually went on to depart significantly both from studio technology and from the performerless approach of sounding objects, focusing instead on a body of work that dealt explicitly with a return to human performance.

**MUSIC ON A LONG THIN WIRE**

The second piece I discuss is Alvin Lucier’s *Music on a Long Thin Wire* (Fig. 2). Lucier instructs:

> **Music on a Long Thin Wire** is constructed as follows: the wire is extended across a large room, clamped to tables at both ends. The ends of the wire are connected to the terminals of a power amplifier placed under one of the tables. A sine wave oscillator is connected to the amplifier. A magnet straddles the wire at one end. Wooden bridges are inserted under the wire at both ends to which contact microphones are imbedded, routed to a stereo sound system. The microphones pick up the vibrations that the wire imparts to the bridges and are sent through the playback system. By varying the frequency and loudness of the oscillator, a rich variety of slides, frequency shifts, audible beats and other sonic phenomena may be produced [10].

Like Reich’s *Pendulum Music*, Lucier’s piece includes a set of distinct instructions that trigger a visual/sonic experience that depends on the basic physicality of material conditions. At first Lucier experimented with performing on the wire by manipulating the pitch of the audio oscillator but ultimately he decided to remove the presence of a visible human performer, choosing instead to leave the oscillator on a single setting. “I discovered that by carefully tuning the oscillator, the wire could be left to sound by itself. Fatigue, air currents, heating and cooling, even human proximity could cause the wire to undergo enormous changes” [11]. Lucier’s piece may not be as extreme in its visibly didactic qualities as Reich’s, because many of the conditions that affect the sound of the work are not visible. However, the visibility of the wire in motion is extremely important, as Lucier instructs: “Light the wire so that the modes of vibration are visible to viewers” [12].

While it may not be clear to most visitors what exactly is causing or affecting the vibration, the visibly vibrating wire is clearly creating the sound that one hears. By translating a pure and invisible mode of sonic vibration (a sine wave oscillator) into a visible, physical material (a vibrating metal wire), Lucier converts the nonvisual sonic techniques of the sound studio into the visible realm of a performing object.

Lucier’s choice to treat this work as an installation as opposed to a performance is significant. While it is possible to vary the oscillation and play the wire as a live performer, Lucier “decided to remove [his] hand from the musical process” [15]. In this sense he goes one step further than Reich, divorcing the visibility of the performer entirely from the performance of the musical process. This choice puts an even greater emphasis on the visible/auditory presence of the object, allowing visitors to approach the material intimately without the usual boundary of audience/performer. The performerless, automatic nature of the work allows a close proximity to materiality that is also reminiscent of mechanical musical instruments. With the removal of the performer, one becomes not only more aware of the mechanism of performance but also more intimately attentive to the material that is producing the sound.

The installed nature of a work such as this also undoes any idea of fixed performative duration. The sound of the wire proceeds continuously, limited by the duration of its exhibition rather than by the timed attendance of a seated audience. In this way, the piece fades in as each visitor makes a bodily approach and fades away in volume upon departure, mimicking the eb and flow of a volume pot as it is turned up or down in

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a studio. Just as the music might seem to continue after the volume fades out on a vamp at the end of a pop song, so does a sound installation physically engage this sense of continuity as one departs the space. It is through the movement of one’s body that one fades the volume of the piece down, simply by walking away from the installation. The audience is put in bodily control of the termination of their own musical experience, subtly translating the transformative processes of the recording studio into a physically embodied experience.

**80 PREPARED DC-MOTORS, COTTON BALLS, CARDBOARD BOXES 71×71×71CM**

The final work to address is one by Zimoun, a contemporary Swiss artist known for a growing number of object-based sound installations. Utilizing commonplace, inexpensively procured materials, Zimoun’s work grows out of the advancing popularity of DIY electronics. In 80 prepared dc-motors, cotton balls, cardboard boxes 71×71×71cm, 80 cotton balls attached to 80 DC motors randomly beat against 80 cardboard boxes (Fig. 3). Repetitions of this single mechanical action combine in great number across stacks of boxes to create a dense and continuous soundscape.

The repeating forms of single points of sound are relatable to more recent developments in recording technology that allow electronic musicians to copy, cut and paste sounds over and over again, looping and layering a single sound event into a similarly dense sonic landscape. Zimoun has successfully translated this digital editing process into a mechanical, physical presentation, thus making visible the layering that the studio so easily allows. The use of industrially manufactured materials allows the physical objects visually to mimic the reproducibility of sound in the studio environment.

Of course this reproducibility is complicated by the inherently idiosyncratic sonic quality of each object’s sound. Thus, the exacting uniformity of the material is partially undone by the subtle acoustic differences that can be heard within the sonic character of each individual object. This aspect of the installation is intensified by the spatialization of the work. Upon entering the space, one hears an apparently continuous sound, but as one approaches the work, what emerges is an auditory awareness of the distinct rhythm and timbre of each of the sounding objects. The visibility of the object’s motion emphasizes this relationship, allowing the listener visually to focus in and to hear the individual sonic event of a single cotton ball in motion.

In a sense this spatialization of discrete sound events encourages visitors to mix the piece by moving through the space with their own bodies. The body of the listener again mimics the volume fader of the studio, intensifying and focusing attention on specific sound events within the context of a larger whole. Also, as in Lucier’s and many other sound installations, when we depart the space we perform a final bodily interaction as the sounds of the installation crossfade into the sounds of the everyday.

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**Fig. 2. Alvin Lucier, Music on a Long Thin Wire, conceived in 1977. Realization for the film NO IDEAS BUT IN THINGS—The Composer Alvin Lucier by Viola Rusche and Hauke Harder at the Hamburger Bahnhof, Berlin, 2011. (© Alvin Lucier. Photo © Viola Rusche and Hauke Harder.)**
All three of these examples present attempts at new modalities of performance by breaking away from the sonic hegemony of the recording studio and into the realm of visibly embodied sonic objects. These works do not represent a denial of the recording studio as a tool of aesthetic discovery but can rather be understood as a unique approach to the performance of sonic transformations. The way in which these works make use of a visible mechanism should be understood not as a nostalgic step backward toward some pre-rationalized time but instead as a way of addressing fundamental questions concerning the history of musical performance, reproducibility and the separation of the senses. Reflective of our immersive position within the current technological era, these works inventively occupy the threshold of virtual construction and embodied experience.

Object-based sound installations exist in dialogue with the history of listening in the West as they seek to introduce sight and body into the transformative possibilities of the recording studio.

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References
9. Reich [8].

Sound artist and composer Ethan Rose has released recordings, scored films, constructed performances, created sound installations and worked with a variety of collaborators. In works that manifest across a range of media, Rose’s consideration of sound reaches out from the formal mechanics of studio composition to investigate revealed gestures of sonic transformation.
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