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## Spectral Processes in The Music of Alvin Lucier

### ABSTRACT

#### Background

Within the realm of analysis, Alvin Lucier's music has been paid little attention. I argue that Lucier's music conforms with Joshua Fineberg's description of the aesthetic principals of spectralism. Fineberg claims that spectral composers view music 'as a special case of the general phenomenon of sound', moreover, these composers 'consider music to ultimately *be* sound' (Fineberg 2000, 2–3). Alvin Lucier's music operates on a much smaller scale. Often focusing on one phenomenon per piece, Lucier's music becomes atomic in nature. Typically, spectral composers feature multiple phenomena in their works; therefore, Lucier's singular phenomenological pieces form the atomic structure of spectral compositions.

#### Aims and repertoire studied

Using three of Alvin Lucier's works, *Twonings* (2006), *Nothing is Real (Strawberry Fields)* (1990), and *Silver Streetcar for the Orchestra* (1988) as case studies, I will examine the information provided by Lucier to uncover otherwise overlooked spectral processes. By doing this, I will lend Lucier the same analytical attention that has been paid to other spectralists. In each case, a direct lineage from phenomenon to production and then to the concepts utilized by spectral composers emerges. To test this connection, I compare these works to standard spectral works such as *In Vain* (2000) by Georg Friedrich Haas and *Modulations* (1976–7) by Gérard Grisey.

#### Methods

*Twonings*, for cello and piano, exploits the dichotomy of just intonation and equal temperament. Both musicians are asked to play the same written pitch; the cellist realizes these pitches as natural harmonics, which make up the system of just intonation. After interpreting the notated string information — Roman numerals IV–I for strings C–A — a harmonic series can be created for each string's fundamental pitch. This facilitates a mapping of the pitches throughout the score as well as a calculation of each pitch's exact frequency. The exact difference between the tuning systems of the respective instruments can be calculated with reference to the 'table of equally tempered scale  $A = 440$ ' created by Alfred Howe (Howe 1963, 30). Patterns within Lucier's choice of string and choice of partial of each string emerge in each section of the piece when examining this data.

A similar exploration of just intonation and equal temperament occurs in Georg Friedrich Haas's *In Vain*, for chamber orchestra. Although Lucier's piece operates on a much smaller scale, he is able to achieve the same effects as Haas does in *In Vain*. Robert Hasegawa describes *In Vain* as only utilizing fundamentals native to the equal tempered scale; more specifically, however, the fundamental pitch descends chromatically through the equal tempered scale. As this descent occurs, the overtone pitches slide upwards to the nearest overtone

pitch of the next fundamental (Hasegawa 2015, 16–18). The last section of *Twonings* models Haas's shifting fundamentals; the pitch content ascends stepwise through the overtone series of each of the cello strings. Modelling the descending fundamental motion of *In Vain*, Lucier uses the last section of *Twonings* to ascend through the partials of the cello strings. Starting on partial six of string I, the instruments continue upwards to partial twelve. Once the instruments reach partial twelve, the pitch content shifts downwards to the overtone series of string II. At this point, the pitch content returns to partial six where the process repeats until the piece concludes on partial twelve of string IV.

*Nothing is Real (Strawberry Fields)*, for piano, amplified teapot, tape recorder, and miniature sound system, falls into a different facet of spectral aesthetics. The piece follows a simple two-part form. First, the pianist records the gestures provided in the score in real time. Second, the pianist plays the recording through a small speaker placed inside a teapot. Though the notated music contains no reference to spectral techniques, the teapot performs the filtering technique often utilized by spectralists. For example, *Modulations* features spectra generated from the pitch  $E_2$  on the trombone played through various mutes. Grisey exposes a phenomenon where, depending on the type of mute, specific partials become diminished or accentuated (Rose 1996, 16–20). The second half of *Nothing is Real* achieves this same phenomenon. A spectrogram analysis of the first pitch of *Nothing is Real* shows an almost complete elimination of the first and third partials of the piano once the sound passes through the teapot. Lucier's teapot governs three forms of filtering: teapot with closed lid, teapot with no lid, and the transition between closed lid and no lid. To cycle through these different sonorities, Lucier indicates in the score that the lid 'will roughly follow the contour of the resonance tone melodies' (Lucier 1990). The resonance tone melodies, in this case, are pitches that emerge through the transition between an open lid and a closed lid.

*Silver Streetcar for the Orchestra* also contains spectral aesthetics. Lucier asks the player to strike a triangle at a rate of 320 beats per minute for no more than 20 minutes while simultaneously muting the triangle with the thumb and forefinger of the free hand. The player is asked to manipulate five different performance parameters while striking the triangle, and only one parameter is manipulated at a time. These include the triangle beater location on the triangle, the striking rate, the strength of the attack, the amount of damping, and the location of where the triangle is being dampened. Throughout the twenty-minute piece, the player transitions seamlessly between the five parameters slowly enough to create an imperceptible process of change. Lucier specifies that 'as soon as the acoustic response of these conditions — altered parameter — is established, the player begins gradually altering the same or another variable until a new response is heard' (Lucier 1988). *Silver Streetcar for the Orchestra* owes its success to the rhythmic simplicity of the work. The listener is presented with little to process because of the

rhythmic regularity of the work. Gérard Grisey classifies this rhythmic organization as ‘maximally predictable’ (Grisey 1987, 244–7). Since Lucier presents the audience with a minimal amount of music to process, the listeners are able to focus on the changing acoustic responses of the tringle. With each triangle differing physically from other triangles, a spectrogram analysis can only show frequency trajectories throughout the piece.

### Implications

Though I chose to focus only on three pieces, these compositional aims can be found in other pieces in Lucier’s repertoire. For example, *I am Sitting in a Room* (1970), for voice and electromagnetic tape, works towards revealing the acoustic properties of a specific room. Much like *Silver Streetcar for the Orchestra*, *I am Sitting in a Room* operates through repetition; however, instead of repeated attacks of a percussion instrument, a recording of the human voice is played and recorded into the room repeatedly until the sonic characteristics of the space emerge. *Still and Moving Lines of Silence in Families of Hyperbolas* (1973–4) utilizes the phenomenon of acoustic beating of closely-tuned sine waves to create a perceived sound that suggests movement throughout the listening space. *Music for Sonorous Vessels* (1991) amplifies the resonance within various objects resulting from the piano. Similar to *Nothing is Real (Strawberry Fields)*, the concepts of filtering and resonance are exploited as the main musical idea.

These analyses show that Lucier’s music possesses similar — if not identical — qualities that spectral composers value. In comparison to spectral composers who provide more musical data for an analyst, Lucier’s music operates at an atomic level, focusing on one phenomenon at a time to arrive at a similar result. Due to the atomic nature of his music, it is necessary to tease as much information out of the score as possible to aid in understanding the processes governing the music.

### Keywords

Alvin Lucier, Spectralism, Georg Friedrich Haas, Gérard Grisey, Phenomenon, Music Analysis, and Sound.

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