

Understanding Spectralism In The Works of Kaija Saariaho

Rolando J. Gómez

University of Syracuse — Setnor School Of Music

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Kaija Saariaho



- Born in Helsinki, Finland on October 14, 1952.
- Died in Paris, France on June 2, 2023.
- Studied at the Sibelius Academy where she studied with Paavo Heininen.
- She also studied at the Freiburg Musikhochschule with Brian Ferneyhough.
- Her participation at the Institute for Research and Coordination in Acoustics/Music (IRCAM) led her to adopt spectral techniques in her own compositions.

Spectralism

- Spectral music is a style of composition that started in Europe in the 1970s. Instead of focusing on traditional melodies and harmonies, it is based on the natural properties of sound itself—like how different frequencies combine to create tone color.
- Gérard Grisey (1946–1998) *Partiels*
- Tristan Murail (b. 1947) *Gondwana*
- Hugues Dufourt (b. 1943) *Erewhon* **coined the term!

- In the work of Kaija Saariaho, she uses timbre to construct metaphors, symbols, imagery, and narrative.
- More specifically, she transforms the tone quality, gesture, and the presence (dynamics/amplitude) of a sound object in an attempt to create extra musical meaning.
- The listening experience invites a more primitive interpretation of the music—where the natural properties of sound are prioritized over the associative properties of sound (harmony, musical topics, style, genre).

Other thoughts..

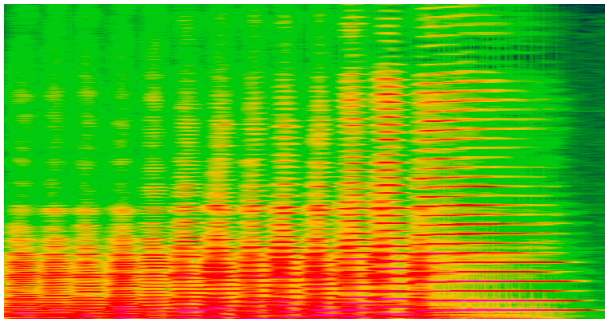
- Since timbral development are at the heart of Saariaho's work there are limitations in effectively arranging it to other instruments.
- Bach's cello suites have been arranged for a variety of instruments—with varying success. It would be quite difficult to do the same with Saariaho's Sept Papillons...
- Speaking of which, let's analyze some of her work in order to gain a greater understanding on her musical language!.

Sept Papillons - Context

- Before we can dive in to the first movement of this work, we must gain a better understanding of how overtones can be manipulated on the cello.
- The right hand of the cello is responsible for producing sounds. It can do this by either using a bow or by plucking.
- These two approaches have different sound qualities, not only in duration but also in the production of overtones.
- If we compare a passage of bowed and pizzicato cello music, we will see a big difference in its frequency content using a sonic visualizer.

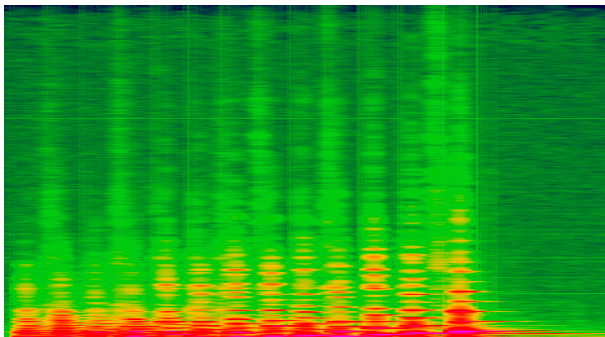
Arco

- Normal Arco:



Pizzicato

- Pizzicato:



Comparison

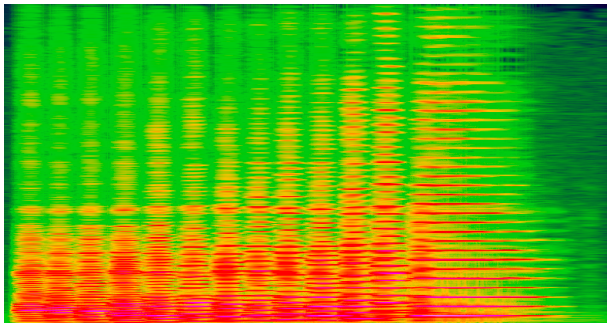
- In comparing these images, it is clear how pizzicato has less high frequency content—which is why it usually has less presence in comparison to arco.
- Now let's listen to these two lines and connect our visual diagram to what we hear.
- <https://isfee.music.indiana.edu/moreBowColors>
- <https://isfee.music.indiana.edu/pizzicato>

Other Bow Techniques

- The bow can also manipulate the production of overtones depending on where it is placed in relation to the bridge.
- If the bow is close to the bridge then it is considered to be **sul ponticello**. If it is far over the bridge and over the finger board it is **sul tasto**. These two techniques produce differing sonorities.

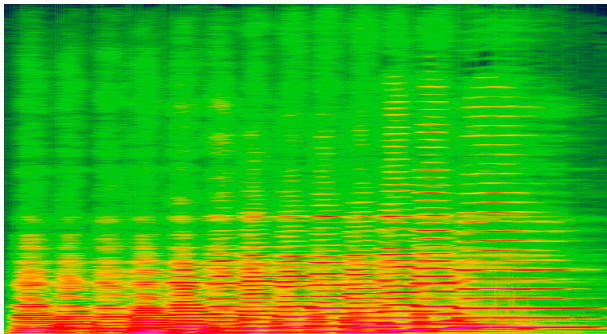
Sul Ponticello

- Sul ponticello:



Sul Tasto

- Sul tasto:



Comparison

- In comparing these graphs, it is clear that sul ponticello has a brighter and metallic quality due to its higher presence of high frequencies. This is similar to using distortion.
- Saariaho's string writing may call for molto sul ponticello or for estremamente sul ponticello, all of which continue exaggerating the higher end of the frequency spectrum.
- Overpressure completely exaggerates the higher frequency with little to no fundamental. This produces a highly distorted sound.

Comparison cont.

- Sul tasto on the other hand has less high frequency content, which is why it produces a softer tone quality.
- Both sul ponticello and sul tasto also have less presence in its fundamental—this is more true with sul pont at a piano dynamic and high bow speed.
- This is hard to observe in the given diagram, but a nuanced difference can be seen when comparing the vary bottom of these diagrams with that of the regular arco where the bottom has a pinker color indicating more low frequency presence.

Harmonics

- Now that we have a visual understanding on how special effects in the right hand can have on the tone quality of a sound lets move to the left hand.
- Cellists can produce either natural or artificial harmonics. The usually sound an octave or two above the fundamental. With this technique the fundamental is never heard. Harmonics, like regular notes, can also be manipulated in terms of its tone quality by the right hand.
- <https://isfee.music.indiana.edu/celloNH>
- <https://isfee.music.indiana.edu/celloAH>




Harmonics in Sept Papillons

- Saariaho's first movement of Sept Papillons only uses harmonics, which are then manipulated and transformed with a variety of effects—all of which affect the production of overtones on the cello.
- Her performance notes reveals all the different techniques she uses.
- These techniques frequently appear in her work, its an integral part of her musical vocabulary...

Sept Papillons - Performance Notes


NOTATION

Trills should always be played up a semitone, unless otherwise specified.


| | |
|---|---|
|  | change very gradually from one sound or one way of playing (etc.) to another. |
|  | diminuendo al niente |
|  | crescendo dal niente |


All glissandi should be started at the beginning of the note value.

| | |
|--------|--|
| S.P. | sul ponticello |
| S.T. | sul tasto |
| N | normal (used with S.P. and S.T., otherwise ord.). |
| E.S.P. | estremamente sul ponticello: as close to the bridge as possible. |

 add bow pressure to produce a distorted sound, in which the audible pitch is totally replaced by noise, then back to tone again.

 natural harmonic

 move gradually from normal to harmonic sound (less and less pressure with the left hand).

 a trill produced by alternating the finger pressure between normal (○) and light (harmonic, ◇). The result should be alternating normal and harmonic sounds.

Frequency of Extended Techniques

- In seeing this excerpt of the score, notice how frequently these expressive marks appear on just the first two lines.

Kaija Saariaho

Papillon I

Metallic/Bright yet Delicate Timbre

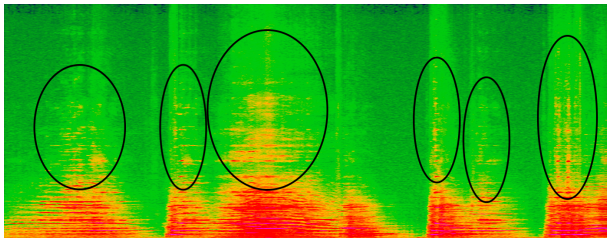
Dolce, leggiero, libero

Fluttering gestures

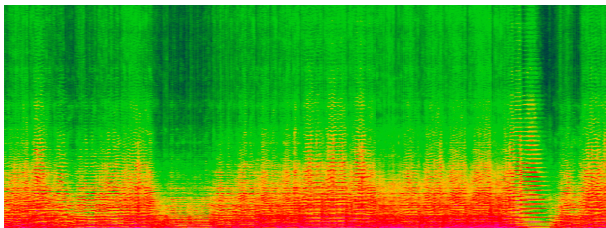
Comparison to standard cello repertoire

- All of these extended techniques completely transform what the cello sounds like—creating a surreal version of the cello.
- This can be seen most evidently in comparing an excerpted spectrogram of Sept Papillon and Of Bach's Cello Suite Prelude in C.

Saariaho - Sept Papillon mvt. 1



Bach - Cello Suite No.1 - Prelude



Comparison

- Notice how there is a higher range of frequencies in Saariaho's piece.
- What are other things do you notice in comparing these graphs?

Creating meaning out of spectralism

- Now that we can see how spectralism informs this work, we can discuss the actual meaning of the work.
- This work sounds new and novel due to its surreal approach to writing for the cello, but it overcomes plain novelty due to its use of imagery.
- Our first clue is given in the title... Papillon is french for butterfly.

Butterfly



- What are some ways you would describe a butterfly?
- Delicate, Aerial, Majestic, Elegant, Fluttering, Gentle, Calm, Poise, Magical.
- Is Kaija Saariaho realizing these qualities through music? How?

Music And Animals

- What is some repertoire that seeks to express characteristics of an animal through music?
- One piece that comes to mind is Camille Saint-Saëns' *The Carnival of the Animals*.
- More specifically I am thinking of "The Swan".
- The swan, like the butterfly, is also associated with elegance and beauty.

Swans vs Butterflies

- Saint-Saëns' elegant swan is expressed by its melodic and harmonic construction, musical rhetoric, and association.
- Kaija Saariaho's elegant butterfly on the other hand is expressed through tone quality, gesture, and presence.

Tone Quality, Gesture, and Presence in Sept Papillons

- If we again observe the excerpt of the score we can notice how these three qualities interact to create the imagery of a butterfly.

Kaija Saariaho

Papillon I

Metallic/Bright yet Delicate Timbre

Dolce, leggiero, libero

Fluttering gestures

Tone Quality

- Natural Harmonics
- Transformation between normal, sul ponticello, and sul tasto.
- Overall, this movement takes place on the higher end of the cello. Usually sounds of a higher frequency are perceived as being located in a higher plane—leading to imagery of a being or object suspended in space.
- The purity of the tone quality also helps to create a sense of elegance and delicate due to the soft dynamics and lack of vibrato.
- Over pressure is used towards the end of the movement—this produces an unexpected distorted color. How can this surprising moment inform imagery?

Presence

- Dynamic range between pianississimo and mezzo-forte.
- Subtle crescendos and decrescendos.
- Gestures have a tendency of fading in and out and fluidly transforming into different sonorities. Although silences aren't explicitly written in, they are implied between phrases.
- This suggests movement and stillness.

Gesture

- Trills
- Tremolos
- Bow Crossing
- "Fluttering movement" created by the use of trills, tremolos, bow crossings.
- Bow crossings provide both the aural perception of fluttering and a visual cue as well. Built in choreography!

Conclusion

- In examining the first movement of Sept Papillons, it becomes clear that Kaija Saariaho employs timbre as a primary tool for constructing metaphor, symbolism, imagery, and narrative.
- Through transformations in tone quality, gesture, and the dynamic presence of sound objects, she evokes extramusical meaning that transcends traditional structural elements.
- This listening experience encourages a more instinctive engagement with the music—one that prioritizes the raw, natural properties of sound over its conventional associations with harmony, style, or genre.

Further Study - Homework

- In examining the first movement of Cendres (French for "ashes"), Kaija Saariaho employs timbre as a primary tool for constructing metaphor, symbolism, imagery, and narrative.
- Unlike Sept Papillons, there is a greater degree of ambiguity in how the music and title are connected.
- In analyzing the work think of associations made with ash — death, life, transformation, mortality, creation, "return of the ashes".
- How can these potential meanings connect to raw musical properties in this work?

Sources

- All Spectrograms were made by myself!
- The audios were sourced from: <https://isfee.music.indiana.edu/>
- The recording of Bach's Cello Suite No. 1 - Prelude was from: Yo-Yo Ma's *Bach: Cello Suites Nos. 1-6, BWV 1007-1012* (2009 Remaster)