

Programme Notes

The Four Seasons in (Climate) Change

Friday, 9th September 2022, 19:30
Assembly Hall

Title: *Continents, Oceans, Poles* [a recomposition of Vivaldi's *Spring*]
Composer: Daniel Kalantari

ABSTRACT

Climate change refers to long-term shifts in temperatures and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil, and gas. Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures [1]. The four seasons in climate change project is a collaboration between composers, scientists, and a baroque orchestra organized by Goettingen University to indicate the impact of global warming via music in the hope of further awareness of the disaster that can be ahead of us [2]. This paper describes the reloading process of the Vivaldi Four Season piece for the Spring section.

1. INTRODUCTION

The harmony and regularity of the Vivaldi Four Seasons Concerto No.1 in E Major RV 269 "Spring" is a symbol of harmony and regularity in nature in this piece. The acquired RGB data from a NASA video related to global warming from 1880 to 2020 [3] has been applied to this concerto and transformed into a new piece. The calamity that has befallen Vivaldi's notes is the mirroring of what has occurred to the earth by global warming.

2. TRANSFORMATION PROCESS

Figure 1 shows all the steps of the transformation process including acquiring RGB data from the video, transforming these data into musical parameters, and applying them to the original score to obtain a new score. In the following sections, all the technical aspects of the project have been described in more detail.

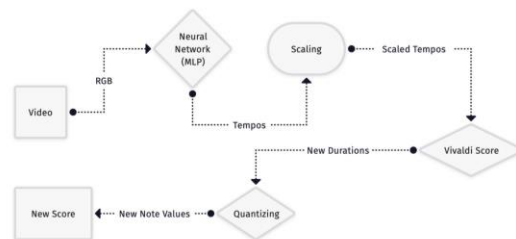


Figure 1. The diagram of the transformation process

2.1 Video

To reflect the impact of global warming on the Vivaldi notes, every three movements of the concerto have been mapped to different locations on the earth in the video to be influenced by the RGB data acquired from the assigned location. Continents have been tracked in the first, oceans in the second, and poles in the third movement (see Figures 2, 3 & 4). The obtained RGB data from each location has been assigned to one of the parts of the considered movement. An algorithm designed in MaxMSP [4] captures the pixel values of the allocated locations and collects one RGB data for each year from 1880 to 2020.

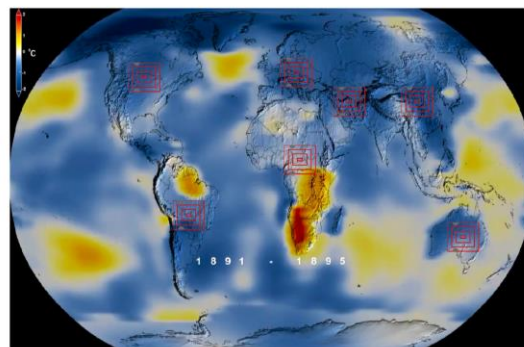


Figure 2. Tracked locations for the first movement

Bach [7] in Max/MSP has been utilized to apply the new tempos to the Vivaldi score (see Figure 8).



Figure 8. Applying the new tempos in Bach in Max/MSP

2.5 Quantizing and New Score

Due to the fast tempo changing in each part and the level of precision, it would be close to impossible for humans to perform such a kind of score without the help of computers. To make the performance of the work for an acoustic setting of the baroque orchestra practical, all the new durations have been collected and quantized to achieve a new score with a constant tempo.

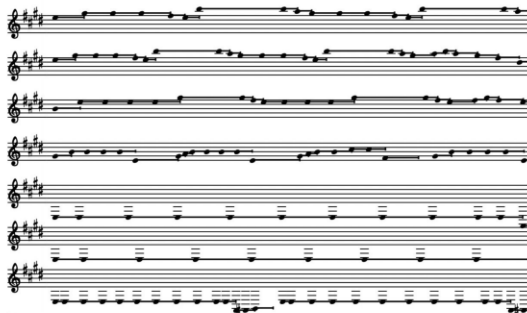


Figure 9. Collecting the new durations in Bach



Figure 10. The new score

3. CONCLUSIONS

In this paper, we dealt with all the processes of this algorithmic music composition for a baroque orchestra,

which gives insight into how an algorithmic music composition for acoustic music can be implemented. Additionally, it indicates how non-musical parameters can be translated to musical parameters via technology to compose conceptual music.

REFERENCES

- [1] What is climate change
<https://www.un.org/en/climatechange/what-is-climate-change>
- [2] Goettingen University
<https://www.uni-goettingen.de/en/652583.html>
- [3] Video: Global Warming from 1880 to 2021
https://climate.nasa.gov/climate_resources/139/video-global-warming-from-1880-to-2021/
- [4] Max/MSP/Jitter
<https://cycling74.com/products/max>
- [5] Wikipedia: Multilayer Perceptron (MLP)
https://en.wikipedia.org/wiki/Multilayer_perceptron
- [6] Fluid Corpus Manipulation
<https://www.flucoma.org>
- [7] Bach Project
<https://www.bachproject.net>

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Title: *Summer Distortion* [a recomposition of Vivaldi's *Summer*]

Composer: Mark Barden

This work transforms its source material through various processes that echo and reference our present age of climate change. My central focus was on the pervasive *anxiety* with which our minds and bodies apprehend the rapidly deteriorating stability of Earth's climate future. I was fortunate to meet with a number of climate scientists while preparing this composition, who pointed me to studies that document not just the climate science but also the associated affective, cognitive, and behavioral ramifications on the populace. Overwhelmingly these studies attest to the immense psychological burden that climate change anxiety exerts on one specific group: that of children and young people—i.e., the age group both least responsible for and most vulnerable to climate change. Here I must mention a parallel to race, class, and nationhood: the brutally unjust, on-going projects of imperialism and racial capitalism have ensured that those portions of the global population least responsible *for* will remain the most vulnerable *to* the devastation and suffering of the unfolding climate disaster.¹

As temperatures, wild fires, droughts, food and water scarcity, and—it must be said, the power of fascism across the world—rise, so do the numbers of people who agree with statements like “the future is frightening”, “humanity is doomed”, and “I am hesitant to have children”.² The failures of older generations and of the so-called “developed nations” to prevent the catastrophe manifest for them, statistically, as a milder psychological burden of anxiety and, for some, guilt. At our worst we are, of course, deeply selfish beings. That children and “underdeveloped nations” are forced into the role of chastising for their flagrant abuses those whose actions dictate the very world in which we all exist is both a commonplace and one of the chief perversions of our age.

Summer Distortion addresses the subject of psychological distress through distortions—even perversions—of Vivaldi's score. Extension is pushed to the point of *distension*, like a body organ swollen far beyond its natural limits. Sudden shifts of mood, while present in the original work and in the poem that serves as its musical program, are here juxtaposed to the point of absurdity. Above all, *Summer Distortion* is marked by a persistent tendency to *rise*.

Temporal discombobulations also appear in multiple forms. Familiar elements repeat in unfamiliar ways—too long, too short. Pauses disrupt and efface the original dramaturgy, at times painfully prolonging what is already obvious. Several passages jarringly collide past, present, and future musical events, severing them from their roots only to thrust them into fallow ground. There is even a moment where the music loses itself completely, reëmerging in a roughly contemporaneous Baroque concerto by a different composer (BWV 1048). In the second movement, half of the musicians form an independent tempo layer, which soon unmoors itself from the others, its strange, disembodied, inhuman dirge softly rising.

This music does not take a hopeful position on climate change. No one who's looked seriously at the numbers possibly could. If it takes any position it is this: Our persistence in writing, playing, hearing, and (a very different act) *listening* to music in the 21st century remains a meaningful, deeply human act. As our world literally burns, perhaps anxiety is a place we must inhabit. Perhaps this inhabiting—our full, unflinching immersion therein—is how we move beyond the disaster. But also, and legitimately: Perhaps there is no moving beyond it.

¹ Curious readers are invited to explore the writings of Cedric Robinson, Robin D. G. Kelley, and Mary Annise Heglar.

² Hickman, C. and Marks, E., *et alia*. “Young people's voices on climate anxiety, government betrayal and moral injury: a global phenomenon”

Titel: *l'Autunno* [a recomposition of Vivaldi's *Autumn*]

Composer: Zara Ali

My approach to composing the work involved a fusing of 3 elements. The first element was the original concerto of Autumn by Vivaldi, naturally. The second element was the poetry that Vivaldi published with each concerto in The Four Seasons. The third element was the scientific evidence provided by the scientists in this project that shed light on the very quantifiable and apparent changes in the climate in a negative trend.

In bringing together these 3 elements, I first had to study the poetry that was published in 1723 alongside the music for the Autumn concerto.

The poetry is quite upbeat and jovial, as is the music. However, placed within the context of a dying Earth and an impaired Autumn, these poems can take on a new light.

For example, the poem extract to the first movement of Autumn reads as follows:

*The peasants celebrate with dance and song,
The joy of a rich harvest.
And, full of Bacchus's liquor,
They finish their celebration with sleep.*

This first poem corresponds to my first re-composed movement entitled "The Feast." The Feast is about the excesses of people, who are the "peasants," and the "joy of a rich harvest" represents the earth. One can imagine a bountiful feast with much wine, devolving the celebration into a mere party of drunks. This poetic image in the context of a dying Earth transforms the scene into a complete satire and comment on the callousness of people and their blind joy to take from the Earth without restraint.

The second poem extract corresponds with my movement "The Slumber."
This part of the poem reads as follows:

*Each peasant ceases his dance and song.
The mild air gives pleasure,
And the season invites many
To enjoy a sweet slumber.*

In the context of the human cause behind climate change, this poem represents the ignorance of man, self-absorbed in his own comfort and sleeping away, unaware or without conscience to his influence. The music is lullaby-like, with dissonance, representing a careless slumber that is haunted by the foreknowledge of a nightmarish future. The pleasant ambience is haunted by the basic principle that excessive enjoyment today comes at an awful cost in the future.

This last poem extract corresponds to "The Beasts."
It reads as follows:

*The hunters, at the break of dawn, go to the hunt.
With horns, guns, and dogs they are off,
The beast flees, and they follow its trail.
Already fearful and exhausted by the great noise,
Of guns and dogs, and wounded,
The exhausted beast tries to flee, but dies.*

This poem illustrates succinctly the basic relationship between man and nature. Man is a predator--the most omnipotent of all hunters on Earth. To man alone, all else is prey. At the end of the day, whatever we want to kill and destroy will inevitably be killed and destroyed. There is a surety to this behavior. The music seeks to convey this relentless debased behavior and the music itself, through repetition, becomes exhausted in its own nature until it dies and ceases to exist.

The music and poetry are connected in this dark, even satirical way, because of the evidence of climate change that science provides. The scientific context is unignorable, as it is an explanation of the reality in which we all live in. The scientist Dr. Christian Markwitz reveals this in his presentation on the climatological trends during the season of Autumn.

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Title: *l'Inverno* [a recomposition of Vivaldi's *Winter*]
Composer: Carlo Tosato

I was personally involved to transform Vivaldi's *Winter*, and the challenges contained in it were particularly engaging since each musical motive was related to a particular aspect of the natural phenomena happening in winter. What was really helpful was the poem related to this composition, probably written by Vivaldi himself, which gave me essential indications to how modify the musical material, especially in the second movement.

Each movement is related to three different manifestations of water: snow, rain and ice and the musical ideas are strictly related to them. To each movement I used different approaches, reflecting also the ones Vivaldi used in the compositional process.

First movement (snow)

For this movement I used mainly the snowfall data (mm/day) related to western and central Europe as well as the North Pacific area from 2010 to 2080 derived from the last IPCC report made in 2021 (more specifically from the scenario SSP3-7.0 within the model CMIP6), which shows clearly a drastic drop in the future decades. To this movement I gave then a warmer and sultry connotation, which melts drastically at the end. I got rid of all the musical tools which represent at best the "cold" connotations, but I maintained quite transparently the core musical ideas behind them. A good example of it can be found already at the very beginning of the movement, in which I drastically slowed down the trill factor or completely cancelled it, changed the playing position to a warmer tone and slowed down the main tempo.

Second movement (rain)

For this movement only two verses of the sonnet are used by Vivaldi:

Passar al foco i di quieti e contenti

Mentre la pioggia fuor bagna ben cento

(To rest contentedly beside the hearth,

while those outside are drenched by pouring rain)

They show strongly what in German is described as *Schadenfreude*, that is being satisfied at other's misfortune.

This contrast is represented clearly in the music, where the solo violin represents the lucky person who can forget of the problems outside and the rest of the orchestra representing the rain outside, set in the background as if it is muffled and away. What I had to do then was to bring this contrast to the extremes, giving the orchestra a much more grotesque color and making the solo violin even more out of context and unsuitable to what is happening around him. This is to reflect also a human negationist behaviour and the inability to think to the distant future with present actions. In the second part of this movement the orchestra is slowly taking over the solo violin, representing the slowly increasing awareness and anxiety of the newest generations. Really helpful were the data about the maximum 1-day precipitation (change in %) in western 1st-World countries between 2010 and 2080 (always from SSP3-7.0 in CMIP6).

Third movement (ice)

Melting of glaciers has become a common occurrence and it's indisputable that human is the main influencer. The main idea was then to transform the entire movement into a distant memory which slowly fades away. Doing so the harmony was completely changed and only the core parts of the movement were maintained.

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