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Equilibria: Sustainability and Eco-Awareness in Music Production

By Ashley Kahl-Placek

An undergraduate honors thesis submitted in partial fulfillment of the requirements for the degree of Bachelor of Science in Sonic Arts and Music Production and Environmental Science

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Introduction

Everywhere around the world, stories of catastrophic extreme weather events have been a near-constant as portrayed in the media in the last few years. From floods to wildfires, worsening threats from disease, and a myriad of other unpleasant (or even deadly) events have taken place. We no longer live in the era of “We may see these effects by 2100”. We are now burdened with a time-sensitive challenge that appears at once vividly horrific while simultaneously being all-too obscured by notions of a far-off scenario. Conflated political and capitalistic agendas fueling the mainstream media have also contributed to these distortions of truth. This dichotomy has led to a snowball effect in terms of public apathy towards issues of climate change, environmental degradation, and loss of habitat and biodiversity for the species we share this planet with. It seems that while many agree that climate change poses a critical threat to life on earth, there is some sort of block in getting individuals to take action. In some cases, this loss of hope and frustration is understandable. For example, several young people have taken to social media recently to address the blatant disregard for the health of the planet by celebrities and billionaires using private jets for 5-minute jaunts. In turn, the questioning of how much good skipping their plastic straw can do seems quite reasonable.

Yet this project seeks to combat societal forms of climate apathy and faux-environmentalism across all generations and classes through direct communication by incorporating more natural sounds in unique and interesting ways, and observing how that can counteract the general shift in sound towards using fewer organic noises in contemporary art (Schafer 1977).
The goal is to cherish the earth through a sonic arts project, essentially writing a love letter to the planet that still touches on personal themes from my own life. I aim to address apathy, justice, and engagement of audiences towards action in their personal lives, existential ponderings, and in the case of artists, their engagement with emotive lyrics and instrumentation and ability to use field recordings to enhance a contemporary piece.

In my work I’ve mainly focused on the lyricism of songs targeting environmental woes, while utilizing field recordings of various ecosystems and species to construct “ecosystem orchestras” by layering sounds from the same natural systems, paying attention to the harmonious ways that species operate like a well-rehearsed ensemble.

We can definitely learn from the ways in which ecosystems use music in specific ways to bring equilibrium and balance and apply these lessons to how we work together on the climate crisis, and how we solve problems in our own lives. Other themes I’ve aimed to tackle include the performative nature of many in the environmental movement, and the many issues in the modern music industry surrounding its lack of sustainability.

Background

a. Using Sounds from Nature in Contemporary Music

There are several examples of artists and producers who have used sounds from ambient natural sources, direct animal sources, and some of the most unique and endangered species on the planet to create art. Innovative collections and uses of samples have been employed by an
artist named Ben Mirin, whose creation of a “BeastBox” web tool allows users to build their own beats using real field samples from 30 different species (BeastBox, Ben Mirin). The site is interesting in that users are encouraged to select species from the same ecosystem in order to complete a beat, and generally find that the sound is more sonically pleasing; pointing out the idea of ecosystem orchestras. Species recognize the intrinsic value of those they share a system with, and understand the mutualistic relationships that drive each of their own survival.

Use of field samples from nature and animals in contemporary context can be found in several more artist’s work, such as Bernie Krause, notable field recording artist, whose work has spanned decades and which has witnessed the forests falling silent during his research. In his project *Natural Imperfections*, Krause mixes acoustic guitar sounds with crickets and other sounds of the outdoors to construct an interesting soundscape with a sort of cricket bass and poignant interjections from frogs (*Natural Imperfections, 2005*).

b. **Political statements, Musings on Life As it Is (Absurdism), Protest music**

Power in music comes both from musicians’ concerted efforts to make a statement about an ill in the world while also using subtle and humanistic references in order to relate to a broader audience. In Australian band Holy Holy’s 2021 release “*Hello My Beautiful World*”, there’s a powerful spoken word piece with beautiful backing orchestration. The lead singer pens a love letter to Australian wildlife and the Earth itself:

“Hello my beautiful world...hello land, hello sea, hello mountain clothed in trees, hello saltbush, island, reef... Epic distance, comic time, Hello moss and heath and vine.”
I enjoy the way that subtly is thrown out of the window in this case, in favor of bearing the truth: we need these species and their processes, and we should be celebrating all they do instead of solely fearing existential crisis.

Although, there’s something to be said about warning of the severity of the issues we face, such as in work like Thom Yorke’s “And It Rained All Night”, which warns of catastrophic floods. I hope that my work has struck a balance between the hopeful love letter and reflecting on the very real trauma many humans and other earthlings have had to endure, and will continue to, unless action is taken to control negative anthropogenic inputs.

In artist Father John Misty’s 2012 release “Now I’m Learning to Love the War”, the lyrical content produced by songwriter Josh Tillman matches the satirical, sometimes matter-of-fact, and clever analysis of the consumption issues at hand in the 21st century that I am attempting to portray. “Try not to think so much about the truly staggering amount of oil that it takes to make a record” pens Tillman. My work aims to not only say something about issues like that but also do what I can in the eventual production and distribution of my art to make it as sustainable as possible. Some argue that there’s little benefit in trying to make changes in terms of the supply chain for items like vinyl.

I believe that if we’re forced to operate in this capitalist world, we must play our own game of economics for the sake of the planet by working with our biggest asset, supply and demand. Transparency and education are key factors in making for a public that demands products that are better for the earth. I state this knowing full well that convenience and finances have made me choose products that are harmful. It’s a difficult concept to escape, but one that must be addressed if we’re going to get anywhere in healing the damage we’ve done.
Another relevant sub-group that I draw upon is the activist work of the 60s and 70s in both experimental and folk music contexts. For example, Leo Ferre’s impactful piece “Il n'y a plus rien” that layers orchestral sounds, haunting whale field recordings, and powerful French spoken word that touched on anti-establishment activism. This combination of sounds positions the human aspect again as seemingly on top of the rooted natural sounds of the whale and ocean. I also look to artists like Malvina Reynolds whose song “What have they done to the rain?” In the early nuclear-protest song (later turned-environmentalist song addressing acid rain) she comments on the impacts of nuclear fallout, noting how “the grass and the people have disappeared” (Reynolds).

While many other albums influenced this project, one thematic influence I’ll note was All Things Must Pass - George Harrison (1970). The title song is one of balance, of ebb and flow, the hard times and the good. It speaks of the unavoidable, equilibrative nature of life. This song is at once spiritual, while at the same time relying on principles that one can find in the scientific process, namely, the idea that the way things are as we can logically and physically assess them are the best information we have as to make new scientific discoveries and predictions. Climate change scientists rely on knowledge of physics, earth’s geological and thermodynamic processes through time in order to ascertain information about potential future scenarios. Harrison writes “Now the darkness only stays at nighttime, in the morning it will fade away. Daylight is good at arriving at the right time. It’s not always going to be this gray” (Harrison 1970).
The writing process for the lyrical components of this project was rooted in an ‘analog-first’ method. Many writing sessions took place outside in parks, on the beach, or after several minutes or hours of paying mindful attention to, and recording the sounds of the outdoors. I at once wanted to convey the drastic issues plaguing us while encouraging empathy and reconnection to the planet. For example, in the first line of my song Creatures, I allude to the idea of taking a walk to counteract my anxiety regarding the climate crisis. I also address the idea that maybe people get too preoccupied with their own stresses to remember that the issues plaguing us also plague the environment and all the species within it when I write that “You don’t ever stop to hear the sound of a creature losing this life that they had found”.

**Creatures**

*Taking steps to calm me down*

*Feel the forest die under the town*

*And you don’t ever stop to hear the sound*

*Of a creature losing, this life that they had found*

*This life that they had found*

*And keep your head up the water’s getting high*

*I believe that we still have some time*

*But you don’t ever care to hear the sound*

*Of a creature losing this life that they had found life that they found*
The End of Night is a song that I wrote in a flurry the day after Earth day, feeling like we had once again done it. We’d allowed this holiday to take a performative tone that only serves to either reinforce straws as a main culprit while oil companies and Amazon feel like it’s their time to present some greenwashing propaganda on why they’re not so bad. Because of these corporations’ seemingly immense power, people of all ages feel dejected and helpless on days like this even though that attitude of “my action isn’t enough” is precisely what serves these megaliths to continue their hidden and not so hidden destructive actions. I write in this song that the “suburban, yuppie, collegiates will all say its the corporation’s fault, it couldn’t be mine” because as an environmental science major, I’ve heard all too often how these issues are corporation’s fault, which is too naive a viewpoint, we must be able to recognize our collective damaging consumption habits and the system that they reside in, which is one of capital intrigue.

The End of the Night (Or the Day After Earth Day)

The Day After Earth Day (The End of the Night)

V1.

Look at how we all go on with our lives,

The day after we swore we’d change

And time is a construct, I get it we’re all fucked

but this apathy is weighing on me
Ch:

So I propose, a toast to the ones who did it right

Mama'll always put up a fight

I propose, a toast to the birds and their resilient cries

In the face, in the face, in the face

Of the end of the night, the end of the night

V2.

Look at how it all stays the same
Lies and lies, failed promises and lies

The suburban, yuppie, collegiates will all say
It's the corporations' fault, it couldn't be mine.

Ch2:
But I propose, a toast to the ones who recognize,
demand breeds supply
And I propose, a toast to the cattle when they cry, on their way to die
At the end of the night, the end of the night

Bridge:

So there goes Elon

And there goes Bezos

What are you doing with all that money?
But we don’t need you to save us (You should just go to space then)

**Instrumental soundscape - guitar/ambient nature**

Ch3.

But I propose, a toast to the ones who did it right

Mama’ll always put up a fight

I propose, a toast to the creatures and their resilient cries

In the face, in the face, in the face

Of the end of the night

Collection of Samples

After two years of isolation during the pandemic, returning to Portland for school was at once nerve-wracking and also a welcome venture back into the sights and sounds of collective human gathering. I wanted this project to stay away from collecting human-produced environmental sounds (i.e. cars, people’s chatting, construction etc). However, this wasn’t possible due to both the increase in human desire to reconnect with nature post-isolation, and the unavoidable sounds of construction and other human driven rearrangement of the earth. Field recordings were recorded where and when I could escape the indoors, and the inner city. Notable locations include Mt. Rainier National Park, Mt. Tabor Park, and recent collections throughout the whole of middle America including Kansas, Kentucky, and beyond. Supplemental recordings come from online databases such as the Cornell Macaulay Library.
Composition Technique and Planned Use of Samples

In the song *Creatures*, my composition methods stemmed from a melodic throughline that carries the piece. I wrote it for piano and used a unison between piano and vocals to portray a sense of oneness among parts. This song has an orchestral opening and lead in, and will implement sounds from species in groups within urban areas that I have collected via iPhone and tape recorder. Samples used in this song are limited to those collected in urban areas in order to highlight the context of the song which has to do with the issues of urban development and sprawl reducing the natural habitats of species and leading to many not paying attention to the sounds of creatures around them.

In *The End of the Night*, my goal was to really create a catchy folk/rock tune that also had some of the intricate use of samples I hope to sprinkle throughout the whole project. For this reason, I experimented with isolating specific frequencies from samples and layering them in with typical instruments. In other words, I was trying to turn animal sounds into their own instruments. For example, the fundamental frequency of a hi-hat cymbal is anywhere from 3-5 kHz. By isolating the frequency and then using a selective EQ process to carve out a similar timbre as the typical instrument, I’ve been able to make the sounds of nature as integral to the song as the instruments themselves.

Also, the song mentions the “resilient cries” of birds, which is a note about my experiences hearing several dawn choruses from birds in the city, as well as my experiences in traveling to many places where the only animal sounds present have been from birds. For example, on a trip to Costa Rica’s Monteverde Cloud Forest I was inundated with the sounds of birds while degradation had left the sounds of other animals (especially amphibians) noticeably
silent. For this reason, I decided to pepper in unprocessed bird call samples in specific turning points in the song (i.e. bridge).

Finally, I continue to work on other tracks for this project that utilize both recordings of my guitar and piano along with Spitfire’s BBC Symphony Orchestra. The ability to compose via midi and play the parts on keyboard that I wish to write for instruments I don’t play has been one of my favorite aspects of this work. I value the blending of human voice, orchestra, and both raw and processed field samples. A song with the working title “1999 A.D.” will likely serve as the opening track on the project. This piece is instrumental and is thematically related to the intensification of the climate crisis since the year of my birth as well as the way that Earth’s soundscape has shifted throughout time.

The piece is very segmented, with the beginning being silent and simple with only atmospheric drones playing alongside the lonesome hooting of an owl. As I take the listener through different eras and spaces, I build ecosystem orchestras and then slowly watch a built system dissolve in the face of a harsh attack (i.e. symbolizing a species under threat of extinction). Overall, the use of samples is integrated in both the pieces that rely heavily on them thematically, as well as those that do most of the thematic work in the lyrical process.

**Walking the Walk: Sustainability in Merchandise, Production, and Promotion**

In my view, songs are truth, whether that truth is veiled in storytelling, humor or abstract emotional minutia. Therefore, songs that either target issues of climate change, greenwashing, faux-environmentalism, and the need for change should be rooted in a process by the artist and/or team that is one of equity, cognition of impacts, and a concerted effort to use whatever
platform the distribution of music might yield in order to promote these actions. Some might argue that this process being public may appear as a form of performative action. It’s my view that this issue can be avoided by using strict adherence to standards

A. The Little Things

Every action adds up, even though many like to ignore that. Things to consider when looking to implement sustainable practices in this process include

- The time to drive to photo/video shoot locations
- Makeup/hair product vegan/eco-friendly practices
- Wardrobe (Are items thrifted, or brand new? What are the values of the corporation?)
- During production, how many hours are spent on a computer? What is the overall footprint from a project such as this one?

B. The Not so Little Things

Vinyl production is notoriously harmful to the environment in that plastics are melted and used in production (Devine 2019). Options for counteracting this include partnering with manufacturers who use different types of recycled plastics or more eco-friendly hemp products in the production process. Artists like Nick Mulvey have tried to use recycled ocean plastic to create vinyl on their project *In the Anthropocene* that is not only sustainable but has an artistic appearance (Donnison 2021). Unfortunately small pieces of sand, dirt, etc collected along with the ocean plastic in this method can cause issues with the grooves of the records. It still represents an option, while other industrial adaptations like recycling old records for reprint, and decreasing the amount of energy required during the pressing process represent solutions as well (Donnison 2021). When I move into the physical merch stage of this project, I plan to get quotes
from a Dutch record manufacturer called Green Vinyl Records, which uses a non-steam pressing method that they say reduces energy consumption by 60% (Green Vinyl Records, Appendix C).

Offsetting carbon emissions from streaming presents another challenge for the industry. According to some calculations, streaming an album 27 times would surpass the amount of emissions as opposed to just buying the vinyl (however this may not account for the energy required to plug in your record player) (Donnison 2021).

When creating promotional content such as the website I produced, it’s necessary to consider the amount of CO2 that will be generated in terms of the hosting and data usage of the website. Typically more pages and photos leads to more CO2 per webview which is why on my website I tried to limit the amount of information.

Setting up a carbon neutral shipping system for merchandise is important to me as an artist and is another way to make sure that I “walk the walk”. There are often issues with funding that arise from doing things the more sustainable way at first, but it is my goal to highlight the need for these methods in the story that I tell my listeners so that crowdfunding can become a viable option for making a lot of these sustainable investments.
Eco-Friendly Music Marketing

I built a website, ashautumn.com, which will serve as the host for links to my finished music, a page dedicated to resources for artists and listeners to make their music creation and consumption processes as sustainable as possible.

A. Building a green website, minimalizing digital infrastructure (Raw notes to follow when constructing a site)

- Average website emits 2 grams of CO2 per page view (Eco Friendly Web Alliance).
- Compress images from raw source as much as possible to reduce weight of the data transfer (and thus the amount of energy required to process the page).
- Be minimal and directed in branding and visitor experience efforts. Get across the message without using significant data processing power.
- 10% world’s energy goes to internet consumption (E.F.W.A)
- 4% carbon emissions = internet, planes are 3%
- Internet’s Carbon emissions set to double in the next 3-4 years
- Pandemic and greater emphasis on crypto/nfts and meta and people embracing online music making and sharing.
- How can we responsibly consume technology and use Climate adaptation in our digital choices and culture?
There is a growing desire for vintage forms of musical consumption (tapes, vinyl, CDs), so a driving question when considering merch and consumer products was how I could make physical items that were both compelling and sustainable. I wondered, how could I make the production and distribution a net-zero carbon emissions story?

Setbacks and Future Plans

*Equilibria* is the name of the EP I plan to release under the name Ash Autumn. Equilibria will contain the work derived here, with the goal of sharing my realizations regarding the need for balance and harmony across all species and ecosystems on the planet. Due to technological and financial setbacks, recording in full became impossible under the time constraints. I will incorporate the field recordings, lyrics, and arrangements gathered here into the work going forward.
Appendix A.

Mockups for album cover

<table>
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<th>Option 2. Equilibria</th>
</tr>
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<td><img src="image2" alt="Mockup Image" /></td>
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<table>
<thead>
<tr>
<th>Option 3. 1999 A.D.</th>
<th>Option 4. Equilibria</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Mockup Image" /></td>
<td><img src="image4" alt="Mockup Image" /></td>
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Appendix B.

Website Action page: https://ashautumn.com/action

1. Go vegan. (And advocate for plant-based only events when you play out!)
2. Switch to a bank that is committed to divesting from fossil fuels or powering a green-driven economy next time you want to buy a guitar pedal or concert ticket!
3. Support artists who are investing in sustainability efforts like alternative processing of vinyl and merch.
4. Join a local group committed to climate action (or better yet start a club!) Artists can also support artists concerned about the climate crisis.
5. Demand not only equitable pay from streaming services, but accountability for their emissions. You can also be selective in how you stream to limit your contributions.

Appendix C. Green Vinyl Records

Better world, same vinyl

GREEN VINYL RECORDS

Did you know that a lot of energy is lost during the vinyl manufacturing process? Traditionally, vinyl records are produced with a process that works on steam: a time consuming process that also costs a lot of energy and waste. In addition, the material of which the vinyl records are made contains a number of ingredients which are harmful for as well humans as the environment, especially during the recycling process.

We, a group of 8 Dutch companies, together develop an environmentally friendly alternative production process for vinyl records. This process is based on the injection moulding principle instead of pressing. We also replace the plastics of which current vinyl are made with environmentally friendly materials. Maintaining the familiar vinyl feeling is key in this process. Together, we achieve energy savings of over 60%, create a faster manufacturing process and cause less impact on environment and health.
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