Active Listening: Experimental Processes for a Post-Anthropocentric Ecology

Dev Wiggers

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Prof. Yunjin Woo

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Abstract

Active Listening, at heart, seeks to engage with life and habitat, and, in the process, to question and redefine existing anthropocentric relationships towards them. It is intended to create space for the acceptance of the agency of lifeforms much older than ourselves, our shared habitat, and the all-encompassing degree of our interdependence; the propagation of a post-anthropocentric ecology.

Current materialist philosophies guiding anthropocentric attitudes and actions towards life and habitat, ascribe an inadequate or non-existent agency to non-human entities and environments. Their boundaries of moral concern are firmly planted within the realm of an anthropocentric ecology.

By working with experimental processes, plants and soils are actively engaged and collaborated with. Scientific or technical processes in the forms of soil and leaf chromatography, and biodata and soil sonification, are appropriated and intentionally subverted. Alternative ideologies are offered and philosophies and meanings are explored.

Active Listening culminated in the creation of collaborative, experimental audio-visual works, with an emphasis placed on the importance and effectiveness of sound-based presentations in the form of lo-fi ambient music. The electrical signals of plants, field recordings, and soil acoustics are translated into introspective human-music, and soil and leaf chromatography, drawing upon the traditions of anthotypes, the album cover, and ideas of place, are presented as a visual accompaniment in an effort to go beyond the issues of non-site inherent to contemporary photographic methods.

DEDICATION

To my friends, plants and soils,

Who I have known and loved

ON GIVING THANKS

As a culmination of my undergraduate practice, I would be remiss if I did not thank the educators, mentors, and supporters I had along the way:

Thank you to my wife, Amanda, without your love and support this would not have been possible, and to our little Julia, for being my spark, and to my sister, Jordan, my niece Averie, and my mother, Anna, for always believing in me.

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PREFACE

Research Question: Is it possible, through the experimental processes of biodata and soil sonification, as well as leaf and soil chromatography, to improve human=plant=soil relations and push towards a post-anthropocentric ecology?

Thesis Statement: The use of experimental processes, encouraging intentional active engagement and collaboration with life and habitat, can improve human=plant=soil relations, thereby influencing the progress of boundaries of moral concern towards a post-anthropocentric ecology.

Sections I-IV

An introduction to the philosophies and frameworks that guide my work, a contextualization of my work within contemporary and historical aesthetic movements, and an introduction to the processes used.

Sections V

A step-by-step narration of this project.

Section VI-VII

Opportunities for in-depth discussion, analysis, and importance of certain details.

Section VII-IX

Figures and Bibliography

I. Awakening the Ecological Self

On Ideology

A shift from materialism

This work rests upon the assumption that you, the viewer, or perhaps more appropriately, the listener, are approaching it with a willingness to explore shifts away from the materialist and atomic philosophies that define western attitudes and relationships to the world that we inhabit; ones that are so deeply ingrained that they are not commonly regarded as a metaphysical framework at all. It asks that you put aside, for the next few pages, the materialist idea that the natural environment lacks it's own moral significance or agency. In other words, to keep an open mind, and to feel free arrive at your own introspective conclusions.

To do so, a quick exploration of the metaphysical ideas surrounding the philosophies of an ecological self are needed, as it is difficult to set aside frameworks and ideologies even when they are clearly defined, and near impossible when they are shrouded the murk of the philosophical or psychological.

The atomist ideology, at it's core, is that the world is made up of many discrete individual parts; they are independent. Even when connected casually, they retain that distinct individualism. It states, in no uncertain terms, that those connections, or relatedness, is not a part of an individuals essence.[1] This is in comparison to an alternative, a viewpoint explored in this work, of the substance monism metaphysical archetype, that the universe is to be understood as one dynamic whole, essentially interrelated.[2]

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[1] Matthews, "The Ecological Self", 4

[2] Matthews, "The Ecological Self", 5

Of course, the above paragraph is an extreme simplification of two metaphysical theories, the merits of which many people have spent their entire academic careers researching and writing about. To claim to be completely, or even remotely, accurate would be intensely hubristic, but that is not the intention. The point, is to introduce alternatives, to explore interconnectedness over individuality, and to create a baseline lens through which my work can be experienced.

On Cosmology

The scientific method as cosmology

Science, for those within the Capitalosphere, has completely supplanted myth as a source for cosmology.[3] This may seem like an obvious, if a bit oddly phrased, statement. However, it is a critical recognition, as consumer culture becomes more and more cognizant of the need for cosmological rehabilitation. As such, it is inappropriate and disingenuous, at best, to pluck an existing cosmology with enticing idealogical concepts from another culture. Rather, for an authentic and earnest adoption, this rehabilitation needs to be drawn from our relationship to the scientific understanding of the world.

That worldview can be drawn from the theories of quantum mechanics.[4] The atomist ideology, a Newtonian one, can appropriately be succeeded by the view points of modern physics, wherein the world is no longer understood as a machine made up of individual,

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[3] Matthews, "The Ecological Self", 45

[4] Matthews, "The Ecological Self", 56

unrelated cogs, instead being seen as an indivisible whole that is critically dependent on it's interrelations.[5]

From the Ego-Self to the Eco-Self

Frameworks as they relate to my work

All of this is intended to provide an introduction for the idea of Self-Realization as the process of adopting the Ecological Self, and the accompanying cosmological rehabilitation, as the context within which my work exists. Self-Realization, is the psychological state of the above metaphysical theories that assert, simply put, that everything is interrelated.[6] It disposes of any hierarchical claims between humans, animals, plants, and as I will present, soils.[7]

It is the identification of the Ego self, the part of human personality through which the world is perceived, with larger and larger systemic and universal wholes. It is important to note that this idea of Self-Realization is not solely psychological, it is situated within the metaphysical facts of interconnectedness, modeled after ecological interconnectedness.[8]

This framework allows for a deeper understanding of, and more genuine investigation into, the described processes. Of course, the work itself attempts to explore these ideas and present them in a way that references and reinforces. As intention and process are critical components of my work, further writing allows for a more complete, but not prescriptivist, knowledge of those components. Further, I posit that the idea of the ecological self, Self-

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[5] Capra, "The Turning Point"

[6] Talukder, "On Self-Realization"

[7] Talukder, "On Self-Realization"

[8] Matthews, "The Ecological Self", 178

Realization, can be achieved in part by paying close attention to specifics glossed over by materialist ideologies; plants and soils.

Art as an Avenue of Approach

Collaboration of the arts and sciences

Since science is the single source of western cosmology, it is appropriate then to appropriate scientific processes and build upon them as artists. In fact, in contemporary arts, it is a well-established practice, and there exists movements and opportunities for scientists and artists to collaborate. Data collection and representation, in particular, is a method for artists to work with scientists, or take on the mantle of researcher themselves as seen in Darya Warner's *Dendroclimatology Project.*[9]

Art is capable of increasing understanding of scientific concepts, especially when the subject is one that is not easily perceived.[10] Additionally, researchers conducting meta-analyses of science education argue for the implementation of STEAM, or Science Technology Engineering Arts and Mathematics, as a method for increasing engagement and outreach for science education programs at the macro, meso, and micro-levels.[11]

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[9]Warner, Darya. "Dendroclimatology Project " Climate Maze"." Darya Warner, www.daryawarner.com/new-page-3.

[10]Sangweme, Davison, et al. "Microbe Art Can Educate and Correct Misconceptions about Microorganisms."162–69

[11]Braund, Martin, and Michael J. Reiss. "The Great Divide: How the Arts Contribute to Science and Science Education." 219–36.

II. An Introduction to Relevant Disparities

Plant Awareness Disparity

Plants are highly evolved beings in their own right

Plant Awareness Disparity (PAD) is the description for the way that plants, in the eye of the general public, as well as academia, are not seen in the same manner that other organisms, take animals for example, are.[12] PAD means that plants take a backseat in regards to our visual cognition processes. That manifests in being less interested in them, understanding them less, relating to them less, and having a less positive attitude towards them.[13]

This disparity can be pointed to as a symptom of anthropocentric attitudes towards other forms of life, or, the idea that people are more important than plants, especially in terms of understanding of ecological interactions.[14] Fostering relationships, connecting people to their local habitats, is critically important to building understanding.[15]

Broadening the Spectrum of People=Plant Interactions

Methods for engagement

People=Plant interactions then, act as a method of understanding the ways in which people can perceive plants. Those interactions also have the opportunity to create significant

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[12]Parsley, Kathryn M. "Plant Awareness Disparity A Case for Renaming Plant Blindness." 598–601

[13]Parsley, Kathryn M. "Plant Awareness Disparity A Case for Renaming Plant Blindness." 598–601

[14]Parsley, Kathryn M. "Exploring New Approaches to the Problem of Plant Awareness Disparity in Undergraduate Students"

[15]Balding, Mung, and Kathryn J.H. Williams. "Plant Blindness and the Implications for Plant Conservation." 1192–99.

transformation at the personal and communal levels.[16] An understanding of the interactive spectrum is needed in order to afford opportunities for meaningful engagement, and in order to leverage scientific or technological applications and processes to broaden that spectrum.

Current research places interactions into three rough categories; peaceful abiding, tactile immersion, and physical exertion.[17] Viewing interactions as a spectrum allows for the interconnectedness to come to light; with only peaceful abiding, the garden is stripped of it's agency and life, becoming the romantics view of unchanging, unspoiled nature, whereas with only tactile immersion the possibilities of mechanization or oppression exist, becoming the authoritarians forced labor.[18]

Engaging with that spectrum opens to possibility of the self to reorganize or transform, to learn, and ultimately, to explore different frameworks of personal, ecological, and social conditions.[19] This spectrum of interaction however, is not simply humans, being the actors, and plants, being the acted upon. Plants too, experience that spectrum; responding to human touch and care, and moving through human spaces in response to water, soil, and sunlight. It is a two-way street.

While sensory engagement with plant habitats is encouraged, and indeed, well-recommended, peaceful abiding sensory engagement and immersion with plants themselves is conspicuously absent. Enter, a powerful addition, which will be explored in depth, plant sonification, or simply put, just listening.

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[16]DelSesto, Matthew. "People Plant Interactions and the Ecological Self." 201–11

[17]DelSesto, Matthew. "People Plant Interactions and the Ecological Self." 201–11

[18]DelSesto, Matthew. "People Plant Interactions and the Ecological Self." 201–11

[19]DelSesto, Matthew. "People Plant Interactions and the Ecological Self." 201–11

Rebuilding Human=Soil Affection

Exploring Intimate Interdependence

Soil suffers from a similar, or perhaps greater, disparity as plant life does. Soil awareness disparity (SAD), informs the way that soils are engaged with or cared for, and, the greater the disparity, the greater the possibility for exploitation and abuse. As such, a spectrum of interactions can be applied, similar to and entangled with the spectrum of people-plant interactions.[20]

Art, of course, is but one method of understanding soil, and is one that is collaborative with scientific inquiry and education.[21] Visual artists have used soils since pre-history, as a pigment and a medium in itself. The aesthetic presentation of soil invokes a certain sort of connection that exists through time, and recent works have started to focus on depictions of underground soil life that are pushing towards a new collective culture in which scientific images take on a dominant role.[22]

In the application of a spectrum of interactions, a more intimate knowledge of the soil should be cultivated. Touching soil, becoming familiar with it's tactility, it's aroma, in much the same way a newborn child is held close, builds attachments and understandings. This approach has been used to great effect by visual ecologist Aviva Reed, and her *Soil Biome Immersion*

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[20]Puig de la Bellacasa, Maria. "Re-Animating Soils: Transforming Human–Soil Affections through Science, Culture and Community."

[21]Puig de la Bellacasa, Maria. "Re-Animating Soils: Transforming Human–Soil Affections through Science, Culture and Community."

[22]Puig de la Bellacasa, Maria. "Re-Animating Soils: Transforming Human–Soil Affections through Science, Culture and Community."

Participatory Performance.[23] Reed invites viewers to interact with soils, and the life that call them home, in an effort to cultivate a human-soil ecological ontology. There, she creates the connection that soil is the temporal engine that cycles nutrients, binding all life together as inter-related future and ancestral remnants.[24] This is not incommensurable with scientific thought; it is a simple fact that soil is the degraded remains of life, and a building block for terrestrial life.

Enlivening then, is a realistic avenue of approach, that places human=soil interactions in a part of the spectrum that encourages the pursuit of an intimate knowledge of living soil, reduces the awareness disparity by bringing to light our interdependence. Experiencing soil leads to understanding soil, which leads to that joyful enlivening of soil.[25]

In much the same way as I approach the spectrum of human=plant interaction, I present the ideas of soil sonification as a way of immersion, enlivenment, and subsequent understanding. Soil immersion, or a calling to play, touch, feel, and smell soils, engages the senses and builds affection for them. Laura Parker's work, *A Taste of Place*, asks participants to smell soils while eating the food grown in them, as a way to awaken the nuances of taste and form deeper connections.[26] Soil sonification, on the other hand, asks a listener to experience the soil in a different way; one that allows soils to be understood in the place that they exist.

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[23]Reed, Aviva. "Soil." Aviva Reed, www.avivareed.com/soil-biome-immersion#:~:text=A%20Soil%20Biome%20Immersion%20immerses.

[24]Puig de la Bellacasa, Maria. "Re-Animating Soils: Transforming Human–Soil Affections through Science, Culture and Community."

[25]Puig de la Bellacasa, Maria. "Re-Animating Soils: Transforming Human–Soil Affections through Science, Culture and Community."

[26]Parker, Laura. "Taste of Place." Laura Parker Studio, www.lauraparkerstudio.com/taste.

III.Sonic Remediation

Using Sound to Improve Awareness

Exercising active listening skills

The act of listening, by default, means engaging. Unlike hearing, which is a passive physiological process, listening is an active cognitive one, wherein a listener is operating as a willing partner in a conversation.[27] Applying these techniques afford a more in-depth kind of observation, and serve to form more intimate relationships. These relationships, applied to other life, allow for the genuine connection of a multi species ethnography, where metaphorical and literal love and affection occur.[28] The question then becomes, how do we start listening?

An Introduction to Plant Sonification

Electrical physiologies

Plant, or biodata, sonification is a technical process by which the electrical micro-current fluctuations of a living being are measured and translated into Musical Instrument Digital Interface (MIDI) notes. These notes can then be expressed, through a Digital Audio Workstation (DAW) or synthesizer. An apt analogy is that of a human, or animal, electrocardiogram, where the electrical signals of the heart are expressed graphically instead of sonically. Building upon that analogy, it may be possible to understand the health of plants through listening, in much the same way that a human or animal medical professional uses a stethoscope, or electrocardiogram, or sonogram, to better understand the health of their patient. This act then, raises ethical

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[27]Petress, Kenneth C. "Listening: A Vital Skill."

[28]Julie Soleil Archambault, “Taking Love Seriously in Human-Plant Relations in Mozambique: Toward an Anthropology of Affective Encounters.”

questions, as with improper intentions it is all too easy to work extractively rather than collaboratively.

It is crucial to understand that the sounds produced are not musical compositions in the way that humans understand them. Although plants are capable of sophisticated communication, those methods are not what this process engages with.[29] The process does, however, have very real implications for interspecies relationships with plants. Another form of sonification, promoted by artist Adrienne Adar, uses contact microphones in order to amplify the movements of plants, and the human interaction with them.[30] Both methods act to broaden the spectrum of human=plant interaction through novel sensory experiences.

With either method, intention, and ethics, must be at the forefront of the artists practice. While plant sonification can be used to create introspective human-music, measures must be taken to ensure the agency of the plant, lest the sounds be simply extracted, as the human listener has complete control over the expression of these MIDI notes. To manage these concerns, I propose that the artist, or producer, acts in the role of translator. This avoids using the plant as an instrument to be manipulated, while still allowing for collaboration. Of course, being an ethical concern, these procedures quickly enter the realm of the qualitative and subjective.

Critically, in my work, the sonification is not quantized; the notes are not forced into that human meter. Additionally, the track is laid down in one take, and is not spliced or rearranged. Lastly, I consider myself to be in the role of translator, or producer, when I create this work. It is

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[29]Harsh Pal Bais et al., "How Plants Communicate Using the Underground Information Superhighway."

[30]Adar, Adrienne. "Sonic Succulents at Second Home, London." Adrienne Adar, www.adrienneadar.com/work/second-home.

inappropriate to say that I wrote or performed the music, because I did not, my plant compatriot did. These considerations are also why the ambient electronic genre is an ideal arena.

An Introduction to Soil Sonification

A deeper understanding

Soil sonification works similarly to the method that Adrienne Adar uses; by placing contact microphones into the soil, and amplifying them, the acoustical environment of soil can be heard. Similarly, it can be appropriate to say that we are listening to the physiological processes of the soil when we do so, supposing that soil itself can be treated as a super-organism, as we are hearing the sounds of meso- and macrofauna.[31]

Ecoacoustics holds that soundscapes are made up of certain groups of sound sources. Broadly speaking, these are geophonies, biophonies, anthropophonies, or technophonies.[32] Anthropophonies and technophonies refer to sounds created by humans and their technologies, while geophonies refer to the sounds created by earths processes, and biophonies from living organisms. These sounds, when listened to and analyzed, create a picture of a soils health, those physiological processes.[33]

Since soil sonification does not use the same methods of translation, it is a literal amplification of the existing soundscape, there are less ethical concerns that need attention. Luckily, there are in-depth guidelines for field recordists that can be applied.[34] These guidelines

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[31]Marcus Maeder et al., “Sounding Soil: An Acoustic, Ecological & Artistic Investigation of Soil Life.”

[32]Marcus Maeder et al., “Sounding Soil: An Acoustic, Ecological & Artistic Investigation of Soil Life.”

[33]Marcus Maeder et al., “Sounding Soil: An Acoustic, Ecological & Artistic Investigation of Soil Life.”

[34]https://imaginative-ethnography.com/2016/02/10/auditory-ethics/

work in concert with the methodologies I set in the earlier section; that when making these works, the artist (or listener) is acting in the role of producer. Notably, these concerns are best applied to artists or researchers; humans solely interested in listening on a personal level, but not recording, analyzing, or distributing, face much less pressing questions.

IV. Western Sensory Hierarchy and Scientific Appropriation

Western Sensory Hierarchy

Cultural impacts on perception

The way that we, as primates in the family Hominidae, engage with the world on an individual level is through our senses. Those senses, smell, taste, touch, hearing, and sight, are further influenced by culture.[35] The proficiency of communication about smell, color, shape, sound, texture, and taste varies wildly, but in some small way, that makes sense. Cultures that engage heavily with music are better at describing sounds, regional cuisine has an impact on taste. People, in general, have more developed skills with concepts they have had more exposure to. The western sensory hierarchy places sight as the most important, and as such, our listening skills need practice.

Sound, in particular music, takes on a particular role within the oral tradition. Learning by rote is commonplace amongst musicians; listening to a teacher play a piece, and then practicing it. It circumvents visual processes, relegating them to only small matters of technique, and of course, heightens the ears.[36] Reengaging with the oral tradition means using music, and sound. It allows us to resist, but for a moment, those western hierarchies and values.[37]

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[35] Asifa Majid et al., "Differential Coding of Perception in the World's Languages."

[36] Emma Patterson, "Oral Transmission: A Marriage of Music, Language, Tradition, and Culture."

[37] Maryam Navabi, "The Power of Oral Tradition: Critically Resisting the Colonial Footprint."

Scientific Appropriation

Scientific processes

As before stated, science has completely eclipsed myth as the source for western cosmology.[38] This recognition must lead to a questioning of science, and it's methods, as it forms the framework for the way that western cultures interact with the world. It is difficult to enact change from within a system so broad, and there are real dangers in simply appropriating scientific language and asserting that authority.[39] To that end, I have chosen to accompany sonic works with appropriated visual scientific tests, to at once return them to the realm of non-scientists, place more importance on the act of listening, and to allow them to take on new meaning.

An Introduction to Soil Chromatography

Seeing soil in a new light

Soil chromatography is a qualitative method of soil analysis, which is to say that is a subjective way of understanding soils health.[40] This has regained popularity with peasant-farmers and artists alike, circumventing expensive specialized testing.[41] It is also a photographic process, using the developer silver nitrate to produce the image. I aim to promote it's use in two ways, by

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[38] Matthews, "The Ecological Self", 45

[39] These questions are far beyond the scope of this article, but an introduction can be read here: https://www.prosocial.world/posts/decolonizing-science-and-a-world-turned-upside-down

[40] Centre of Excellence in Natural Resource Management, "Using Paper Chromatography for Assessing Soil Health in Southwestern Australia."

[41] "The Ground Our Food Eats | the Center for Land Use Interpretation," clui.org

encouraging people to interact with their local soil, and by applying the principals of anthotypes as a printing method.

To the first method, again, the thought stems from the principals of immersion on that spectrum of interactions, in order to build affection. Soil, in particular, allows us to be literally immersed in our environment, molding and shaping humans and our relationships with the world.[42] The second, seeks to create landscape photographs that do not lack the vital characteristics of a place that has been fractured and abstracted through contemporary landscape photography, for the purpose of creating album covers; art that visually represents the music contained therein.

An Introduction to Leaf Chromatography

Anthotypes and scientific process

Leaf chromatography is an introductory method to chromatography, common to early science classrooms. It is a precursor to column chromatography, which is a way to break organic compounds into base parts, and is a crucial part of organic chemistry.[43] A similar form and composition to soil chromatography, while acknowledging the extractive industrial and scientific uses of the process - when placed together allow for a subversion and reclamation of those processes. It is also closely related to the photographic process of the anthotype.

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[42] William Bryant Logan, "Dirt : The Ecstatic Skin of the Earth"

[43] Alice M. Dias and Maria La Salete Ferreira, "'Supermarket Column Chromatography of Leaf Pigments' Revisited: Simple and Ecofriendly Separation of Plant Carotenoids, Chlorophylls, and Flavonoids from Green and Red Leaves."

Anthotypes are today considered an alternative photographic process, but they present opportunities to better understand a place.[44] By using them as a printing process, they imbue the physical properties of the plant into the photograph, providing a more complete picture, and bearing witness to the impacts of an anthropocentric ecology.[45] In this case, I have chosen not to print with anthotypes, but instead to engage with them as they are taught in science classrooms, as leaf chromatography, as they then become a snapshot of the plant interacted with, a most intimate portrait of a being.

[44] Nick Hall, John Ellis, and Kristof Vrancken, "Hands on Media History : A New Methodology in the Humanities and Social Sciences."

[45] Nick Hall, John Ellis, and Kristof Vrancken, "Hands on Media History : A New Methodology in the Humanities and Social Sciences."

V. My Approach to *Active Listening*

A quick note on terms

Clinical vs. Philosophical

Throughout this paper, I will use plant sonification and biodata sonification nearly interchangeably. Plant sonification is a more specific term, whereas biodata sonification is a widely accepted technical one. I also reference soil sounding or sonification and geodata sonification, although soil sounding or sonification is more accurate due to the biophonic origins of many sounds present in the soil. All terms are clinical in nature, and so, I prefer to refer to the process as a whole, as simply listening. While that preference does not allow for a complete understanding of the process, and lacks suitable specificity, it does inform a philosophical understanding and need be included.

Listening

A (narrated) field guide

To begin with, I struggled to find a suitable location. There were many factors in my decision-making process, and often, they were at odds with each other. As this project is a culmination of my undergraduate work, I found it appropriate to return to a place where I first grappled with the short-comings of contemporary photography, and sought to create a more informed abstraction (or perhaps to present less-abstracted information).[46]

The next obstacle was time itself. Since this project relied entirely upon plants (one young Winterfat in particular), I needed to wait for them to emerge from their hibernation, and

[46]See “Democratic Photographic Processes” in the Discussion.

one they began to wake up, I needed to wait for the weather. Luckily, that afforded plenty of time to think, and to write, and to ask questions. Once the time was right, I was able to again visit the north end of the Rocky Mountain Flats Wildlife Refuge, 39°54'37"N 105°11'36"W, to be exact[47], at 0934 on 17APR23.[48] There, I set up my equipment and began listening. I first tried the delightful Prickly Pear, and the young Yucca, but neither were feeling particularly chatty. So, I turned to Winterfat, and was immediately rewarded.

I was listening with a pair of earlobe-style electrodes with a 2.5mm jack, clipped to Winterfat's emerging leaves, connected to a 2.5mm-to-3.5mm jack adapter, connected to a USB-powered MIDI translation device of the sort referenced earlier, connected to a MacBook Air operating GarageBand (fig. 5.0).[49]

Once I had dialed in the sensitivity, as being too sensitive creates an overwhelming amount of signal, and being not sensitive enough means not really listening, I set about translating. The first step is choosing the voice through which Winterfat would be expressed, and after some thought, I settled on a west-coast style synth, with plenty of delay and reverb, because that's what sounded right. The next step of course, is to start recording. Knowing that I was using cassette tapes somewhere between 35 and 40 minutes long, I listened for about 35 minutes.

Critically, I did not quantize Winterfat's notes; to do so would violate those ethics of translation. Forcing Winterfat's notes into the well-defined meter used in human music would

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[47]Place continues to play a large role in my work, as I want for others to be able to visit the same site I did, and maybe interact with Winterfat, and form their own introspections.

[48]Samuel Cusumano's listenings have shown that plants exhibit their own sort of circadian rhythm.

[49]All figures shown at end for archival purposes; in keeping with the theories of the work, visual representation has been minimized.

have stripped Winterfat of any agency, and would have been an act antithetical to the frameworks I operated within.

After I had listened, but before I began collecting, I recorded my artist statement and the operating instructions for the piece.

Looking

Preparing for chromatography

I then began collecting, leaves and soils. The leaves I plucked delicately from Winterfat, thinking about how a yellow warbler or an elk might. They were then labeled, stored, and stowed, until I could work with them further. The soil was collected from just next to Winterfat, but off to the side a bit, in order to avoid hitting the roots. For the soil, I used a soil coring tool, a large T-shaped piece of metal designed to reach soil 8-12” below the surface. This too was labeled, stored, and stowed.

Ritual

In my ancestral tradition

After the work was complete, we shared in the most respected tradition of my mother, a ritual focused on rest, relaxation, friendship, sharing, and joy; coffee hour. I offered the first sips to Winterfat, not too much for fear of a caffeine high, and we sat together for a time enjoying the sounds of the birds and the gentle breeze. In this way, we can broaden that spectrum of interaction, and form new relationships and understandings, by treating life as equals to be respected and their offerings as gifts.

Chromatography

Alternative photographic processes as supporting elements

Once home, I began preparations for chromatography. Winterfats leaves were ground in a mortar and pestle, and just enough isopropyl alcohol to cover them was added. The green pigments began to separate out from the leaves, and once I had enough to make a few chromatographs, I set the mixture aside to rest. I decided to work with two methods for the chromatography; the first a wick, the second a dip. It is worth noting that both actually do use capillary action, but they present quite differently.

For the wick method, a hole was punched in the center of a 15cmx15cm square filter, and a wick was made by tearing a filter into strips and then rolling into a cylinder. Enough mixture was placed into a petri dish, which works nicely but any flat bottom dish with a lip will do, the wick was threaded through so that it touched the bottom of the plate, and I waited a few hours (fig. 5.1). The result is a neat circle, with lighter pigments transported to the outer rings, and the heavier pigments towards the wick.

For the dip method, no such preparation was required. I simply poured the mixture into a dish, placed the filter paper directly into the mixture, supported with a glass, and waited overnight. This method took much longer, but the bands are quite pleasing (fig. 5.2).

Soil chromatography took a bit more preparation. First, 5g of soil needed to be sifted and weighed out. Then, it had to be mixed with a 5% solution of NaOH in order to help break down the organic material for filtration. It should be noted that the container gets a bit warm during this step. This step takes, with infrequent agitation, about six hours. After that, the solution is ready to be used.

While this is all going on, I prepared my filters. This meant coating them in a 0.5% Silver Nitrate solution, in low light of course, and allowing them to dry. I used the same wick method as I did with the leaf chromatography, as experience has shown that oft the sediments are too heavy for any meaningful capillary action with the dip method. Working with the extra step of coating filters in silver nitrate also means that an extra wick is needed!

Once the filters were suitably dry, I poured the soil solution into a petri dish, inserted the wick, and waited about 15 minutes, and then let it dry in a window for about an hour. This results in a circular soil chromatograph of an appropriate size (fig. 5.3). Interestingly, the shape of the filter paper has no effect on the capillary action; square filters and disc filters both result in circular chromatography.

Producing

Putting it all together

This is the step where ethical concerns arose and had to be dealt with. I had the recordings laid down with Winterfat directly in GarageBand, but I had to import and sort through the soil sonifications and field recordings. While I had 35 minutes straight from Winterfat, I only recorded 5 minutes of unique audio from the soil. I also had snippets of field recordings, listening to birds and wind and bugs. Those 5 minutes of soil sounds were looped for the duration of Winterfats part of the track, acting as a drone to their melody, and providing some sort of over-arching pattern. The field recordings were placed so as not to interfere with Winterfats melody or solos, but to flesh out the track when they, in the jazz tradition, took a backseat.

As stated earlier, I chose to express Winterfats notes in the voice of a west-coast style synth, because this is an experimental track after all and that's what felt right. Again, I did not quantize Winterfats notes; the timing and pace of the track is theirs and theirs alone.

The soil sonifications in particular take a bit of EQ'ing in order to remove static from the low and high ends of the spectrum. I also added a touch of reverb and ambience, as this is a musical track after all, not data analysis. The field recordings were left untouched in that regard, though the entire volume of the track and the individual inputs was changed so as to be complementary and not overwhelming.

Once the track was mixed and mastered, I needed to put together the album covers and j-cards. Winterfat had already done the hard work for me, providing the album art through their leaf chromatography, so it was simple enough to cut the filter papers to size and tape them into the correct shape. Since I had two players, I burnt two tapes, and used soil chromatography for one cover and the dip method leaf chromatography for the other. In that way I could make sure that both soil and Winterfat were represented (fig 5.4). Additionally, I whipped up a j-card in Adobe Illustrator, modeled after an old *Kill Bill* one I found on the net. This let me use the wick-method chromatography from Winterfat as album art as well, since any tapes distributed would not have the chromatograph album covers. These j-cards also allowed me to give due credits to Winterfat, the soil, and the Earth, as well as a place to put a QR code link to that audible artist statement.

The final product is displayed simply for the requirements of the BA program here (fig 5.5), but again, in keeping with the theories behind this work, the visual presentation is minimized in favor of the actual, interactive, listening.

VI.Discussion and Analysis

Active Listening as an exploration of relationships

This project is, at it's core, about relationships, specifically meant to encourage intimate, personal relationships with living beings experiencing disparity, plants and the super-organism of soil. It is about encouraging openness to our connections, and a recognition of plants as phylogenetic kin, and soil as our ancestors.[50] It is about rewilding the human and affording the more than human world it's rightful place, not as other, but as beings deserving of care. It is about total immersion with the world, and introspection within.

Cassette tapes, community, and introspection

Cassette tapes play an important role in the experience of the final piece. While the track is available through more modern means (read, Spotify), the lo-fi quality of the cassette player holds at once nostalgia and novelty.

The portable cassette player is an interesting piece of equipment, one that gave individuals the ability to experience music alone, even when surrounded by others. In this way it has been seen as the ultimate in introspective devices and an anti-social tool allowing a user to opt-out of society. Yet, in it's resurgence, it has inspired community in the way that modern streaming services have not.

It is a thoroughly tactile experience, from the chunkiness of the tape, to the satisfying clunk of pressing play, the physical interaction of the device. This format, similar to the record,

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[50]François Bouteau et al., "Our Sisters the Plants? Notes from Phylogenetics and Botany on Plant Kinship Blindness."

inspires a sense of responsibility that digital music does not. That sense of community, and the fostering of care, makes the portable cassette player an ideal vehicle for introspection.

Experimental photographic processes

The inclusion of experimental photographic processes is highly necessary; as the most prominent forms of the work are not accessible to people without a background or a keen interest. These much simpler options are intended to allow larger groups of people to interact with life and habitat in different ways than they may be used to, and are particularly important as a means of hands-on learning. If we are to apply the lessons of tactile immersion and recognize it's importance on the spectrum of interactions, then acts of contemporary photography should be limited.

Not only is contemporary landscape photography is an abstraction of a place, not in the art history definition of the term, where anything inessential to recognition is stripped away, but the act of looking through a viewfinder fully removes a photographer from their surroundings. Even though it may be visual representation of a certain place at a certain time through a certain point of view, it is to be found lacking, a distortion; all of the essential parts of a place have been stripped away through the sterility of digital image processing.

Engaging Sonic Actions

The sonic works, however, more directly address theoretical concerns; they create a larger space for understanding and questioning. The reliance on sound directly argues against a

cartesian hierarchy of senses, and in the vein of oral tradition, moves to impact listeners on a deeper, more permanent level.

This rearrangement of sensory hierarchy offers a final allegory of, and engine for, change. Unfortunately, the creation of such works present a real barrier to democratization; time, equipment, skill, and knowledge play heavily into the outcome of the final piece.

Fortunately, similar awarenesses can be achieved on a personal level through the promotion of deliberate engagement with proxemic and local soundscapes. Taking the time to listen, by sensory sound mapping, or participating in solo and social sound walks, are low-tech and low-cost options for the type of sensory hierarchical inversion, and alternative approach to the realization of the ecological self, for which this project hopes to become a bridge.

All told, *Active Listening* acts as a survey of, or an introduction to, techniques and processes that can be used by artists, researchers, educators, and the curious, to further the realization of the ecological-self via experimentation, play, and a broadening of awareness.

VII.Notes

On the project as a whole

Active listening exists, not just as a survey or the culmination of my own undergraduate work and art practice, but, I hope, as a toolbox for artists, educators, researchers, and the curious, to expand their set of experimental processes and engage with life in different and exciting ways. To that end, I have tried my best to explain these processes and intentions in depth, even when it is unwieldily to do so. If, at any point, you have questions, observations, or ideas, and would like to share them with me, I can be reached at howdy@wiggs.de.

On the reuse of cassette tapes

For the installation of this project, I used two tapes from Kenneth Copelands ministry on the authority of the believer, and for any tapes burnt after, I have used the King James Bible on cassette. This is a continuation of a theme that I expressed in my photographic series *A Natural Religion* in which I appropriated religious iconography and still-life paintings to reimagine fungi into the annals of art-history and give due credit to the matriarch, who were the traditional holders of fungal knowledge. Since that project was a critique of both western religious and scientific patriarchy, and the narratives of other-ness present within, I opted to literally rewrite those ideological narratives in this project, giving new life and purpose to those tapes.

On the use of technology

This project contains works created through the use of both analog and digital technology. Whenever feasible, I opted for analog, lo-fi options. This is a continuing theme in

my work, of reusing existing or obsolete technology as a means of starting discussions about our place in the techno-sphere. As a resident of the Global North, I understand that my access to technology far outstrips that of the average person, and I have serious concerns about the proliferation of digital technology and the impacts that has on energy use, as well as the livelihood and well-being of residents of the Global South, and non-human life found in ecosystems throughout the planet.

On location

The Rocky Mountain Flats Wildlife Refuge is a place that I have found myself returning to. It holds a special significance in the Front Range mythos. It is also a place that I consider a part of my home. It paradoxically stands for the wanton ecological destruction of the US military-industrial complex, the ability to rehabilitate, and anthropocentric hubris. In that formerly irradiated area lies cattle raised for meat, habitat replaced by housing, major shale industry, and a wildlife refuge that still acts as part of an energy corridor supplying natural gas and electricity.

When I showed this project to my mentor, Prof. Marin Abell, one of his first questions was if I had a comparison. His immediate thoughts were to ask if these sonic works could be used to compare the marks and scars made by humanity, if the music would sound different in a happy plant versus one that struggled due to human influence, field recordings from an area unmarked by industry, and soil that had not been poisoned. I didn't have a good answer for him, but he did leave me with one final thought; what would this place sound like if we settler-Americans had been better caretakers?

On writing conventions

Whenever possible I attempt to refer to plants as I do humans, and when not possible I try to refer to humans as I would plants. This is because of feedback I received from a peer, Chicana artist Micah Ramirez, during an early presentation of this work. Micah made a note (in not so many words, but I have never been accused of being concise) that while my intentions may have been collaborative, the language that I was using was decidedly not; it was in fact reinforcing the anthropocentric dynamics of power I so wished to rail against. It was a good reminder that the language we use shapes our experience in the world. For further information, please see the five volume series *Kinship*, edited by Gavin Van Horn, Robin Wall Kimmerer, and John Hausdoerffer.

On ideology

There exists, throughout this written work, references to ideologies, in particular those of Deep Ecology, Materialism, Biocentrism, and Anthropocentrism. This is not to be dogmatic, but rather to serve as jumping off points for individuals to investigate and determine their own self-theories and philosophies. In that same vein, I do not espouse a post-anthropocentric ecology as an iron-clad ideology, but rather as a theory of approach to human interactions with the more than human world. For a more in-depth discussion on ideologies and theories, please see Mikal Jakubal's essay, *Biocentrism: Ideology Against Nature*.

VIII. Figures

Fig. 5.0, Wiggers, Dev, *Active Listening: Winterfat's Melodia*, 35mm film scan, 2023, Denver.

Fig. 5.1, Wiggers, Dev, *Active Listening: Winterfat's Melodia*, wick leaf chromatography, 2023, Denver.

Fig. 5.2, Wiggers, Dev, *Active Listening: Winterfat's Melodia*, dip leaf chromatography, 2023, Denver.

Fig. 5.3, Wiggers, Dev, *Active Listening: Winterfat's Melodia*, wick soil chromatography, 2023, Denver.

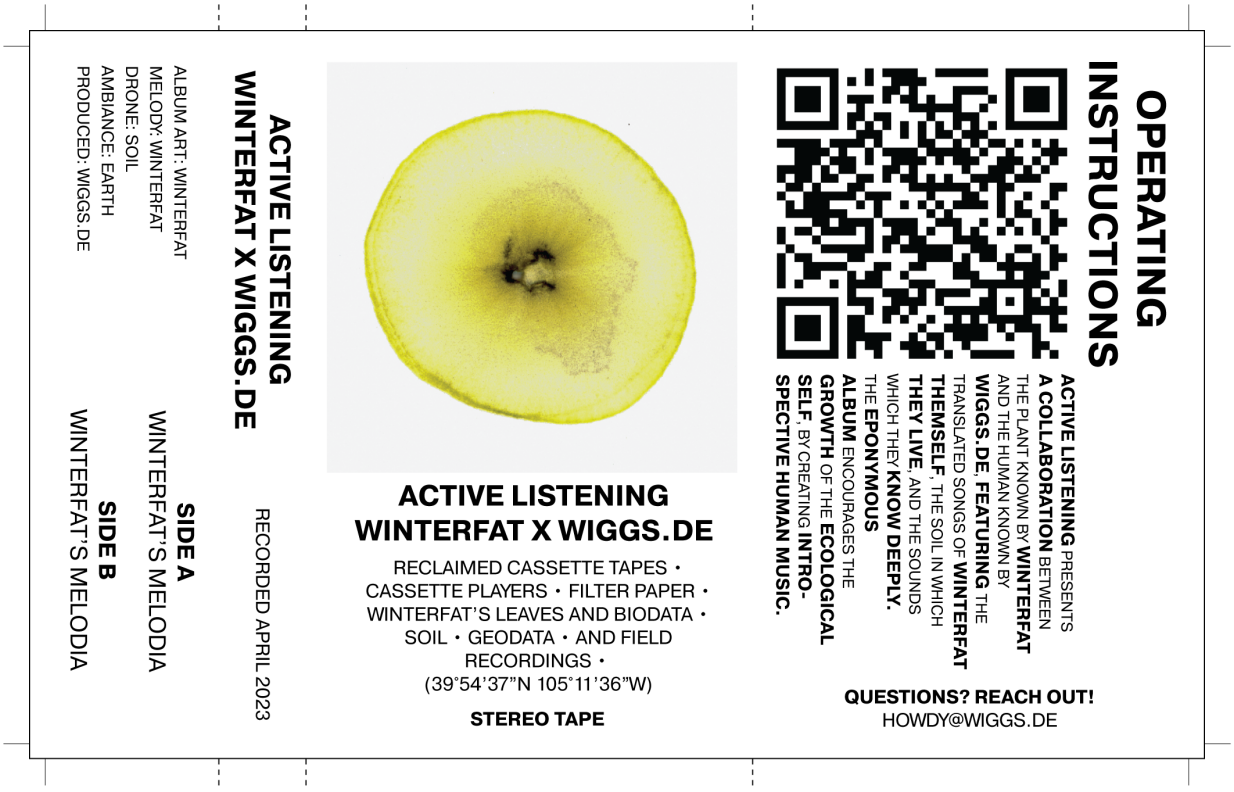

Fig. 5.4, Wiggers, Dev, *Active Listening: Winterfat's Melodia*, j-card, 2023, Denver.

Fig. 5.5, Wiggers, Dev, *Active Listening: Winterfat's Melodia*, installation photograph, 2023, Denver.

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