ABSTRACT

Title of Thesis:	VEGETAL IMAGINARIES: SOUNDING AND SENSING PLANT LIFE AND A "RE-ENCHANTMENT" OF THE MORE-THAN-HUMAN WORLD
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This thesis explores how sound and music provide ways of knowing and modes of enacting relationships with plant life. Based on a year of ethnographic and archival research, I examine the practices of two distinct but related populations: people who use electronic tools and instruments to sonify plant life and artists and healers whose numinous experiences of receiving plant messages shape their sonic, healing, and artistic practices. I ask how sensual and sonic experiences with plant life shape participants' ethical conceptions of interspecies and intrahuman relationships. I examine how conceptions of communicative, psychic, and energetic plants enable imaginaries of unmediated connection to plants and act as modes of "re-enchantment" (Partridge 2004). I argue that my research participants' sonic and sensual engagements with plant life are communicative encounters that inform their idea of what it means to be human and shape their conceptions of ethical relations between humans and plants. Further, at best, such practices bring humans into relationships of care and attention with the vegetal and, at worst, reinscribe extractive relationships with the more-than-human world.

Vegetal Imaginaries: Sounding and Sensing Plant Life and a "Re-Enchantment" of the More-Than-Human World

by

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Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Master of Arts
2025

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Dedication

To Lili and Woden.

Acknowledgements

Thank you to all of the humans, particularly Tamalyn and Eileen, who participated in this project and were so kind as to generously share their time, thoughts, and passion for plant life with me. Thank you to the trees, plants, fungi, protists, animals, bacteria, air, water, and earth. Big thanks to my advisor, Siv Lie, for patiently guiding me through the thesis research and writing process. Her attention to detail, sage advice, input, patience, encouragement and support have been invaluable. Thank you to my committee members: Fernando Rios, whose unique knack for asking questions no one else asks always helps push me in new directions practically and creatively, and William Robin, whose feedback in seminar courses has helped me organize my somewhat free-form thinking and writing. Thanks to everyone in UMD's musicology/ethnomusicology division, especially all that colleagues that I have had the good fortune to study and TA with. Thank you to all my teachers, past and present, and every student I've had to the pleasure to teach and work with in discussion sections. Thank you to all my family and friends who have been supportive and shared their love throughout this process. And finally, a big heartful thank you to Lili and Woden.

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Introduction

"Let Your Plants Play Music, and Gardens of Sound Will Bloom"(Pardes 2019), "Enjoy the Soulful, Natural Music of the Seaport's Singing Trees" (Trottenberg 2022), and "The Lessons to Be Learned from Forcing Plants to Play Music" (Haigney 2020) are just a few recent headlines in the popular press concerned with human musical interactions and collaborations with plant life. Along with recent scientific research into plant communication and intelligence, works of fiction, and the academic field of plant theory, the idea of singing trees, musicking gardens, and ensouled vegetation challenges humanity's conception of itself as a uniquely intelligent, communicative, and artistic species.[1] Scientific studies of our fellow mammals, like apes, chimpanzees, elephants, and whales have provided challenges to humanity's presumed primacy, while plants are commonly considered passive, immobile, and silent.[2] The philosopher Michael Marder points out that while "animals have suffered marginalization throughout the history of Western thought… non-animal living beings, such as plants, have populated the margin of the margin" (2013, 2). Relative to humans and animals, plant life is at the fringe of the conscious, animate, and sonic, thus allowing for an easier objectification of the vegetal world.

However, 21st-century scientific and philosophical explorations of plant life reveal data and modes of meaning-making that assign sensitivity, reactivity, communication, and consciousness to plant life. Botanist and environmental philosopher Matthew Hall points out that

[1] For 21st-century journalism regarding plant consciousness, see Marder 2012 and Shechet 2019. Additionally, works of popular fiction and non-fiction like Simard's 2021 popular-science monograph *Finding the Mother Tree* and Richard Powers' novel *The Overstory* engage with conceptions of communicative and sentient plants.

[2] For instance, gorillas and chimpanzees have learned American Sign Language; Jane Goodall's discovery of tool-using chimpanzees challenged the idea of humans as the only tool makers/users. Whales sing as a form of communication; elephants care for their young and have the ability, much like whales, to communicate sonically over long distances.

"within contemporary scientific literature is a growing awareness that plant behavior has many of the hallmarks of mentality" (2011, 12). Further, Hall states that this literature recognizes plants as having the "attributes of sentience and personhood" (12). Writing about the ecologist Monica Gagliano's experiments, the geographer Karen Bakker asserts "that plants have the capacity to detect sound, make sound, and exhibit a behavioral response to sound" (2022, 106). Further, Bakker describes Gagliano's attempts to expand the definition of intelligence by referring to her plant subjects' "ability to perceive and respond effectively to changes and challenges in one's environment" as *plant intelligence* and *plant learning* (107).

This thesis explores how sound and music performances provide ways of knowing and modes of enacting relationships with plant life. Specifically, I examine the practices of two distinct but related populations: people who use electronic tools and instruments to sonify and "give voice" to plant life, and musicians, artists, and herbalists whose personal experiences of receiving messages from plants shape their sonic practices that are often oriented toward healing and meditation. Both populations' engagements with plants reveal imaginaries where plants are considered conscious and communicative entities that are sensitive to human thoughts and that reveal messages for humans. Individuals from both populations mobilize private, intimate, and sensual encounters with plants to inform their more public artistic and healing practices and public personae. I ask how individual sensual and often sonic experiences with plant life shape participants' ethical conceptions concerning interspecies and intrahuman relationships. Further, I ask how attempts to know plants, listen to their messages, and interact creatively and sonically with the vegetal world contribute to acts of personal and social transformation for humans.

Core to this thesis is the assumption that attending to relationships with the more-than-human world materially, ideologically, and sonically in the age of climate change is existentially

important. Humanity's negative impact on the earth's ecosystems and more-than-human life has become increasingly apparent in the 21st century, calling into question the future livability of the earth—not just for humans but also for the flora, fauna, and the fungi that humans share the planet with. In drawing attention to human existential issues pertaining to the environment, relationships across species, and climate, I put this thesis in conversation with diverse scholarship in music studies that, in some quarters, is referred to as ecomusicology. Jeff Todd Titon defines ecomusicology as "the study of music, culture, sound, and nature in a period of environmental crisis" (2013, 8). In their introduction to the foundational ecomusicology text, *Current Directions in Ecomusicology*, Aaron S. Allen and Kevin Dawe argue that ecomusicology is a "multi-perspectival field," implying that it is inclusive of diverse disciplines, methods, topics, and approaches (2016, 1). Allen and Dawe argue that ecomusicology is not a particular theory, method, or discipline but a plurality of approaches with overlapping concerns—specifically, a concern for "music and sound, culture and society, nature and environment" in all of their diverse meanings (2). Taken as a whole, ecomusicology may be understood as the study of music, sound, culture, and nature within the context of global climate change and the Anthropocene. While ecomusicological literature focuses on various objects, plants are, in contrast to animals or nature in general, rarely a featured object of study. However, attending to plants—commonly considered passive, quiet, and non-communicative—and human imaginaries of plant sounds and communication provides a framework to explore ideas of intra-human communication, communication between humans and plants, humans and nature, and communication itself.

Through my case studies, I examine how musicians, healers, and artists sonically enact material, social, and sensual relationships with plant life and the more-than-human world at

large. I argue that my research participants' sonic and sensual engagements with plant life are communicative encounters that inform their idea of what it means to be human, shape their conceptions of proper ethical relations between humans and plants, and highlight the pitfalls of disconnection from not just the vegetal world but more generally, the more-than-human world. Their engagements with plants in acts of listening, performance, praise, and representation point toward semiotic ideologies (Keane 2003) that consider plants to be conscious, active, and intelligent. However, I assert that their sonic performances and discourse are not always commensurate with their economic, and political activities.

Going forward, I highlight three approaches to thinking about the relationships between human musical and sonic practices to plant life, climate catastrophe, and more broadly the more-than-human.[3] First, I ask how my research participants' sonic encounters with the vegetal alternately reinscribe and challenge extractive and exploitive material and economic relationships with the more-than-human. While all human musicking is interwoven with the more-than-human world, modern musical instruments, recording devices, and modes of listening to recorded sound are largely reliant on extractive material and economic processes that have negative consequences for the more-than-human world.[4] For instance, bamboo and cane used for

[3] Philosopher and Cultural ecologist David Abram coined the term more-than-human world as an alternative to the terms nature, environment, and non-human and as a way to describe how the "*human world* is necessarily embedded within, permeated by, and dependent upon the *more-than-human world* that exceeds it" (2024, 342). Further, Abram claims that more-than-human subverts a divide between culture and nature, human hubris, and anthropocentrism. Following Abram, I use more-than-human in place of the terms nature and non-human as well as a way to assert the embeddedness of the human within the more-than-human. However, I also use the terms nature and environment(al). I frequently use "nature" and "environment(al)" when that is the term used in the relevant literature or by a research participant. I also use nature to denote the conception of a divide between humans and the rest of the animate world. I also use "environment" to denote a specific location full of the more-than-human. Further, I follow the common use of "environment(al)" in environmental humanities and environmental activism.

[4] Of course, this is not limited to music. Our everyday lives are full of ubiquitous technologies like refrigerators, computers, cars, and cellphones that rely on extractive economic practices that exploit humans and more-than-humans.

reeds; animal gut, metal, and plastic for strings; metal for brass instruments; wood for pianos, violins, and guitars; and metal, plastic, and energy needed for recording gear, electronic instruments, and playback devices are all reliant on economic infrastructures that exploit both human labor and the more-than-human world. Matt Brennan and Kyle Devine explore the environmental and human costs of sound recordings and their distribution in the US since the early 20th century in their attempt to discern the "most sustainable ways for musicians to distribute their recordings in the twenty-first century [and]… for consumers to listen to those recordings" (2021, 43). In the process, Brennan and Devine discover that while streaming allows for wider access to more music at a lower cost than previously available, "the environmental cost of listening to recorded music is probably higher than ever before" (59-60).[5] Similarly, Elliot Bates (2020) uses the case study of a common mic preamp (the Focusrite Red 8 preamp) to examine processes of mineral extraction and environmental pollution that are essential to the production of the solder and capacitors that, in addition to being the preamp's integral components, are found in nearly all electronics including devices needed for plant sonification. On the other hand, scholars have noted the effects of environmental extractivism and climate change on resource loss, resulting in scarce materials for instrument production and lifeways (Sakakibara 2021; Dirksen 2019). Plant sonification relies on extractive economies at all levels, from the trade in houseplants to the materials used in sonification devices and the computers and synthesizers necessary for the sonification process. While this is no different from other contemporary musical practices, plant sonification is frequently explicitly eco-conscious and attempts to bring humans into contact with plants collaboratively. There is an inherent friction

[5] While the use of plastics by the US recording industry is lower than in the ages of LPs, tapes, and CDs, Brennan and Devine estimate that energy use and greenhouse gas emissions in the age of streaming music are twenty to one hundred percent higher due to the infrastructure needed to store, process, and transmit music and the costs of accessory technologies like computers, phones, and tablets (51-53).

between plant sonification ideologies that attempt to moderate human exceptionalism and plant sonification's embeddedness in extractive material practices and anthropocentric ideologies.

Second, I take inspiration from ethnomusicological and anthropological literature highlighting performance practices that involve both the human and the more-than-human to explore interspecies social lives, community, pedagogy, and identity. Thomas Turino points out that "the performing arts are frequently fulcrums of identity, allowing people to intimately feel themselves part of the community through the realization of shared cultural knowledge and style and through the very act of participating together in performance" (2008, 2). I ask how plant-entwined sonic practices contribute to conceptions of identity, human and more-than-human boundaries, and community. Further, I ask what the ethical implications are for expanding "community" beyond the human and what it might mean to consider plant performers. Donna Haraway offers tools to help answer these questions with her notions of "companion species," "becoming with," and "kin" which she uses to challenge human exceptionalism and assert the interconnectedness and mutual dependence of species (2008, 2016). Haraway offers, "to knot companion and species together in encounter, in regard and respect, is to enter the world of becoming with… Species interdependence is the name of the worlding game on earth, and that game must be one of response and respect. That is the play of companion species learning to pay attention" (2008, 19). Haraway argues that respect, response, and attention are ways to enact relationships across species and acknowledge the entwinement between humans and more-than-humans. Haraway further addresses this entwinement and confronts human exceptionalism and its relationship to inequality and injustice through her idea of kin. In an interview with journalist Steve Paulson, Haraway describes kin as an "enduring mutual, obligatory, non-optional, you-can't-just-cast-that-away-when-it-gets-inconvenient, enduring relatedness that carries

consequences" (Paulson 2019). For Haraway, there is an inherent mutuality and relatedness across species that requires relationships of care and accountability. The participants discussed in this thesis all exhibit differing degrees of care, attention, and accountability toward plant life. Considering these relationships, I ask: how does the manner in which my research participants enact their entwinements with and conceive of their responsibilities to plant life impact their interspecies and intrahuman social and sonic lives?

Following are a few examples from ethnographic literature that examine sonic social interactions, becoming with, and kin relations between humans and more-than-humans that have influenced the scope of this thesis. In their monograph on Tuvan singing, Theodore Levin and Valentina Süzükei examine how their interlocutor Anatoli Kuular enacts pedagogical relationships with learns to sing from imitating rivers and streams and as a method for pleasing and praising the river and its associated spirit (2008, 26-29). Kuular approaches the river as a lifeform, asserting, "The river is alive. Rivers sing" (28). Levin and Süzükei say that Kuular believes "everything in nature is inhabited by spirit-masters…To coexist peacefully with these spirit-masters and gain access to the natural resources under their protection, humans have to make offerings, offer praise, and show respect" (28).

In his 1962 monograph, Colin Turnbull describes the Mbuti instrument, song type, and ritual act called Molimo as a mode of awakening the forest (figured as a parent) to the plight of the Mbuti (children of the forest) when there is social distress or poor hunting (Turnbull 1962). The Molimo involves acts of sonic and bodily imitation, praise, and attentiveness played out during nightly rituals involving music and dance. By considering Kuular's singing with the river and the Mbuti Molimo as modes of enacting relationship between humans and more-than-humans, we find contrasts to normative modes of musicking in both popular and academic

contexts where relatively little attention is given to the more-than-human as conscious, inspirited, and alive musical partners. Similarly, Anthony Seeger's study of the Suyá (later known as Kĩsêdjê) in the 1970s reveals challenges to normative Western cultural divides between humans and nature and explicates the Suyá's conception of plants and animals as having social lives interwoven with human lives (2004, 2016).[6] The discourse and practices of my research participants reflect conceptions of the more-than-human—specifically plants—as kin, teachers, neighbors, and powerful agents worthy of praise. This thesis reveals imaginaries of plants as members of human and interspecies sonic lives and social worlds, shaping ideas of communication and identity.

Finally, this thesis engages music and sound as powerful modes for generating personal sensual and affective experiences that involve or attempt to enact a relationship with plant life. Through case studies and the practices of my research participants, I examine how subjective sensual experiences with plants are transformed into or inspire sonic performances, relationships, and objects. I use Christopher Partridge's terms "re-enchantment" and "eco-enchantment" to help contextualize my research participants' creative sonic engagements with plants as experiences of wonder within historical processes. Partridge describes "re-enchantment" and specifically "eco-enchantment" as a response to modernity's rationalization and "thing-ification" of nature. He posits that 19th century rationality and positivist science divorced the supernatural from the natural world, leaving nature as only that which is "rationally quantifiable, empirical matter" (2005, 44). Partridge argues that in the 1970s environmental movements and philosophies sparked a "re-enchantment" interweaving with new age spiritualities throughout the

[6] Levin and Süzükei, Turnbull, and Seeger provide just a few examples among many of communities that regard plants, animals, and geographic features as non-passive partners in a social life that extends beyond the human.

end of the 20th century. Partridge characterizes "eco-enchantment" as a reaction to "the driving force of rationalization—the dominance of bureaucracy and the consistent seeking of a more efficient relationship between means and ends—[that] purged the natural world of the supernatural" (44). According to Partridge, in the West, the supernatural was once part of the natural world. However, due to the forces of modernity, it was relegated to the realms of fantasy, fiction, and theology. While Partridge paints his idea of the West in broad strokes, he mainly talks about people who engage in New Age religious practices and how these practices are contextualized and shaped by Euro-American cosmopolitan histories of positivist science, politics, economics, and religion. The participants discussed in this thesis fit within the historical process and cultural formations that facilitate what Partridge calls "re-enchantment." Partridge offers the example of how the "typically modern, science-based profession…[of] medicine" has seen a rise of complementary and alternative modalities as an example of "re-enchantment" (52). I use "re-enchantment" to explore how scientific understandings of plant consciousness and communication rub up against creative, artistic, and alternative healing practices that engage in vegetal imaginaries that take creative liberties with scientific discourse, sometimes verging on the fantastical. Further, I draw parallels between the roles plants play for some of my research participants and the roles of angels and spirits in religious practice.

This thesis draws from and contributes to scholarship in the humanities related to the recent "plant turn" and a small but growing interest in the vegetal within music studies. In one of the central and highly cited monographs associated with the "plant turn," *Plants as Person*s (2011), philosopher Michael Hall surveys various philosophical and religious traditions' conceptions and attitudes toward plant life "to uncover how and where plants are placed within a variety of human worldviews" (3). Hall asserts that Western and Christian attitudes classify

plants as resources and objects subsumed under a homogenous conception of nature; however, he argues that "the marginalization (of plant life) that characterizes Western thought is neither natural nor inevitable" (6).[7] Hall does this by looking toward European pagan, Indigenous, animist, and some aspects of Hindu and Buddhist conceptions of plant life that offer insight into "less destructive, more respectful, harmonious relationships between humans and nature" (1). He argues that humans should not just think of plants as intelligent and individual persons, as merely a philosophical exercise, but should interact with plants socially in order to reclaim a "positive human ecological influence on the natural world" (168).

Ecologists Monica Gagliano and Suzanne Simard's research on plant communication has influenced scientific communities, the popular imagination, and the environmental humanities. Both writers have published works of popular science that combine elements of memoir and have been profiled numerous times in the media, becoming public personae associated with communicative and intelligent plant life. Simard is best known for her research on intra-tree communication via collaborative relationships between trees and mycorrhizal networks (2015; 2021). Gagliano's somewhat more controversial research focuses on plant cognition and bioacoustics (2018). Gagliano claims her work combines "the objectivity of the scientific method and knowledge and the subjectivity of transcendental experiences and intuition" (2021, 2). Gagliano engages in rigorous scientific experimentation as well as intensive personal journeys with plant medicine (ayahuasca), which has led her to consider "plants as persons and companions" and as teachers (6). These works are important to a small field of humanities researchers; however, Simard and Gagliano are among a handful of scientists whose literature

[7] Hall traces some Christian conceptions of plants as passive, soulless, and spiritually inferior by examining the Old Testament/Tanakh, particularly the book of Genesis, and the works of Christian Theologians Saint Augustine and Thomas Aquinas.

has also reached the popular imagination, helping shape how a non-specialist general public conceives of plant life. My research participants, who are not scientists, are influenced by popular conceptions of plants as intelligent and communicative, as presented by Simard and Gagliano. Hall, on the other hand, points toward a trend—that I see reflected in my research participants—of looking for ways of understanding plant life, the more-than-human world, and healing outside of worldviews broadly associated with somewhat stereotypical conceptions of the West, modernity, and urban life and that are sometimes associated with conceptions of "traditional" or pre-modern.

In *Singing to the* Plants (2009), Stephan Beyer explores how mestizo shaman in the Upper Amazon follows a restricted diet in conjunction with psychoactive plants (ayahuasca) to listen to plants and "to create a relationship with the plant spirits…and receive their gifts of power and song" (52). Beyer shows how mestizo shamans communicate with and listen to plants through songs (icaros), learn from plants, and engage with plants as healers. In her study of icaros, anthropologist Christina Callicott explicitly frames Amazonian ritual relationships between humans and plants as interspecies communication which provide a model for "shifting human cultural discourse to a more eco-centric one that recognizes the importance of non-human agency and the possibility for a mutually beneficial relationship between humans and the rest of nature" (2013, 40). Callicott implies that taking cultural practices that consider plant life to be wise and communicative from one formation (her anthropological others) and importing them to her own formation is a pedagogical lesson that will presumably positively affect all of humanity. This reflects Hall's approach to investigating plant philosophies and some of my research participants' sound-based healing practices that take influence from "Indigenous," "ancient," and "traditional" methods. My research participants' conceptions of and practices with plant life

reveal similar conceptions and habits that Beyer and Callicott observe in their Amazonian subjects; knowledge of and relationships with the vegetal are enacted sonically and sensually, and plants are considered to be teachers and healers. However, while my research participants' practices and beliefs about plant life may resemble indigenous and mestizo practices in the Amazon, they are engaged in different historical processes and power and economic relationships

This thesis engages with scholarship across music studies that intersect with the natural world, environmental ethics and concerns, extractive economies, and musicking and communication across species boundaries. It contributes by centering my research participants' sonic and sensual practices with the vegetal world to suggest that plants offer novel insight into how humans construct identity, sonic and experience, and the nature of communicative possibilities across species boundaries.

Roots of the Research and the Journey into the Field

The seeds of this thesis were planted in 2016 when I noticed electronic musicians in New York City attaching synthesizers to plants. I specifically remember attending a performance in April 2016 of the ambient musician Laraaji and the plant sonifier Nature of Now at Maha Rose, a self-proclaimed "center for healing, inspiration, creativity and transformation," in Brooklyn (Maha Rose).[8] The experience was structured more like a meditation or workshop rather than a concert. I recall a sparse audience sitting on cushions on the floor or laying supine on yoga blankets in a space that fit about forty people. While I honestly do not recall the music in detail, I

[8] Nature of Now is the moniker of Joe Patitucci, one of the primary subjects of my first chapter.

am sure—based on my familiarity with the artists—that the sounds loosely fit into the genres of ambient and new-age music. Over the next few years, I observed an increasing number of local musicians and artists connecting electrodes to plants, and around 2020 I began to notice plant sonification videos on Instagram and YouTube. I took note, as plant sonification practices struck me as particularly ripe for investigation and analysis. However, it was only in the fall of 2023 that I began researching plant sonification for a seminar course—research that became the bones of this thesis.

The research participants whom I write about in the second chapter are part of a small group (to which I belonged) of about fifteen healers, meditators, and therapists who work with sound. The group—which the members call Sound Mentorship Group, Sound Group, or more simply Sounders—met in person in Manhattan's East Village about once a month starting in the fall of 2017 and then moved to Zoom in the Spring of 2020 at the onset of COVID-19. At the meetings, the group members provided peer supervision, explored sound meditation and therapy protocols, and created sound together. Over the years, the group members shifted, with new people joining and others dropping out irregularly. Online group meetings started to taper off in early 2023. The primary mode of communication is now a WhatsApp group chat, with occasional in-person gatherings for members still located in the New York City area.

Tamalyn Miller—an artist, musician, poet, aromatherapist, hypnotist, alternative healer, and self-trained herbalist—was one of the original core members of the Sound Group and remains in touch with many of the group's members. Most of my interactions with Tamalyn have been within the confines of group meetings. For years, I had primarily thought of Tamalyn as the player of a self-built one-string horsehair fiddle she calls Mr. Fiddle. However, as time passed, I slowly learned more about her work as an artist and her interest in aromatherapy. Further, as she

is an experienced cat caretaker, I have sought her advice about and support for caring for sick cats. Tamalyn was one of my primary research participants, and chapter two is, in large part, based on her work.

In late 2023, during a Zoom meeting of the Sound Group, Tamalyn briefly mentioned that she had talked with and listened to plants while taking walks in the park near her home in Beacon, New York. A few other group members added to the conversation by sharing their own recent experiences with plants; one of the members mentioned they had been playing tuning forks to her house plants, and another reflected on listening to the wind in the trees. While I took note and observed, I did not respond at the moment.[9] However, I took Tamalyn's share as an omen; at the time, I was working on an early iteration of my chapter on plant sonification for a seminar course, and I was in the very early stages of becoming acquainted with plant theory.

I was deep in the weeds thinking about plant life and sound and had been looking for a way to engage with the subject ethnographically. Tamalyn's brief share that evening provided a seed for this research. A few months after the group meeting, I reached out to the members on our WhatsApp thread, asking who in the group worked with plants and sound together in their practice. I asked if anyone would be open to discussing their experiences with me, but I only received a few responses. A few other people advised me to look at plant sonification, and a group member named Eileen responded by telling me she had used a popular plant sonification device called PlantWave in the past. PlantWave and similar devices seemed to be the first things to come to mind for most group members who responded. However, I knew from experience that most of the group used plant materials as an olfactory element in their sound baths, and almost

[9] I hope it is not lost on the reader that no one in the group of about a dozen people thought that talking with and listening to plants was in the least bit strange.

everyone owned instruments made from plant materials. Further, a few people used plant imagery in their work; however, none of the group members seemed to associate these engagements with plants as something I might be interested in.

Eileen, one of the last people to join the Sound Group on the cusp of COVID-19, was the first person I talked with for this research. Outside of group meetings, I had gotten to know Eileen one-on-one during drives to upstate New York for some of the group's gatherings and had come to know her as a thoughtful, curious, and very driven person who, in addition to working with sound, engaged in various healing modalities. I initially contacted Eileen because she shared on the sounders WhatsApp Chat that she used plant sonification devices in some of her sound baths. However, during our first brief phone conversation, I learned how she uses plant elixirs and cacao as a component of sound-oriented meditations, healings, and rituals. Indeed, she described practices that were heavily laden with the vegetal. This opened up research avenues that I had previously not contemplated.

Research Methodology: Seeding

This thesis draws on archival, historical, ethnographic, and autoethnographic research conducted from March 2024 to February 2025. The primary research method used for chapter one, which focuses on 21st century practices of plant sonification and its precursors in the 1960s and 1970s counterculture, was the analysis of online archives such as social media, artist websites, performances, message boards, journalism, and interviews archived on YouTube. I undertook archival research to understand how plant sonifiers' promote and shape their ideologies in their creative work via digital spaces and media. Further, archival recordings and

journalism provided a window in the historical precedents of 21st century plant sonification practices.

The primary method used in chapter two is ethnographic research, which was carried out between the spring of 2024 and the mid-winter of 2025.[10] Interviews, which I conducted via Zoom, phone, and in person, were my primary method of investigation. Further, I engaged in participant observation through two field site visits. In the fall of 2024, I visited Tamalyn at her home in Beacon, NY, which gave me a more tactile understanding of her workspace and creative process. Additionally, we took a walk through a park and wooded area near her home to visit the plant life of her local environment, where she shared more about her daily plant-related practices. I also visited Eileen at her home in Brooklyn, NY, in August of 2024, where she facilitated a highly vegetally-infused sound and healing experience. Further, each visit gave me a more fine-grained understanding of my research participant's practices and, in many cases, introduced new practices and lines of investigation to pursue. While our conversations benefited my research, they also facilitated a space for some research participants to reflect on their practices, stories, and ideologies, allowing for a relationship of reciprocity. I had also planned to bring the participants together for group conversations; however, due to availability and time constraints, this did not happen. By sharing stories, beliefs, and practices, I hoped to understand how the research participants identified areas of difference and continuity between their various practices. Additionally, while many of the participants were already in community together, oriented around sound healing practices, I anticipated group conversations to be a way to further build

[10] I had initially planned to conduct ethnographic research for chapter one as well. However, due to rescheduled performances and potential participants' disinterest, silence, and scheduling conflicts, the ethnographic research was minimal and excluded from chapter one.

community by introducing new people to each other and highlighting the shared interest in plant life.

Finally, I position myself as a research subject through autoethnographic methods. As opportunities for in-person participation and observation were relatively scarce, I engaged in various practices, largely gleaned from my research participants, to further immerse myself in the field and gain personal experiences with plant life through sonification, meditation, and listening practices. Autoethnography facilitates the opportunity to better understand the nuances of my research participants' practices, both formally and ideologically.

Chapter Outlines: Branching Out

In chapter one, I explore the popular contemporary plant sonification device PlantWave by engaging with its history, precursors, and surrounding discourse. I look at the experiments of Cleve Backster, the 1973 book *Secret Life of* Plants, and a Berkley California radio program from 1972 that features plant sonification to explore ideologies and practices that influence PlantWave's creators. I then discuss the genesis of PlantWave, its emergence in the marketplace, and the discourse of its creator and CEO Joe Patitucci to highlight the devices' original use as a creative tool used in art installations and niche electronic music practice to presence in wellness marketplace as lifestyle branded tech accessory. Additionally, I offer critiques of plant sonification from the academic perspective of geographers, philosophers, and plant scientists and from the point of view of music synthesists conversing on Reddit. I argue that plant sonifiers enact a "re-enchantment" of plant life by constructing vegetal imaginaries of conscious, psychic, intelligent, and energetic plants that effectively bridge the difference between humans and plants. Further, sonifiers consider their communicative experiences with plants to be direct and un-

mediated, while sonification, by its very nature, enacts multiple modes of mediation via technology and ideology. I assert that sonifiers' imaginaries of a consciousness shared between humans and plants privilege plant minds (and even souls) to plant bodies, allowing sonifiers to avoid critiquing the extractive economies that underlie sonification practices. While previous works have engaged with PlantWave, Cleve Backster, and The Secret Life of Plants, this is the first scholarly work to combine these histories and subject matter in-depth. Further, contextualizing these histories within alternative healing and New Age spiritualities is unique to my analysis.

In chapter two, I explore numinous encounters of the vegetal world and how they inspire healing, art, and music through two case studies. Eileen, a multi-disciplinary holistic health practitioner who uses plants and sound to facilitate her client's relaxation and health, and Tamalyn, an artist, musician, and aromatherapist who engages with plants as a muse and conduit to a transcendental consciousness and whose work prominently features and praises the vegetal world. Both women engage with plants through practices that include embodied sensory experiences like smelling, listening, imbibing, and immersion; the transmission of stories and instruction in the form of folklore and plantlore; and material practices in the form of visual art, music, making tinctures and distillations, teaching, and healing practices that require active relationships with plant life. This chapter explores how immersion in vegetal environments, meditation, altered states of consciousness, and non-rational, intuitive, and embodied ways of knowing affect and prime how Tamalyn and Eileen discursively describe their communications with and reception of plant messages. Further, both women act as "ambassadors" or mediums for the plant world to connect their clients and audiences with the vegetal world. I argue that Eileen and Tamalyn's communicative experiences of the vegetal shape their approaches to the ethics of

healing and art and construct their ideas of what it means to be human while calling attention to the hazards of disconnection from both the vegetal and more-than-human worlds.

I conclude by centering myself as the research subject and recounting my autoethnographic explorations in plant sonification. Using a MIDI Sprout sonification device, a laptop, and the Digital Audio Workstation, Ableton Live, I engage with pleasure, immersion, and exploration in sonifying a neglected aloe plant. While the process brings me into a relationship of care with the aloe, my attention is even more focused on modifying and manipulating the plant-data with Ableton. I close by returning to a critique of the ethics of plant sonification and the marketing of the PlantWave sonification device, arguing that it is disingenuous to promote a device as "environmentally conscious" (Midi Sprout n.d.a.) and as a way of connecting with nature while avoiding contending with the extractive economies which underly its very reality.

Chapter 1: Plant-Data Sonification and Its Counterculture Precedents

The popular press articles mentioned in the introduction's opening all focus on artistic and musical works that use biodata sonification technology to make "plant music." Contemporary biodata sonification technology used on plants—which I will refer to moving forward as plant-data sonification, plant sonification, and, more generally, plant music—can be described in three basic steps. First, two electrodes are attached to a plant leaf to read the fluctuations of the leaf's electrical conductivity. Second, a hardware device receives the reading of the leaf's conductivity and translates it to MIDI data. Third, a synthesizer patch translates the MIDI data into sound.[11] Over the past decade, plant music and popular plant sonification devices like PlantWave have increasingly found their way into the public consciousness via social media, events at public and private gardens, museums, reception in popular media, and performance venues ranging from DIY spaces to mainstream concert halls. With these technologies, artists and musicians who use plant life as central components of their practice both explicitly and implicitly challenge normative conceptions of intelligence and consciousness by extending these qualities to plant life.

In this chapter, I examine the genesis of the PlantWave and its historical and social context, exploring how it entwines with the histories of ambient and experimental electronic music and countercultures of the 1960s and 1970s. I address 21st century plant sonification's historical precedents in the experiments of Cleve Backster and investigate and analyze a 1972

[11] Plant sonification also works without translating voltage to MIDI. Musicians and artists using analog synthesizers can use an attenuator to shape the voltage before sonifying it. However, if the musician or artist is using a computer, a hardware digital synthesizer, or an analog synthesizer with MIDI input, devices like PlantWave that translate voltage to MIDI are necessary.

radio show featuring plant-data sonification. I also explore 21st-century plant sonification through the device PlantWave and the artist Joe Patitucci, who is the Founder and CEO of Data Garden, the company that builds and markets PlantWave. I trace how 21st-century plant sonifiers borrow aesthetics, ideologies, and spiritualities from their counterculture precedents, update them for the contemporary wellness marketplace, and construct a historical lineage. While other scholars have written about 21st-century plant sonification and have cursorily included its historical precedents in the 1960s and 1970s and contemporary sonifiers like PlantWave position themselves within a historical lineage, this chapter analyzes events, discourse, and historical processes that previously have only been explored superficially. This is the first scholarly work to critically examine PlantWave and its historical precedents, contextualizing it within New Age spiritualities, ambient music, extractive economies, and as a mode of re-enchantment.

Throughout this chapter, I ask how and why plant music is made. What beliefs and meanings do practitioners of plant sonification proclaim and imply in their work, practice, and discourse? To what degree are these beliefs and meanings consonant with the material realities of their practice? How is the "plant music" denomination constructed, and how does it contribute to, the imaginaries and discourses around plant-data sonification? Moreover, who is making plant music: plants, musicians, and/or machines? This chapter's case studies will explore the aesthetics, values, and ideas of plant intelligence and consciousness that are enacted and constructed by plant sonification practices. I assert that plant sonifiers attempt to bridge the difference between plants and humans by foregrounding conceptions of plants as communicative, reactive, intelligent, conscious, psychic, sonic, and inspirited. In doing so, they extend a Cartesian mind-body dualism to the vegetal that privileges plant minds over plant bodies. By privileging plant consciousness to plant bodies and focusing on technologically

mediated and modified plant sounds as aesthetic objects, sonifiers largely avoid contending with the extractive and destructive economic realities that facilitate their work. Additionally, while technology plays a crucial role in mediating plant sounds and constructing the idea of plants as psychic, energetic, and conscious, this very construction allows plant sonifiers to imagine their relationship with plants as direct, intimate, and relatively unmediated. I consider these imaginaries of unmediated psychic and energetic connections between plants and humans as a mode of "re-enchantment," that along with creative sonification practices, scientistic discourse, and sonic pleasure merge into a feeling of direct connection.

The Psychic Plant: PlantWave's Precursors in the 1970s Plant Craze

In April 2012, the zero-waste record label Data Garden presented their installation *Quartet* at the Philadelphia Museum of Art. *Quartet* consists of four plants—a philodendron, a snake plant, and two Schefflera—connected to an early iteration of the PlantWave device and a computer running four synthesizer instruments, each dedicated to sonifying a plant. Data Garden's technological inspiration for *Quartet* is a component of the polygraph machine called the galvanometer, a device used to measure electrical conductivity in human skin. The galvanometer's use on plants dates back to 1966 when, on a whim, one of the USA's "foremost lie detector" experts—Cleve Backster—attached his galvanometer to a dracaena plant (Collier 1971).[12] Backster observed readings from the dracaena that he believed looked strangely similar to human emotion and decided to test the plant's response to threat. Initially, he dipped the

[12] Upon watering the plant, Backster wondered if he could "measure the rate at which water rose from the root area into the leaf" (Collier 1971). As the galvanometer measures changes in electrical resistance, Backster surmised that changes in the leaf's water content would affect the leaf's electrical resistance (Tompkins and Bird 1971, 3-4).

plant's leaves in a cup of hot coffee with no reaction. Backster then planned to burn the leaf with a match, but the galvanometer registered a drastic change at the exact moment this idea came to his mind. Backster recognized the galvanometer's readings as indicating fear, and from this moment, he concluded that plants are aware of the thoughts and intentions of the humans around them, essentially reading people's minds (Collier 1971). Backster's experiments were covered in the popular press, and as his fame grew, the idea that plants could perceive the thoughts and emotions of humans became known as the Backster Effect. Backster continued experimenting with plants for the remainder of the century, eventually publishing his findings in 2003 (Backster 2003).

In addition to the extensive news coverage of Backster's story in the late 1960s and early 1970s, he gained wider renown in 1973 as the opening anecdote to the *New York Times* non-fiction bestseller *The Secret Life of Plants*.[13] Written by WWII OSS spy and journalist Peter Tompkins and botanist, "science vulgarizer" (Castro 2020, 176), possible ex-CIA agent (Pace 1996), and New Age author Christopher Bird, *The Secret Life of Plants* is what journalist Michael Pollan refers to as a "beguiling mashup of legitimate plant science, quack experiments, and mystical nature worship that captured the public imagination a time when New Age thinking was seeping into the mainstream" (2013). Frequently criticized as pseudoscience, the book documents plant experiments—many of which were later debunked—and their intersections with the uncanny (Pollan 2013). Furthermore, plant geneticist Daniel Chamovitz asserts that the

[13] *The Secret Life of Plants* is frequently referenced in popular news articles about plant communication, consciousness, and plant music. While *The Secret Life of Plants* is an object of jokes and derision, it also influences fringe science, the arts, the new age, and the popular imagination. As Chamovitz asserts, the book may have set back plant science, causing scientists to repress any work that touches upon plant consciousness, communication, and cognition out of fear of ridicule.

book's shortfalls affected the trajectory of plant behavior research "as scientists became wary of any studies that hinted at parallels between animal senses and plant senses" (2017, 6).

While Chamovitz and Pollan claim that *The Secret Life of Plants* hindered scientific plant research, it may also be understood as a form of "re-enchantment," sparking the public and artists' senses of wonder and imagination with plant life. Through its "mashup" of science, pseudoscience, esoterica, and spirituality, *The Secret Life of Plants* documents a fascination with the vegetal world that has one foot in fact and another in fiction (that is often presented as fact). Through conjecture and playfulness, it pushes the edge of rationalized order into the fantastical, providing an enchanted and wonderous plant life imaginary. While the book's inaccuracies mislead the public and likely hindered plant science, it is best thought of as archiving an enchantment with the vegetal world that proclaims values and meaning: plants are worthy of consideration as fellow beings that are "living, breathing, communicating creatures, endowed with personality and the attributes of soul" (Tompkins 1989, xiv).

The Secret Life Plants and Cleve Backster are two of the most prominent nodes within what historian Teresa Castro (2020) calls the "1970s plant craze." Castro asserts that "in the early 1970s, the belief that plants were sentient and intelligent entities, capable of reacting to human thoughts and emotions (as well as to animals' pain or music) became widespread, nurturing popular culture's flirtation with vegetal being" (Castro 2020, 173). Castro highlights the magazines, fine arts, and films infected by the plant craze and illustrates how "cold-war paranoia, New-Age spirituality[,]…ecological thinking," systems theory, cybernetics, and technology were all braided throughout the material culture of the plant craze (173-174). Castro asserts that the craze was much more than "hippies hugging trees" by emphasizing the centrality of technological mediation to bring unapparent aspects of plant life into the visual and audio

realm, such as turning a plant's bio-electrical resistance into visual art or sound. Such mediations allow for imaginaries that consider plants as intelligent and reactive, echoing Castro's claim that "the communicative, sentient plant is a mediated plant" (175). Further, technological mediation was essential to the glut of plant-related music made in the 1970s. This body of work included, among other examples, the repackaging of classical music in tape and vinyl compilations intended to be played for plants to facilitate their growth; Stevie Wonder's 1979 soundtrack to the film version of *The Secret Life of Plants;* John Cage's *Child of Tree*, which uses an amplified cactus as well as various plant materials as instruments; Annea Lockwood's *Piano Garden*, a long duration piece that involves a piano's decomposition and a garden's growth; and a 1974 LP initially available only by purchasing a plant at the Los Angeles plant shop *Mother Earth*: the electronic musician Mort Garson's *Plantasia.* These examples highlight the notion that whether through recordings, microphones, or a piano's decomposition, the sound of plants and plant-related sounds require mediation through human technologies to reach human ears. Thus, technology provides understandings, experiences, and imaginaries of the vegetal world that would otherwise remain unknowable.

One of the earliest documented precursors to the PlantWave is a radio program that features a sonified sensitive and communicative plant, hosted by the composer Charles Amirkhanian on the Berkeley, California, radio station KPFA from October 18, 1972, called "Radio Event No. 20: Rhododendron."[14] On the show, electronic musician and Mills College audio technician Tom Zahuranec presented a philodendron wired to the oscillators of a Buchla

[14] Other Minds, a San Francisco organization dedicated to contemporary experimental music and cofounded by Amirkhanian, archived the radio program on its archival website, https://archives.otherminds.org/ and the Internet Archive, https://archive.org/details/RE_1972_10_18. The archived title reads "Rhododendron," while the plant used on the radio show is referred to as a philodendron throughout the audio recording. For the remainder of this chapter, I refer to the plant as a philodendron and to the event as "Radio Event No. 20."

synthesizer live on air and invited audience members to the studio in order to attempt to "communicate mentally with" the plant (Zahuranec 1972).[15] The Buchla synthesizer plays constantly for the entire forty-five-minute radio program while Amirkhanian talks intermittently with Zahuranec and various audience members. The audience appears to be friends or fans of Amirkhanian and Zahuranec. In addition, as KPFA was a local community radio station with a niche audience, I speculate that most audience members were part of a social circle rather than mere observers.

On the archival recording, the listener hears two sequences coming from the synthesizer: a steady, vibrant quarter-note pulse (at about one-hundred-forty-five beats per minute) and what Zahuranec refers to as a "bubbly sound" (1972, 00:29:30). The "bubbly" sound is a chaotically pitched, quickly moving texture that sounds like an electronic babbling brook. The sounds are rhythmically and melodically highly repetitive, with pitch modulating and timbre shifting minutely, giving the impression of a gradually shifting minimalist music composition. However, there are a few sudden and noticeable changes in pitch or timbre over the 45 minutes. Changes in pitch and timbre, both minute and dramatic, are linked to Zahuranec's claim that the philodendron is aware of the audience's thoughts. Zahuranec uses the term E.S.P. (extra-sensory-perception) to describe the plant's psychic abilities and namechecks Cleve Backster and the Backster Effect in the radio show's introduction, revealing one of the influences for this performance. During "Radio Event No. 20," Zahuranec asserts that the philodendron's reactions to the studio audience, and possibly the audience listening at home, cause the synthesizer's sounds to change. Zahuranec explains that when the plant is elated or pleased, the pitch of the

[15] Zahuranec would later collaborate with the artists John Lifton and Richard Lowenberg on audiovisual sequences for the 1977 film version of *The Secret Life of Plants* (Castro 2020, 183).

quarter-note pulse rises and the harmonic content of the "bubbly sound" is extended.[16] In contrast, lower pitches and less harmonic content indicate the plant's relative displeasure. In other words, the plant's relative pleasure or displeasure—as indicated by changes in sound—is, according to Zahuranec, a response to the thoughts of humans.

Throughout the radio program, Amirkhanian, Zahuranec, and the audience attempt to assess if the philodendron is sensitive to particular people, seeking to correlate changes in the Buchla's sounds to an individual's proximity to the philodendron or to when a new person enters the room. As they try to correlate changes in sound to specific events, they conjecture about what the plant is feeling, drawing on what they believe to be the fact—putatively proved by Cleve Backster's experiments—that plants are sentient, intelligent, and aware of people's thoughts. Further, Amirkhanian asks audience members if they understand what's going on, if they think the whole thing is "hogwash," and if they can perceive any changes in the sound. While "Radio Event No. 20" documents various responses to Amirkhanian's queries and different levels of familiarity with Backster's experiments, there appear to be few unbelievers in the KPFA studio that day. Everyone we hear talking is curious and open to the idea that plants are sensitive to and conscious of human thoughts.

Overall, the event focuses on the plant as the receiver of human thoughts and not the plant as a musician or composer. If we accept Zahuranec's belief that the plant can read people's minds, the philodendron becomes a mediator between humans and synthesizers—transducing human thoughts and feelings. Through its sensitivity to and awareness of human thoughts, the plant allows humans to interface with a synthesizer without using a keyboard or other

[16] From what is available on the audio recording, I have concluded that the voltage from the philodendron is most likely triggering the pitch of the quarter note pulse and a low pass filter that affects the overall harmonic content of the synthesizer's output.

controller.[17] In this light, the plant is viewed as relatively passive. It makes no choices and does not claim any aesthetic opinions. However, Zahuranec describes the plant as not easily fooled or susceptible to artifice as it is attuned to the essence of human feeling and thought. An exchange between Zahuranec and an audience member exemplifies the plant's fine-tuned awareness of human emotion. In an apparent reference to Backster's experiments, an audience member asks Zahuranec if he has tried to incite a response in the plant by attempting to or thinking about causing the plant harm. Zahuranec replies that he has thought about it, but he has never been serious about his intent to harm the plant, implying that the plant could perceive his true intentions and, thus, did not respond. Like the best mind reader, the plant can discern the truth about human emotions, intentions, and thoughts; in this light, the plant may be considered a surrogate for honesty, truth, and perhaps purity. Bearing this in mind, the plant seems to play a role similar to a clairvoyant, diviner, or even an angel, further exemplifying the processes of "re-enchantment."

The supernatural aside, humans in this assemblage control the performance at multiple levels, constructing the synthesizer, programming its patch, cultivating and trading house plants, responding to the sounds, and providing thoughts for the plant to read. However, "Radio Event No. 20" centers on the plant as the focus of curiosity and the prime musicking agent. The human performers—the audience, Zahuranec, and Amirkhanian—are all focused on the plant's performance as they attempt to correlate the plant's responses to the people it is interacting with by isolating particular moments in the soundscape as proof for the plant's perception of humans. As the humans attempt to identify moments of plant perception through the synthesizer sounds,

[17] This is resonant with Buchla synthesizers' design ethos, which notoriously did not use keyboards and attempted to pioneer novel methods for triggering analog synthesizers.

they conjecture about what might incite the plant's responses or lack thereof. They ask: Does proximity make a difference, or perhaps particular thoughts or moods? As Zahuranec lives with the plant, is it more likely to respond to him?

As the human performers try to ascertain and isolate the moments of acute connection between human and plant, they continually mystify the role of the plant while only indirectly engaging their own centrality. More simply, they seem to be asking, "Can the plant hear and see me?" The plant acts as a mirror, affirming the essence of the participants' existence. As a psychic, the plant actualizes the imaginary that thoughts transcend bodies and individuated minds. The idea that plants receive human thoughts unaided by bodily action blurs the boundaries between plants and humans. Thus, the idea of shared consciousness between humans and plants blurs the differences evidenced by dissimilar appearances, biology, and habits. However, while this expands the idea of the individual and the nature of consciousness and communication beyond the human, there are power relations at work; the plant and synthesizer act as augmentations of human minds, not the other way around. Further, thoughts, feelings, consciousness, and psychic powers take preference over the bodily; however, psychic communication is one way—human thoughts penetrate while plants receive. The plant only acts as a node for transducing human thoughts by sending them to synthesizer.

"Radio Event No. 20" is an attempt to document "the psychic plant" and plant/human communication, tracing the plant's ability to sense humans and the human's ability to send plant messages psychically by listening to the sounds of the synthesizer. The plant and synthesizer allow humans to externalize their pure thoughts and emotions and then reflect on this process discursively. However, outside of indicating the ability of the plant to read human minds, it is unclear what the aesthetic value of the sound is for the humans present. The discursive elements

of the radio show are fixed squarely on the plant as a sensing being, but there is no talk about music or sonic and aesthetic pleasure during the event. Human emotions are not sites for self-reflection in "Radio Event No. 20"; instead, they are abstracted and mediated by the plant. The event may be understood as a chain of causality, a human has thoughts and feelings; the plant perceives the human's thoughts and feelings; these perceptions alter the plant's state; the plant's state is sonified, humans observe the sonification, and then as a group they speculate discursively on this process. On a material level, the event involves tracing a signal to find evidence that plants are perceptive. However, if we take Zahuranec's word for it, the plant plays the role of medium, providing a way for humans to control the synthesizer psychically. Yet, while the plant mediates between human and synthesizer, and the synthesizer transduces the plants electrical signal, there is, an imagined direct and pure relationship between human and plant as Zahuranec believe the philodendron perceives the unmediated truth of his thoughts and feelings. This later point is the crux of "Radio Event No. 20" as an instance of "re-enchantment." Mind reading, a fantastic and supernatural ability, is attributed to the plant, naturalized, and understood to enact a direct, unmediated, and non-discursive transmission between human and plant.

"Radio Event No. 20" performs various modes of mediation. The philodendron acts as a psychic, receiving human thoughts and transducing human emotional states while also performing the role of an intermediary between human and synthesizer. Further, the synthesizer transduces and modifies the plant's electrical signals into sound, revealing a sonic representation of an invisible interaction between plant and human. While the event bridges and blurs the domains of human, plant, and electronic sound technology, the human participants ultimately construct the event's meaning. Humans enact vegetal imaginaries, interpret the synthesizer's sounds, and project a desire for connection to the plant.

Zahuranec and the KPFA audience engage in "re-enchantment" by attributing psychic abilities to the plant, contesting conceptions of plants as non-communicative unconscious objects, and enacting an imaginary where consciousness and communication transcend species boundaries. Additionally, human and plant communication is constructed as pure, truthful, and simultaneously non-discursive, which reveals an imagined, unmediated, and direct relationship between plants and humans. This reveals a paradox: despite the various modes of mediation evident in "Radio Event No. 20," the relationship between humans and plants is imagined as psychic and thus a relatively unmediated and direct connection.

PlantWave: 21st Century Plant Sonification

Despite the ridicule and eventual debunking of both *The Secret Life of Plants* and Backster's experiments, their influence has endured in popular considerations of plant communication and consciousness as well in the further adoption of the galvanometer for plant-data sonification, plant music, and ambient aesthetics. Data Garden's CEO, founder, and public face, Joe Patitucci, repeatedly cites the influence of Brian Eno's generative ambient music and likens Eno's use of aleatoric methods to the random signals generated in plant sonification. Eno, who coined the term "ambient music" in 1978 (Szabo 2015, iii) and is considered to be the first to use the term and techniques of "generative music" (Doornbusch 2009, 76), is a touchstone for Patitucci and 21st-century plant music more generally. Along with Brian Eno's late 1970s ambient music, Backster's experiments were vital inspirations for Data Garden's *Quartet* installation at the Philadelphia Museum of Art in 2012. In addition to sonified plants, *Quartet* included "piles of pillows in…[a] room that allowed listeners to recline and take in the often-relaxing sounds emitted by the speakers" (Schwartz 2012). Eno characterizes ambient music as

"an atmosphere, or a surrounding influence: a tint…[that is] intended to induce calm and a space to think" (Eno 1978). Patitucci echoes this sentiment, asserting that the unpredictability of plant music helps people "chill out…connect…[and] be more present" (Laughlin 2022, 36:07), inducing relaxation, connection, and inspiration (Midi Sprout n.d.a.). From *Quartet* to PlantWave, exploring and constructing the linkages between plant sonification, states of relaxation, and the ambient music genre have remained central to Data Garden and Patitucci's work and are key characteristics of plant music more generally.

Data Garden released the recording *Quartet: Live at The Philadelphia Museum of Art* the following May as a limited edition so-called "plantable 7"". It contained no playable media and instead, consisted of "handmade seed paper with screen-printed album art and download code on the reverse side" and instructions for the consumer to bury and water the seed paper (Data Garden 2012). As a zero-waste record label, Data Garden resisted releasing physical media such as vinyl LPs and tapes and instead opted to release recordings via handmade seed paper and digital downloads. The label seemingly continued this ethos when it later released the plant sonification devices Midi Sprout and PlantWave, advertising the devices as being made of renewable materials. However, while the housing or outer containers of these devices are made of renewable and eco-conscious materials, their internal electrical components and additional computers, cellphones, power, and telecommunication networks are not.

Following *Quartet*, Data Garden developed their plant sonification technology into the MIDI Sprout product. The MIDI Sprout is a hardware device consisting of the initial two components of biodata sonification technology: the sensors that measure the changes in current on a plant leaf and a small box containing hardware that translates these measurements into MIDI data. MIDI Sprout users also need a device to translate the MIDI data into sound, such as a

hardware synth or a computer running software synthesizers and samplers.[18] Musicians and composers adopted early versions of the MIDI Sprout, employing the plant-generated MIDI data by plugging it into customized synthesizer and software patches. This cohort consisted primarily of young composers and musicians—specialists who use electronics and synthesizers in works that broadly fit into experimental and ambient music genres.[19]

While initially available via Kickstarter, in 2016 Data Garden sold early iterations of the Midi Sprout as pre-orders through the eclectic record shop, gallery, and community space Commend. Located in Manhattan's Lower East Side, Commend was a go-to spot for ambient, avant-garde, and experimental electronic music recordings and hosted live performances. In addition to recorded media, Commend carried incense, essential oils, marijuana paraphernalia, books, tarot cards, and clothing. Although the storefront closed in early 2022, Commend's Instagram, which is still active but not updated, features the somewhat enigmatic slogan "the inner space within the outer space…" Commend was a spot where one might find a prominently displayed used copy of *The Secret Life of Plants,* Mort Garson's *Plantasia*, and other vegetal products next to obscure used and re-pressed ambient and experimental electronic music vinyl. As a hub for NYC's young electronic musicians, Commend provided a valuable node for MIDI Sprout's distribution.

In 2017, Data Garden introduced a second-generation MIDI Sprout that featured compatibility with smartphones via new hardware connections and an app that they advertised as

[18] The other ways of sonifying the MIDI data. For instance, Jad Atoui's *Biosonics* project incorporates transcriptions MIDI data into graphic, text, and traditional notation for musicians to further interpret.

[19] A short list of artists who have used the MIDI Sprout includes composer Angélica Negrón, film composer and experimental electronic musician Robert Aiki Aubrey Lowe, drummer Greg Fox, composer and improviser Jad Atoui, and composer Ricardo Romaneiro.

allowing its users "to listen to...plants play harmonious sounds designed by our team of artists" (Midi Sprout n.d.b.). The redesign and app provided a step toward making MIDI Sprout more accessible to consumers with little background in music synthesis. In 2019, Data Garden rebranded a further iteration of their plant sonification device and app for a larger consumer market, dubbing the new product PlantWave. While PlantWave has a sturdier case, a built-in speaker, updated hardware that allows for even greater connectivity, and a miniature light show, its key innovation is its expanded user-friendly app, which allows for the non-musician and non-synthesist to "Listen to plants, in real-time" (Plant Wave 2024). The app features premade synth patches called sound sets, designed by Patitucci, enabling users to "let plants sing."[20] The consumer connects their plant to their phone via PlantWave and Bluetooth, chooses a sound set in the app, and then simply lets the app play. Ease of accessibility and a homogenized sonic experience go hand in hand. Thus, your plant sounds like what Joe Patitucci thinks a plant should sound like—a pentatonic, slowly evolving, ambient soundscape. PlantWave's website offers a section called "Use Cases," which advertises the sounds of PlantWave as providing a "tranquil backdrop" for yoga and meditation practice, as a sonic complement to writing, painting, "or any type of work," as a source of inspiration for musicians, and as a way to enhance a hike or gardening. PlantWave provides ambient and atmospheric sounds and a sonic vegetal imaginary for wellness and leisure activities in the form of a portable technological accessory. This differs from Data Garden's earlier device, the MIDI Sprout and "Radio Event No. 20," as both require the practitioners to be more reflexive and interactive, and thus more intimate and involved with the device, the sounds, and the plants.

[20] Plant Wave's Instagram biography features the tagline "The device that lets plants sing" (@plantwave 2024).

While composers using MIDI Sprout adapt plant data to their own aesthetics and creative programming methods, the PlantWave app offers options that limit methods of interaction with the raw data and thus make plant sonification more accessible. Additionally, the app adds another layer of mediation, embedding the practice of plant sonification within the aesthetic choices and worldviews of PlantWave's designers. The PlantWave app provides options to pick between pentatonic major and minor scales and the scale's root note and allows users to tune A4 to 440Hz, 432Hz, or 528Hz. The choices of 432Hz and 528Hz are particularly revealing; in popular new-age imaginaries, these frequencies represent the universe's resonant frequency and the heart chakra's resonant frequency, respectively. Further, the names of the sound sets index 21st-century wellness trends and their new-age precursors. Soundsets with the names Celestial Being, Heart Chakra, Sound Bath, Infinite Possibilities, Clarity, and Ancient Future index the new age, yoga, pop-spiritual and wellness aesthetics, while others with the names Sequoia, Sowing Seeds, Joshua Tree, Bonsai, and Soursop point squarely toward the vegetal.

By consciously contextualizing plant music within ambient, New Age, and wellness aesthetics and histories, Joe Patitucci and Data Garden reinscribe the contexts and precedents of Cleve Backster, Tom Zahuranec, Brian Eno, and *The Secret Life of Plants*. While ambient and new-age music genres did not exist in the early 1970s, the sounds, ideologies, media, and cultural formations of that period would impact the naming and construction of these genres. In short, the names and histories of new age and ambient music had yet to be written and commodified. PlantWave enacts the aesthetics and ideologies associated with its 1970s plant craze predecessors and amplifies the elements of counterculture spirituality, updating them for 21st-century wellness markets. Data Garden actively constructs the historical genres and lineages

it claims as its predecessors and inspiration, effectively slotting itself into a history that is, in some measure, its own creation.

As Data Garden's CEO, public face, and spokesperson, Joe Patitucci positions PlantWave within the wellness and pop-spirituality arena. Patitucci combines PlantWave performances with breathwork and meditation workshops and has collaborated with the pioneering ambient and new-age musician Laaraji and the wellness brand Goop. Further, Patitucci aligns himself with Backster and Zahuranec in his belief that plants have extra-sensory perceptions, claiming that plant music changes when "energy healers, reiki masters, botanists, [and] florists; people that had really deep connections to subtle forms of energy, [and] people who were connected to plants" walk into a room (Field Trip Health 2022, 16:00). Unlike Backster, Patitucci does not claim to have scientific proof of the psychic plant and instead defers to belief, conjecture, and anecdotal evidence. Patitucci extends plant perception to a non-specified field of "subtle energy."[21] Much like Zahuranec, Patitucci claims that the production of plant music is predicated on the plant's response to humans in their environment. In Patitucci's case, the human is more than mind, thought, feeling, and consciousness but is also energetic. Instead of directly engaging with whether plants are conscious or not, Patitucci's use of the term "subtle forms of energy" connects the current measured in the plant's leaf to a somewhat mysterious energy emitted by human healers, reiki masters, and botanists. This idea seems to skirt thought and feeling altogether yet again points toward something essential, pure, or true. Again, plant music and its discourse reveal modes of "re-enchantment," and in contrast with "Radio Event No. 20," PlantWave's engagement with more sizable marketplaces re-enchants at a larger scale.

[21] Catherine Albanese (200) explores the centrality of subtle-energy healing in New Age thought, locating late 20th-century uses of the term "subtle-energy" in the long history of American spiritual thought.

PlantWave and "Radio Event No. 20" seek to center the vegetal—yet, as I have shown, humans are the central actors in these plant music assemblages. Plant sonification and plant music act, in part, as reflections of imaginaries and as objects onto which people project their desires. In other words, plant sonification allows humans to observe themselves while claiming that the plant is the musical subject. Humans attempt to discursively center the plant and enact the belief that they are experiencing and listening to the voices of plants and the sounds of the more-than-human world. While this might seem like a story of Narcissus in the technological age, Patitucci claims that his experience of PlantWave technology is all "about ego dissolution"(Field Trip Health 2022, 00:50:50). Taking this a step further, Patitucci likens his egoless state to the egoless plants who naturally ground "and grow into the light" (2022, 00:51:20). Plant-facilitated ego dissolution positions the plant in a surrogate role, this time as a guru, wise-teacher, or sage.[22] However, this messy process of projections, desires, and mediations allows bridging a gap between the human and plant, at least discursively, as the plants become personified and the human sonifiers attempt to become more plant-like, their boundaries blurred, and an enchanted intimacy forms. Additionally, Patitucci's idea of an energetic connection between plants and humans enacts an imaginary of an intimate and unmediated connection between plants and some humans, echoing the psychic connection between plants and humans found in "Radio Event No. 20."

[22] Writing about eco-spirituality, Christopher Partridge summarizes the deep ecologist Arne Næss' belief that humans reach a more enlightened state when they replace a self that identifies with ego with a self that identifies "with nonhuman individuals, species, ecosystems, and with the ecosphere itself" (Partridge 2005, 60). Regarding the psychedelic counterculture of the 1960s and 1970s, Victor Szabo highlights the ideas of ego-loss and "disindividuation" as a gateway to an expanded mind and consciousness (Szabo 2023, 23).

Plant Sonification's Critics

Karen Bakker offers a critique of plant sonification technologies like PlantWave, advising that "these should not be mistaken for sounds made by plants; what we are hearing is a human construct…we are merely hearing our own voices wearing a thinly veiled plant disguise; like a fun house mirror at an amusement park, we are interacting with distorted versions of ourselves" (2022, 101). Bakker further argues that listening to the sounds of plants via sonification technologies distracts us from hearing the actual sounds that plants make. Therefore, while attempting to connect across the species divide via plant-data sonification, in Bakker's mind, Data Garden reinforces the difference between humans and plants by misrepresenting what is actually occurring. Philosopher Michael Marder and the ecologist Monica Gagliano offer a similar critique, warning that "in trying to discern [the voices of plants], we ought to be careful not to overwrite them with the sounds that are familiar, let alone pleasing, to us…it robs them of their own voice" (Marder and Gagliano 2013). Marder and Gagliano urge a decentering of the Anthropos in an attempt to hear plants on their own terms and argue that plant sonifiers obscure the voices of plants. These critiques highlight how plant sonifiers replace a genuine engagement with plant voices and plant communication and instead mold limited data sets extracted from plants into familiar and palatable sonic forms.

However, while through the eyes and ears of Bakker, Marder, and Gagliano, sonifiers misrepresent plants, both sonifiers and their critics seek to amplify the belief that plants are communicative, sonic, and intelligent. Thus, ideologically, sonifiers and critics alike are aligned in their attempts to bridge the difference between humans and plants and decenter the human. Additionally, Marder (2013) makes the argument, much like Patitucci, that humans should become more like plants. Marder imagines the plant/human encounter as a de-humanizing act

(10), while Patitucci describes his encounter with plants as "ego dissolution." De-humanization and ego dissolution reconfigure and disrupt conceptions of identity (the human as a category and the individual) that verge on erasure. Moreover, Gagliano embraces intuition, transcendental experiences, and subjectivity as compliments to objectivity in her vegetal knowing (2018, 2), inviting her readers to know plants by "allow[ing] for the magical absurdity of your subjective experience to walk alongside the objective rationality of your logical mind" (2). This echoes Patitucci's foregrounding of his personal experiences and his focus on energetic and healing experiences revealed in his use of PlantWave. Gagliano, Marder, and Patitucci's argument that knowing plants decenters the human (and thus, reason) aligns with Partridge's conception of "re-enchantment." Both sonifiers and their "plant turn" critics engage in "re-enchantment," reintegrating the supernatural and natural, intuition and subjectivity with reason, and advocating for vegetal imaginaries of communicative, consciousness, and—for the sonifiers—musical plants.

YouTuber, plant music artist, sound therapist, and film composer Shane Mendonsa describes the Scion plant-data sonification device as enabling "the plant to perform the instruments" in one of his YouTube video descriptions (Mendonsa 2020).[23] It is common for artists and plant music promoters to refer to plants as music makers, singers, and composers. Similarly, online and social media content might center the receiver's activity of listening to the plant itself and not to the synthesizer; for instance, PlantWave videos invite one to listen to "black sage" or to "plants at sunset".[24] Plant sonifiers consistently advertise plants as musicking

[23] Scion, IS a module built for the Eurorack modular synthesizer format, is based on the same open-source design as PlantWave and instead of translating voltage to MIDI it attenuates the voltage for analog synthesizers.

[24] See PlantWave's YouTube videos "Listening to Black Sage in Topanga Canyon," https://www.youtube.com/watch?v=PvO9xzvHi-4&t=1s and "Listening to Plants at Sunset with MIDI Sprout," https://www.youtube.com/watch?v=4lMaXLQKh60.

agents, but journalists, musicians, synthesists, and Reddit commenters often question the validity of considering plant sonification as plant music. For instance, responses to a modular synthesizer community Reddit thread asking, "Are we actually making music with plants in a meaningful way?" (Hedgesandclippersand 2023) inspired sarcastic responses like "a Wendy's Taco Salad composed 90% of my last album" (SuperChillRobot) and accusations that PlantWave is "bullshit," a "gimmick," and fraudulent.

However, Reddit user Hedgesandclippersand is sincere in his question, engaging in both self-reflection and critique, stating, "Maybe I don't have a sense of wonder for stuff like this since it doesn't seem to be a genuine communication, just signals we derived from activity we observed in plants. Organized to fit a tone or musicality that works for the human ear" (Hedgesandclippersand 2023). Their critique engages directly with the idea of "re-enchantment," pointing out that wonder and a suspension of disbelief are key to a compelling experience of plant sonification. Further, they question the plant's communicative ability, asserting that the electrical activity of the plant is neither unique nor intelligible on its own. Many of the music synthesists on the Reddit thread affirm Hedgesandclippersand's critique, arguing that devices like PlantWave can connect to any biological entity to produce a signal and that plants only generate a random signal. Thus, there is nothing special about the plant, as any human, animal, or random voltage generator can do the same job. To the synthesist critics, the plant in the plant music assemblage of human, plant, and human-made technologies is unimportant and replaceable, thus challenging the legitimacy of the term "plant music."

These synthesist Reddit critics' art and craft is to shape voltage into sound; thus, they understand plant sonification technologies and plants within the terms of their practice. They are concerned with generating novel sounds using niche and highly personalized analog synthesizer

systems, and the thread that follows Hedgesandclippersand's question illustrates a fine-tuned sensitivity to trends and inventiveness. There is a general sense on the thread that plant sonification is overly trendy and that the synthesist's choice of patch design, not the plant, makes the sounds unique and interesting. Further, and most importantly, there is a general consensus that what is called "plant music" is definitively not music made by plants. It is salient that the Redditors do not believe that plants are sensitive to the thoughts or energies of people, as Backster, Zahuranec, and Patitucci assert. The plant for the Redditor synthesists is just another voltage source in their arsenal of synthesizer modules, something to be molded and shaped into sounds they find interesting.

While there is overlap, the Redditor critique differs significantly from Bakker, Gagliano, and Marder's critique. While both highlight the paucity of the claim that plants are agents in creating plant music, the former critiques plant sonification's technical and aesthetic value for synthesists, while the latter believes that plant sonification misrepresents plant communication and consciousness. They critique plant sonification along the lines of their agendas and identities. Further, the Redditors are not concerned, or at least not discursively concerned, with bridging the categories of plant and human, questioning reason, and the project of knowing the vegetal—they express no interest in eco-enchantment. However, none of the critics examine what I believe to be the most apparent paradox of plant sonification, the divide between claims of eco-consciousness on the one hand and the use of technologies embedded within extractive and exploitive economies on the other.

While plant sonifiers promote plants as conscious and communicative in an attempt to facilitate empathy with the natural world, they rely on extractive economies that cause damage to vegetal, animal, and human lives. I argue that plant sonification furthers extractive, sonic,

ideological, and economic relationships with plant life, which results in reaffirming plants as objects. At the very least, plant sonification devices and digital downloads require computers or hardware synthesizers, power grids, shipping infrastructures, histories and processes of extraction, and "complex transnational flows of material, capital and labor" (Bates 2020, 66). Despite small steps toward exploring "a more environmentally conscious relationship between electronic music and the planet," Data Garden relies on extractive economies and transnational conduits of capital (Midi Sprout n.d.a.). As propounded by Joe Patitucci, plant sonification seems to work at cross purposes, building empathy for plants while simultaneously enacting economic processes that destroy them. It seems that at best, plant sonification may open the door to acts of care for plant life or facilitate a more sympathetic attitude towards the more-than-human world, and at worst, sonification not only misrepresents plant communication and intelligence, but is deeply embedded in extractive economies that cause damage the vegetal world.

Chapter Conclusions

This chapter has explored how artists and composers use electronic technology to sonify plant life so that they can listen to and give voice to plants. Plant sonification practices enact, reinscribe, and construct imaginaries of plants as communicative, intelligent, psychic, and energetic. These imaginaries are part of a process of "re-enchantment" that attempts to bridge differences between plants and humans. Moreover, sonifiers claim intimate, direct, and relatively unmediated encounters with plants that further the process of "re-enchantment." However, at its core, plant sonification engages diverse modes of mediation between plants, technology, and humans.

Technologically, plant bio-data is transduced by devices like the PlantWave and further modified by electronic musical instruments, converting plant-derived signals into recognizable musical forms. Instead of the sounds of plants, sonifiers and their audiences hear plant-derived signals shaped and mediated by (not just technology but) imaginaries of musical, reactive, and psychic plants. Additionally, humans project conceptions of transcendent consciousness and spiritual ideals onto plant life. The mediating processes of sonification, synthesizer patches, wellness aesthetics, spiritual ideals, and ambient sounds seem to reveal more about human desires for connection and an inclination to disrupt boundaries between plants and humans than about the plants themselves.

In part, sonifiers produce performances of plant sonification to bring themselves and their audience into sympathy with plant life by focusing attention on plants as intelligent, communicative, and conscious beings. However, at best, plant sonification may open the door to acts of care for plant life or facilitate a more sympathetic attitude towards the more-than-human world, and at worst—as some critics have pointed out—sonification misrepresents the plant, drawing attention away from plant behavior that more accurately represents the communicative and intelligent nature of plants. Additionally, while contemporary plant sonifiers frequently market themselves and their technologies as eco-conscious and as tools to connect to the natural world, they avoid conversations that address their work's reliance on extractive economies. I argue that sonifiers' beliefs of shared psychic, energetic, and conscious connections between humans and plants enact imaginaries of un-mediated plant-human relationships. These beliefs and imaginaries act as a mode of "re-enchantment" that prioritizes plant minds over plant bodies and enables sonifiers to sidestep critiques of the extractive economies underlying sonification practices.

Chapter 2: Sound Healing, Art, and Herbalism

The artists, sounders, and herbalists I discuss in this chapter connect with plant life through methods less reliant on electronic technology. This population enacts various modes of knowing plant life through practices that include embodied sensory experiences like smelling, listening, imbibing, and immersion; the transmission of stories and instruction in the form of folklore and plantlore; and material practices in the form of visual art, music, making tinctures and distillations, teaching, and healing practices that require active relationships with plant life. More generally, they cultivate relationships with the vegetal world through diverse practices that combine plant life, sound, and healing. While they represent plant life through song and ritual, they also approach plants as collaborators, consider themselves students of plant teachers, and interact with plants in a tactile and sensual manner and as members of a shared world.

Through immersive encounters with plants both in curated healing practices, practices of meditation and sitting with plants that facilitate non-normative modes of knowing, performance, art, and healing practices, meeting plants in the places they live and grow, expressions of gratitude directed towards the vegetal, listening, talking, and singing to plants, and receiving messages from plants the participants discussed in this chapter engage with plants in a manner that is—in comparison to plant sonifiers—tactile, intimate, and less mediated. These research participants enact relationships of care and reciprocity with plants and at least one attempts to engage in circular economic relationships with the more-than-human world. Using a combination of participant observation and interviews, I examine the practices and experiences of Eileen, a holistic health practitioner who uses plants and sound to facilitate her client's relaxation and health; and the biography and art of Tamalyn Miller, an artist, musician, and aromatherapist whose work prominently features and praises the vegetal world. Both participants' stories

address the importance that place, proximity, and altered states of consciousness play in their personal sensual encounters of plant life. I ask how proximity to plants, immersion in the vegetal world, and altered states of consciousness contribute to plant epistemologies and the construction of plant imaginaries. I inquire into how knowing, communication, and healing interweave through plant imaginaries. I assert that my research participants receive messages in their sonic and sensual encounters with plant life that inform their imaginaries of plants as teachers and healers, shape their conceptions of human ethical responsibilities toward humans and plants, inspire healing and artistic practices, and call attention to the hazards of disconnection from both the vegetal and more-than-human worlds.

Eileen: Meditation, Healing, and Knowing Plants in Place

Multi-disciplinary holistic health practitioner Eileen uses plants to make elixirs, teas, and distillations for topical use and ingestion for herself and her clients. She also uses essential oils, incense, and unprocessed plant materials to create opportunities for her clients to connect with plants through odor and immersion, and she uses living and dead plant leaves as sonic instruments. Eileen mobilizes sensual engagements with plants and plant extracts to encourage relaxation, address health concerns, facilitate altered states of consciousness, and cleanse her client's bodies and spirits. Plants are most frequently used in conjunction with her primary therapeutic modality of sound, as Eileen believes that plants and sound, as healing modalities, can potentiate the effects of each other. In other words, sound can amplify the therapeutic benefits of a plant and vice versa: plants and sound, as healing modalities, are more potent together than alone. In addition to plants and sound, Eileen uses bodywork, yoga, immersion in

water, ritual, and meditation as modalities in her healing practice. However, sound is most central to her work; the text on her website and the descriptions of what she refers to as "offerings" are sound-forward. Plants, on the other hand, are interwoven throughout her various practices, and while essential and ubiquitous, they are not as prominently advertised as her sound-oriented offerings.

Eileen cultivated her connection with and knowledge of plant life while training in herbal medicine at Goldthread Farm and Apothecary in Florence, Massachusetts. In an interview with me Eileen described studying at Goldthread as an immersion in the natural and vegetal world, stating that she was "waking up with it, drinking it…making infusions morning, noon, and night…even our butters at dinner were infused with thyme or rosemary." Eileen describes Goldthread Farm as a place to connect, interact, and relate with plant life as part of daily life and she shared with me that her immersive engagement with the green and leafy life at Goldthread provided a space for "attuning" to nature and the more-than-human world at large.

In the interview I conducted with her, Eileen recalled a formative experience meditating on a plant at Goldthread Farm. As the young plants began to mature in the spring, Eileen and her cohort were instructed to meditate on and listen for communication from a plant, in her case, a plant of the genus Angelica.[25]

> The practice was every single day you sit for a certain amount of time…we did it for 40 minutes and sat and meditated with the plant to hear for communication. That was a really…a pivotal experience for me because I had had a meditation practice but not with a plant before in that way. And the practice was simply to sit with the plant, meditate and listen for any insights and communication that came in. And it was interesting because I

[25] Eileen did not elaborate on the uniqueness of this plant, and the plant's assignment to her was relatively arbitrary. I refer to the plant by Angelica, its genus, instead of the even more general "plant" throughout this chapter as an attempt to delineate it slightly for the larger category and as a reminder that Angelica is just one genus among the many that are part of the plant kingdom.

> had an experience, [and] everyone in the program was able to hear whisperings, intelligence, and communications from the plants.

Eileen's plant meditation is similar to other pedagogical exercises that consist of repeated practice over time that requires attention and focus, like learning an instrument or musical piece, honing a skill like painting, or learning a new computer program. However, unlike learning a musical instrument or to play specific musical composition, the activity of sitting with the plant does not have the appearance of developing a skill other than patience and stillness and there is no resulting public performance or fabrication of an object. Instead, it is about receiving a message, attuning, and gaining insight into the vegetal. Further, Eileen's meditation is a relatively private experience and is only represented by how she shares her experience. In this case, she shared her experience to illustrate her biography and her belief that plants reveal insights through communicative interactions with humans. Additionally, the experience of hearing plant communications influences her practice as a holistic healthcare practitioner and how she shapes "offerings" for her clients. Eileen's experience with the Angelica plant at Goldthread Farm shapes her imaginaries of plants as communicative and, more specifically, as teachers. However, unlike plant sonifiers, she does not represent the plant's "voice" musically; instead, her experience of hearing plant communication shapes her understanding of what the more-than-human world has to offer in her healing practice in conjunction with sonic practices.

Eileen contrasted her ability to "attune" to nature through her immersive experience at Goldthread with life in an urban environment, asserting that connecting with nature and plants is difficult when she is "running around in her car" and spending time with her "devices." By drawing a distinction between vegetal and urban environments, Eileen highlights how the things, lives, and beings she shares her environment with provide different relational opportunities and different modes of attunement. In our conversations she does not explicitly denigrate urban

living in total, nor does she overly romanticize rural living; however, she highlights correlations between environment, habits of daily life, and opportunities for knowing and healing.

Put differently, Eilleen is asserting that what people know, how people know, and their habits of daily human life are correlative to their relationships to their environment and how they use technology. In this light, the contrast Eileen draws between plants and cars and devices is telling: Goldthread Farm may be considered a place to collaborate with nature, while the city provides fewer opportunities for direct encounters with the more-than-human and offers more distractions. Goldthread provides a space to encounter the vegetal world in intimate, tactile, sensual, embodied, and intuitive modes, while Eileen's electronic devices and car mediate encounters between humans and the more-than-human. While tasting, smelling, growing, and being with plants provides intimate, personal, and subjective encounters with the vegetal, Eileen's phone or computer enables contact through layers of mediation—perusing pictures of plants on her phone, googling a plant's position within a biological taxonomy, and downloading scientific papers containing plant-related data points—that only provide more mediated representations of plants. This is not to say that sensual, immersive, and meditative modes of knowing plants are absent of mediation. Nevertheless, Eileen's experience at Goldthread Farm illustrates tactile encounters with plant life that facilitate relationships and epistemologies that allow for alternative modes of knowing, communication, and healing. However, Eileen believes in a clear split between nature and culture, the urban and the rural, and the human and the plant, which are central to her work as a healer.

Core to Eileen's healing work is her critique of technology's impact on the human nervous system, telling me that "every time you get a ding [from your cell phone or computer], you're taking your nervous system out of rest and digest." As a calm nervous system is her bread

and butter, the vegetal and the more-than-human more broadly are woven throughout Eileen's healing practice. Eileen further elaborates on the tensions between technology, nature, and healing, telling me that while "maybe it is possible to be totally in tune with technology and healthy at the same time, [health] does require, I think, a balance of just being actually with nature as much as possible because nature is perfect. It's abundant, it's whole, it's complete, it's healed. It's perfect and divine. So, the more that we align with that, the more we are going to be perfect, divine, and healed." Embedded within her statement is a conception of "eco-enchantment" (Partridge 2006, 42); Eileen challenges the conception of nature as solely an object and economic resource and offers a view of the more-than-human world as communicative, divine, and perfect. Not only does she create a powerful imaginary of the more-than-human and vegetal worlds as divine and the root of human healing, but she posits an alignment between personal health and the health of the more-than-human world and implies an ethic of treating the natural world responsibly—relating to it as divine and perfect implies not soiling, degrading, or destroying it.

Eileen further shared that her process of listening to plants requires an external and internal place of quiet, stating " [plants] are always communicating…like anything that's alive is communicating. And then it's a matter of you getting to a place, I think, quiet enough to hear it." The internal practice of meditation and the farm as an external environment, work in conjunction to create a mental and physical space where plans can more readily be heard. The meditation provides a method for minimalizing internal distractions and focusing the mind while the farm, as place full of the vegetal and relatively devoid technological distractions, provides an immersive environment of relative quiet that according to Eileen, are necessary for the human reception of plant communication. Another way of articulating Eileen's point is that humans are

noisy, the environments and technologies that humans make are noisy, and these noisy human places obscure and drown out the messages and sounds of plant life.

While Eileen did not share exactly what the Angelica plant whispered to her, she elaborated on the divinity of plants and their role as teachers, telling me, "The plant kingdom has such wisdom and tools for us. I think they have a solution for every problem that a human can create if we just slow down and listen to it." In addition to a quiet place, she adds that slowing down—presumably both human cognitive function and lifestyle—is necessary to hear plant communication. Most importantly, she asserts her conception of plants as healers, teachers, and problem solvers. Eileen echoes Hall's (2011) idea of 'plants as persons' and Gagliano's (2018) and Beyer's (2010) idea of plants as teachers and healers. Additionally, as I highlighted in the introduction, Callicot (2013) argues that paying attention to and recognizing the communicative abilities of the more-than-human and plant life specifically is "mutually beneficial [for] both humans and the rest of nature" (40). Eileen's vegetal imaginary is of a hyper intelligent plant that holds a utopic key to human and more-than-human healing, and she actualizes these beliefs through her holistic healing practice.

Eileen described listening for plant communication as a subtle, personal, sensual, and relational practice and frames it within the context of immersion in the vegetal and a process of quieting the mind and slowing down both lifestyle and cognition. The rural environment of the farm provides a place or unique environment where one can become immersed in a world of plants. The repeated attentive meditation exercise facilitates a change in the meditator's state of consciousness within that immersive place. This altered state of consciousness allows for listening to communication from plants and provides a way to know plants through sound and acts of listening. In addition to listening to the sounds of plants, Eileen shares that listening can

be applied more ambiguously, as a way to describe the reception plant messages that are "mysterious" and that "make sense in a more visceral way." It is important to emphasize that this meditative mode of encountering and knowing the plant is non-rational, personal, and intimate. Instead of reading about a plant online or treating the plant as an object in a controlled study, encountering the plant through immersion, meditation, and listening is an attempt to minimize the layers of mediation in the process of listening to and knowing the plant. Eileen posits a direct mode of knowing plant life through altered states of consciousness that echoes Patitucci and Zahuranec's claim of unmediated energetic and psychic connections to plants. However, she explicitly cites technology and urban environments as distracting from vegetal knowing, while, on the other hand, sonifiers embrace technology to connect with plants. Further, she posits a divide between humans and plants that can be healed through attuning to the vegetal and the more-than-human, citing plants as wise, whole, perfect, and healing while implying that humans fractured and degraded. However, despite these differences, both Eileen and plant sonifiers offer complimentary and largely overlapping plant imaginaries that enact "eco-enchantment" and establish both as from the same class of people that is Partridge's subject.

While Eileen claims to have an unmediated experience of the Angelica plant via meditation, the very nature of the educational program at Goldthread Farm mediated and primed her experience. Goldthread's website from 2010 describes their immersion program as emphasizing the creation of "a sustainable, non-toxic, and cost-effective community-based healthcare system." Further, their website asserts that personal, communal, and ecological health are integrally connected. While Eileen did not describe the social dynamics amongst her cohort and human teachers at Goldthread Farm, their website provides a clear idea of Goldthread's beliefs and culture. While speculative, based on what I have gleaned from Goldthread's website

and my interviews with Eileen, it is not wild to infer that she was already thinking about plant life's communicative and healing potentials when she practiced her plant meditation.

Eileen's personal experiences of immersion and meditation as modes of knowing are reflected in the "experiences" and "offerings" that she creates for her clients. In addition to the prominence of meditation and particularly sound meditation in her "offerings," Eileen literally immerses her clients in water and plants. Among her "offerings" is a Traditional Bath Ceremony that involves the immersion of her client into a bath infused with flowers and herbs that her website describes as a "botanically-infused bath ritual and sound healing [that] helps to cleanse the body, mind & spirit…The entire experience is designed to be serene and restorative. By opening up to the healing benefits of nature's medicines, you'll balance and renew through this revered bathing practice" (Architects of Experience). For her clients who already find pleasure in baths, this ninety-minute personalized ritual experience combining water, sound, meditation, and plants provides an example of how Eileen's different healing modalities amplify and potentiate each other to down-regulate her client's nervous system. As a holistic healer Eileen acts as an "ambassador for the plant kingdom" using her personal experiences with plants and plant voices to inform the "offerings" she provides for her clients. Her practice is informed by her belief that nature is "abundant…whole…complete, and healed," and she attempts to align her clients with that belief through immersive, sensual, sonic, and plant-infused experiences that facilitate calm, relaxation, and altered states of consciousness. Further, Eileen uses plant scents in the form of incense and essential oils, herbal teas, and the sounds of rustling leaves to index nature in the rituals and wellness practices she designs for her clients. Essentially, Eileen mediates plants and the more-than-human for her clients, playing the roles of medium and "ambassador" for nature and using plant life to represent the whole of nature in her experiential rituals.

While Eileen's experience of meditating on Angelica at Goldthread Farm is unique to her, immersion with vegetal beings in the same spaces where they thrive in abundance, performances of meditation, and altered states of consciousness that facilitate unique modes of knowing the vegetal are themes that occur with unique variations across my research participants' stories. Eileen's personal experiences and healing practice with plants enact a conception of healing that integrates individuals, human communities, plant life, and the more-than-human, and that highlights the belief that disconnection from nature is essentially unhealthy. Eileen embraces an ideology of healing based on a divide between nature and techno-culture, the rural and the urban, health and degradation, and she enacts imaginaries of plants as communicative perfect healing teachers to assert an "eco-enchanted" worldview. While Eileen and the sonifier's methods of listening to and representing the vegetal differ, both (as well as scientists like Gagliano) combine subjective, intuitive, and transcendental experiences with scientistic, if not scientific, discourse as a mode of "re-enchantment."

Tamalyn: Neglected Children, Wounded Instruments, and Powerful Plants

> It's a message [from the plant] that says, we offer you a way to reconnect, reconnect with your unconscious mind, with forms of communication that we've lost…relationship and connection…it's just a very healing plant. -Tamalyn Miller

While Tamalyn's share about hearing plants in the Sounder's Group Zoom meeting planted a seed for my research, she did not respond to my inquiry on the group's WhatsApp chat, despite my addressing her directly. It was not until a few months later that it was brought to my attention that Tamalyn does not use WhatsApp, and with that in mind, I contacted her via email to see if she would be interested in scheduling a meeting. Tamalyn quickly responded was excited to schedule time for an interview.

When I connected with Tamalyn via Zoom in August of 2024, she was putting the final touches on an album of music titled *Ghost Pipe. Ghost Pipe* is a collection of nineteen self-recorded songs, the majority of which are about and in praise of plants. I was completely unaware of *Ghost Pipe* before our Zoom interview, and as she had been working on the project for a few years and was on the cusp of releasing it into the world, she was very excited to tell me about it. However, as she had not yet released the album, there was nothing for me to hear or see. Nevertheless, Tamalyn had plenty to share regarding her experiences of plant life, their place in her life, and how she engages with them in her creative and healing practices. A little more than a month after our first conversation, I received a copy of *Ghost Pipe* in the mail, and I also visited her at her home in Beacon, NY, late in the fall of 2024. The remainder of this chapter is based on our conversations, my visit with her, and *Ghost Pipe*.

Tamalyn recalled that her father, farm-raised near Lancaster, Pennsylvania, was an active gardener while she was growing up. It was from him that she first learned her way around plants. However, it was not until later in life that she became fascinated with plant life. Living in New York City in the early nineteen-nineties, Tamalyn was introduced to the artist Mel Chin by her roommate Sue. Sue had heard that Mel was looking to hire an assistant and thought that, despite Tamalyn not being a visual artist nor having any experience in the art world or art fabrication, Tamalyn and Mel might hit it off due to their shared interest in alchemy. Indeed, they got along quite well, and Mel promptly hired Tamalyn once he learned she had the skills to grow plants and sew.

One of the first projects Tamalyn worked on with Mel was his piece *Revival Field* (1991-ongoing). *Revival Field* consisted of a sixty-foot by sixty-foot square plot situated in the middle of Pig's Eye landfill, "a State Priority Superfund site near St. Paul Minnesota… plateau that

holds contaminated sludge from industrial waste" (Sullivan 2011, 22). Mel collaborated with Rufus Cheney, an agronomist from the U.S. Department of Agriculture, to test the potential of plants known as hyperaccumulators to pull lead, cadmium, and zinc out of the soil and remediate the site (Miller 2016, 212). Tamalyn worked on *Revival Field* over three years, an experience that left a formative mark. The power of plants struck Tamalyn when, after years of working on *Revival Field*, she found worms on the site. On the small plot of land, amid a two-hundred-acre dump, the hyperaccumulator and metal tolerant plants had managed to kick-start the remediation of the land. She told me that when they originally tilled the plot and planted the hyperaccumulators, the land was dead; they did not "find any insects…no worms…no grubs." Thus, she described finding the worms as a "mind-blowing" experience, with an enthusiasm still evident thirty years later. This excitement about plants and the more-than-human is consistent in our conversations; each recollection of a vegetal experience is characterized by a sense of wonder and the numinous.

Tamalyn's work on *Revival Field* and with Mel more generally set her on the trajectory of becoming an artist who frequently engages with the vegetal in her work. A sampling of her plant-related works includes *Rose Whistle*, a whistle painstakingly made of a thorny rose stem; a *Vegetal Map of the Underworld*, a pomegranate rind "painted with miniature botanical studies of plants reputedly found in the Greek underworld;" an installation titled Floriosophy, that is inspired Victorian practice of floriography and Theosophy; and Poison *Oak Paper* and *Poison Oak Bonsai*. Additionally, Tamalyn began to study aromatherapy and teach herself herbalism. Knowing that plants communicate chemically, Tamalyn was drawn to the study of aromatherapy to deepen her relationship with plants and engage with their communicative potential. Tamalyn's interest in herbalism was also a way to learn about and engage with plants, and although she

makes her own essences and tinctures, she is more interested in stories, histories, and creatively engaging with plants as communicative beings and less interested in being an expert in the use of plants in herbal remedies.

Tamalyn moved from NYC's East Village neighborhood to Beacon on February 1, 2020, a little more than a month before the COVID lockdowns. She had lived in a tiny studio apartment in Manhattan's East Village neighborhood since the mid-nineties, where she had little space to work on art. The move to Beacon was facilitated by her winning a housing lottery for subsidized artist housing. Moving to Beacon provided a lot more space for Tamalyn to work, and the park provided a place for her to interact with her more-than-human neighbors; both were especially welcome during the COVID quarantines. The move to Beacon was essential to the genesis of her *Ghost Pipe* LP*, "*just being able to go to the park every day… there's no way I would have done that album. I mean, there's no way the album would have happened…if I had stayed in East Village." Tamalyn's proximity to the river, the park, wooded areas, and variety of vegetal life allowed for daily immersions in the more-than-human world.

Most days, Tamalyn walks the half mile down a moderately steep hill—via curving stairways and streets—from her apartment in Beacon, NY to the town's riverside Long Dock Park. Tamalyn frequently starts her day in the park running along the Klara Sauer Trail—a wide dirt walking path that runs along a stretch of disused train tracks flanked on both sides by trees, bushes, and assorted vegetation. The trail is situated on a narrow stretch of parkland that runs south from Long Dock Park, between active train tracks to the immediate east and the Hudson River to the west, terminating at Dennings Ave—which is more of an access road with little traffic than an active street. From Dennings Ave, Tamalyn frequently continues further south into Dennings Point, a peninsula that juts about a half-mile into the Hudson River and, at its

widest, is about 900 feet. The trails in Denning's Point are narrower than Klara Sauer Trail, and the woods are thicker.

In Dennings Point, Tamalyn has had uncanny and enchanted experiences with plant life and, more generally, the wooded point as a whole. She describes having a heightened sense of the woods, seeing things that are not apparent to others. Tamalyn shared that when walking through the woods with a friend, she found a lion's mane mushroom that her friend seemed entirely blind to. Tamalyn saw it from a distance out the corner of her eye, the mushroom just peeking over the edge of a log. When she pointed it out to her friend, her friend could not see it. Tamalyn had walked her friend through the brambles and right up to the log before she could see it. Tamalyn had a few similar stories about finding the bounty of Dennings Point. One of her more fantastical experiences involved smelling roses in late winter when the roses were months away from blooming. Furthermore, it was in Dennings Point that Tamalyn heard the plants she told the members of the Sounders group about in our late 2023 Zoom meeting. She described the plant sounds to me as a "weird little melody," and did not elaborate further. I consider Tamalyn's acute awareness in Dennings Point and her somewhat psychedelic and numinous experiences with plant life to be sensual experiences shaped by a consistent immersion in the woods and a long-term, whole-hearted dedication to plant life. Tamalyn explains these experiences as receiving messages through altered states of consciousness, non-rational ways of knowing, and trance states. This echoes Eileen's conception of "attunement" and her experience meditating on the plant to some degree. However, what makes Tamalyn's experience different is her obsession with plant life and its manifestation in her daily life, environment, fascination with plant-lore, and artistic practice.

In addition to her frequent runs and wanderings, Tamalyn forages—collecting herbs, weeds, and various vegetal and animal materials—and performs a daily gratitude practice at the park. As she told me in an interview,

> I just say…I'm grateful for the trees, I'm grateful for the plants. I'm grateful for the river. I'm grateful for the mountains. I'm grateful for the air. I'm grateful for Mother Earth. I'm grateful for the creatures, grateful for the dead ones and the spirits and healthy ancestors. And, you know, I just kind of say stuff like that, then maybe I add on anything. You know, I'm grateful. I just got that job, or…whatever. But I always express my gratitude all that's here.

Tamalyn's gratitude practice—which, depending on how she is feeling that day, may take the form of an internal practice that is outwardly silent or by audibly vocalizing—is a way of expressing care for plant life. While plants are prominent among those she is grateful to, her daily practice reflects myriad entities and things she cares about and references who and what populates her world. Additionally, Tamalyn sings to plants and tells individual plants that they are beautiful, or she might let a plant know that she wrote a song about them. She likens this practice to caring for a neglected child, telling me:

> Imagine a child who's neglected by their parents, they're not given the right attention by their teachers, nobody's really giving them the care they need. But if one person comes in and gives them what they need, they can grow up and thrive. So, I think to myself, "well, I'm just gonna give the plants some love and attention, and hopefully that will help." That's just how I look at it. Who knows?

While Tamalyn's material commitments to plants differ from those of a parent or caretaker of children, this statement points to an interesting ambiguity; it is likely even more difficult to assess the outcome of her acts of love, care, and gratitude for these plants than it is for a child. Or at least the plant cannot tell her discursively that she is a lousy parent. Tamalyn sets an intention, vocalizes it, and hopes for the best. Nevertheless, it is apparent from talking to her and engaging with her artwork and music that these acts of care have a profound effect on her daily creative

life, sense of self, identity, and how she carries herself in the world. Additionally, her daily personal expressions of gratitude to vegetal life and the more-than-human manifest more publicly as a core component of her *Ghost Pipe* LP.

Ghost Pipe is available digitally and in two physical editions, a standard CD and a limited-edition CD that includes "27 pages of lyrics, text, hand-tinted drawings and images on cotton and decorative papers inside a stitched vellum bag with photoluminescent details." The meticulously arranged images, texts, and lyrics, which are almost all related to the vegetal, add multiple new threads and layers to *Ghost Pipe*'s sound world. When I visited Tamalyn at her home, she had a one-person assembly station on one of her work desks for the limited edition. Tamalyn's home is full of her artwork and supplies, an odd collection of thrift store and yard sale purchased instruments that she refers to as "wounded," a large assortment vintage clock radios, various scavenged knick-knacks, and a curious collection of animal remains that includes a bird claw, horse skull, and strange ball of feather fluff with unclear origin.

In addition to recorded music, lyrics, text, and drawings, Tamalyn presents *Ghost Pipe* as an artist talk/nature walk that winds its way through Long Dock Park. The walk's attendees listen to a selection of six songs from *Ghost Pipe* by streaming the album from their phones and listening through headphones. Each song is paired with a plant, and as the attendees listen to a song, Tamalyn guides them through the park to locate the associated plant. Once at the plant and the song ends, Tamalyn talks about the plant and song and answers any questions the attendees might have. Tamalyn took me on this walk on a remarkably warm day in early November 2024. She had gone out the day before to make sure she could locate all the plants, as some of them were no longer flowering.

While any one of the six plants Tamalyn explores on her walk would provide a site for excavating Tamalyn's artistic process and themes, I will next focus on the song Zabytko—which Tamalyn refers to as the "linchpin" of *Ghost Pipe*—and its association with the common weed, mugwort (also known as Artemisia vulgaris). During the walk, Tamalyn shared various facts and stories about mugwort. She tells me that mugwort, native to Europe and Asia, was brought to North America in the 16th century. Mugwort does a great job of replicating itself, spreading through rhizomes underneath the ground. When taken internally, mugwort is used medicinally to relieve digestive issues and menstrual cramps and helps moderate sciatica when used as a salve. It can be burned for purification and is one of the main ingredients in moxa, which is used in traditional Chinese medicine (TCM) to increase blood flow and remove impurities. Tamalyn tells me that mugwort is most known for inducing dreams, explaining that "people often take the leaves and put them in a little sachet and put it under their pillow to produce more dreams." She points out that mugwort's scientific name, Artemisia, is derived from Artemis, the Greek goddess of the hunt, wild animals, and the moon, drawing special attention to the correspondence between the moon and dreaming.

All of these aspects of mugwort weave their way through Zabytko. Folklore, folk medicine, science, and common herbal knowledge are integral to *Ghost Pipe* and Tamalyn's creative process and imaginaries. Besides her daily interactions and sensual engagements with the vegetal, Tamalyn is most attracted to folkloric stories and folk medicine involving plants. She shares that mugwort is an essential ingredient in the Nine Herbs Charm, a charm found in an Old English medical text from the 10th century. Tamalyn reads me a section of the charm that praises mugwort, "You mugwort. Remember what you revealed? What you revealed at Regenmeld. Una you are called, eldest of warts. You defeat three, you defeat 30. You defeat

venom, you defeat air illness, you defeat the horror who stalks the land," and she then exclaims enthusiastically, "so this is a mighty plant, right?!" Further, she told me that when applying the salve of nine herbs to the wound, one sings the charm into the patient's mouth, ears, and wound. Tamalyn relays these details with exuberance, as they are the stories, imaginaries, and practical knowledge that inform how she creatively moves through the world. They resonate with her sonic engagements with plant life and her acts of praise and gratitude. Further, they enhance her encounters with the mugwort she meets and thanks during her daily walks, jogs, and acts of gratitude. Tamalyn embodies the elements of vegetal lore, sensual experience, and medicinal plant use in all its diversity in her art and song. Each piece enhances her understanding, experience, and amazement with mugwort, providing multiple modes through which she has become thoroughly enchanted with plant life.

Tamalyn based her lyrics of Zabytko on a Russian folktale about a young girl who fell into a pit of snakes while gathering mushrooms in the forest. Here is the folktale as relayed by Tamalyn:

> The snakes did not harm her and took care of her throughout the winter, during which time, both she and the snakes got their nourishment from a mysterious glowing stone , which is a possible allusion to the moon. When spring finally arrived, the snakes formed a ladder with their bodies, allowing the girl to climb out. And as a parting gift, the serpent Queen taught her the language of the plants but warned that if she should ever call mugwort by name, she would immediately lose the ability [to speak the language of plants]. A long time afterwards, she was walking with her lover along a footpath when he asked her the name of a tall herb growing by the wayside. Without thinking, she answered mugwort and immediately forgot the language of plants. The Russians know mugwort as the herb of forgetfulness, and zabyts in Russian, is the verb to forget.[26]

Tamalyn tells me this story is specifically the "linchpin" for the *Ghost Pipe* album. The album and the folktale address the idea of humans losing the ability to communicate with plant

[26] Tamalyn has a master's degree in Russian. Zabytko is a neologism of her own creation that she translates as "the forgetting."

life, of enchantment, and understanding the vegetal as not just communicative but powerful. Further, she conceives of *Ghost Pipe* as a lament for and a celebration of plants and a collection of love songs "encouraging people to reconnect, in whatever ways, with plants." Plant life for Tamalyn is a muse that she continually praises, loves, and attempts to connect with. I argue that the tension between loss and celebration and between disconnection and knowing the language of plants found in Zabytko is necessary for "re-enchantment." "Re-enchantment," by its very nature, requires the loss of enchantment, the separation of the supernatural and the natural, and a delineation between nature and culture. "Re-enchantment" and "eco-enchantment" act as modes of joining, connecting, and bridging the differences between plants and humans and loss and recovery. "Re-enchantment" is, in this way, a healing process, and to use Eileen's terms, a way of making things whole and complete. Tamalyn hopes that her art and song will help people take a step towards connecting with plant life and having an experience of "re-enchantment" and healing. Moreover, Tamalyn echoes Gagliano's (2018, 2) invitation to allow the "magical absurdity of your subjective experience to walk alongside the objective rationality of your logical mind" by bringing together multiple modes of connecting with plants—intuitive, non-rational, poetic, and objective rationality—in her daily life, art, and song as a form of "re-enchantment."

While her practice is markedly different from Eileen's, and she does not refer to herself as a healer, Tamalyn engages with plants and music as part of a healing process. She entwines medicinal charms and healing themed plant-lore, throughout her creative work. Further, Tamalyn approaches each of her many "wounded" yard sale and junk store-bought used instruments—toy pianos, zithers, guitars, drums, and dulcimers with missing strings and broken tuners—as beings that reveal healing messages. Healing and communication go hand in hand for Tamalyn "healing comes out of the wound [of the instrument], I just start playing [the instrument] and see what it

has to say." In Tamalyn's imaginary, neglected plants and discarded instruments communicate healing. Patiently waiting for messages from her motley collection of the disregarded, unclaimed, and ignored plants, instruments, obsolete technologies, and animal material is a key component of her artistic process.

What becomes increasingly clear to me toward the end of my visit with Tamalyn in Beacon is her belief that everything, not just plants and humans, has the capacity for consciousness and communication. While she had hinted at this belief throughout our conversations, she only voiced it explicitly at the end of a long afternoon of walking and talking. Tamalyn explained that the messages she receives could come from anywhere and that it is somewhat arbitrary that they come from plants. She shared that what is most important to her is the reading, the response to, and the altered state of consciousness that a message or messenger might prompt, seemingly downplaying the importance of the message's origin and the message itself. All messages, Tamalyn implies, have a shared origin in a universal consciousness. She cites the Jungian conception of the collective unconscious, akashic records, and the theosophical writings and clairvoyant visions of Annie Besant and C.W. Leadbetter as both references and influences for her idea of universal consciousness.[27] When I asked her why she feels connected with plants and what is vital about the message she receives from plants versus messages she receives on her phone or from the truck we happened to be standing next to when I asked the question, she replied, "I can't explain why it is that I would be attracted to certain things that trigger those responses…I think that plants are part of, that everything is part of the collective unconscious… Just like certain people you become friends with, and certain people you don't. I think it's more like that, but I can't explain it." After spending an entire afternoon with her, I was

[27] Tamalyn specifically reference Besant and Leadbetter's 1905 book *Thought-Forms*.

somewhat surprised. After all, plants are her muse, her friends, the neglected children she cares for, the subjects of her songs and art, and her collaborators. Further, they are also the channels through which she receives messages from a collective unconscious or transcendent consciousness.

Chapter Conclusions

I have explored Tamalyn's biography and how her work on Mel Chin's *Revival Field* provided a numinous experience of the vegetal that inspired her artwork and drove her to know and communicate with plants via aroma therapy. I looked at how moving to Beacon, NY, enabled daily immersion in the vegetal world and provided her space to create. I highlighted how her gratitude practices towards the more-than-human world are acts of care. Further, spending time in Dennings Point and along the Klara Sauer trail exposed Tamalyn to plantastic experiences and altered states of consciousness that fueled her music album *Ghost Pipe.* Tamalyn's biography and proximity to the more-than-human reveal relationships that motivate and facilitate her creative work, while her altered states of consciousness enable ways of knowing and making. Tamalyn's experiences of altered states of consciousness, her fascination with plant life, and her immersion in the more-than-human world create the conditions for her reception of plant messages, which in turn inspire her to create. Tamalyn's embrace of various modes of knowing aligns her with Partridge's conception of "re-enchantment." However, Tamalyn's belief that all messages originate in a collective unconscious proposes a transcendent ontology that adds a layer of ambiguity to her work. Are these messages immanent to plants, or are they transcendental—rooted in an ambiguous universal consciousness?

If the latter, Tamalyn flattens the difference between plant and human, and indeed all things, providing an unclear political agenda regarding the exploitation of the more-than-human world. If universal consciousness is the root of all messages and all that matters is that these messages inspire a unique response, than the nature of her response is the sole measure of ethics in a material world. However, Tamalyn shared on the *Crookit Dreams* podcast that her muse, the weeds she refers to as "neglected children;" her tools, the "wounded" instruments that slowly share their own stories; and her methods of making handmade art and self-recording are an "antidote to overproduction and commercialization" (Kirkpatrick 2024). With this statement, she again asserts that plants, musical instruments, and her creative work are healing. Additionally, she infers that what is being healed is a world afflicted by capitalism. In a very material way, her use of unwanted, invasive, and readily available plants like mugwort and her recovery of neglected and damaged instruments are ecologically aware and ethical and political choices.

Eileen's story introduces ways of knowing and experiencing plants through altered states of consciousness. It explores how conceptions of proximity to plant life and the more-than-human versus urban environments affect her healing ideologies and practices. Eileen acts as a mediator or "ambassador" between the healing powers of the plant kingdom and her clients. I examine how Eileen's assertion that plants are "abundant…whole…complete, and healed," contrasts with the conception of humanity as out of balance and unhealthy and constructs and enacts a binary between culture and nature, technology and the vegetal. Further, I highlight how Eileen's conception of non-rational, personal, subjective, and relatively un-mediated communication with plants echoes Zahuranec and Backster's belief in the psychic plant and Patitucci's belief in subtle-energy as direct modes of communicating with plant life. These

imaginaries of direct and communicative relationships with plant life are a mode of "re-enchantment."

Conclusions: Autoethnographic Experiments in Sonification and Ways Forward

In this conclusion, I highlight the participatory aspects of the research process by focusing on myself as the research subject. As part of my fieldwork, I engaged in practices inspired by the participants covered in chapters one and two and the research participants I talked with during my investigations yet did not include in this thesis. During the research process, I explored a range of practices, including meditating on trees; visiting a medicinal herbalist; consciously ingesting plants in the form of teas and tinctures; paying close attention to the sounds, smells, textures, and sights while walking in the woods; playing tuning forks for houseplants; giving daily thanks to the vegetal world; visiting a sound healer; and more generally listening to and noticing plants. In the final pages of this thesis, I reflect on my experience sonifying house plants with a MIDI Sprout and computer software.

I set out to explore how my subjective experiences of sonifying might modify my attentiveness to and relationship with plants. Further, I was curious about how engaging creatively with plant signals might impact my imaginaries of plant life and my opinions concerning the imaginaries of the practitioners covered in my research. Might my own tactile and sonic attentiveness to a specific plant affect my thoughts about the vegetal at large? Might I learn something new about plant life or my attitudes toward plants by participating in creative engagements with specific vegetal beings

My engagement with sonification involves recording plants and manipulating these recordings. Sonification includes processes of transduction, transforming the resistance of electricity in a plant leaf into MIDI data, and modification, where I—much like the subjects of chapter one—turn a perceivably chaotic plant-derived MIDI recording into a more predictable

set of sounds resulting in music. In sonification, chaotic data is transformed and manipulated into relatively predictable coherent sound, while in the latter, I removed excessive noise to isolate a clear signal. My experience demonstrates that the attempt to make plants coherent and intelligible through sonification, amplification, and modification parallels ongoing conversations in the sciences, the humanities, and the public sphere that create rationalized narratives and understandings of what plants are. Are plants persons, human surrogates, healing agents, teachers, subjects, or objects ripe for exploitation? Moreover, what is at stake when assigning any one of these values to plants writ large? My lack of ethnographic engagement with plant sonification motivated me to gain first-hand experience with sonifying plants. Additionally, my sonification experiments revealed a sense of fascination and pleasure with both the technological process and the plant, which allowed for embodied, personal, and subjective experiences, helping me imagine and speculate what the process might be like for other sonifiers.

Due to its three-hundred-dollar price tag, I had been putting off purchasing a Plant Wave. However, the Plant Wave, available only directly from Plantwave.com, was sold out when I finally decided to purchase one. Moreover, as preorders were estimated to ship in late March 2025, I began to look for one on the used market and consider alternative devices. I also asked a few friends if they knew of anyone who had a used device, which led to a purchase of a used early-generation Midi Sprout from a friend of a friend. First-generation MIDI Sprouts come in the form of a small cardboard cube slightly smaller than two and a half inches. On the front face of the cube is a small metal knob used for turning the device on and adjusting its sensitivity, and a one-eighth-inch mini-jack, into which the user plugs the electrode lead that connects to a plant. The back of the box has a single MIDI jack (the output to my computer). On top of the box is a minimalist die-cut logo depicting an icon of a tree, which is illuminated by LEDs that turn on

when the mechanism receives a signal—a visualization of the plant data. Unfolding the box reveals a circuit board and battery compartment. The kit also came with an electrode cable featuring a stereo mini-jack on one end and two nodes on the other, on which sticky gel electrode pads are attached (the same electrodes are used for TENS machines or an EEG). The sticky electrode pads are attached to the plant, while the mini-jack is plugged into the box.

I first hooked up the MIDI sprout to a neglected, somewhat emaciated aloe plant. Attaching the large, very sticky electrode pads to the plant's emaciated leaf and the MIDI Sprout to my computer, which was running the DAW Ableton Live, was uncomplicated. After adjusting the inputs and making sure Ableton was receiving MIDI data, I began recording the MIDI without sonifying it. I observed the MIDI on the visual display on Ableton's piano roll editor. The MIDI data had no perceivable patterns on the first view, just a burst of random pitches of varying lengths across six octaves. In order to hear the MIDI, I quickly added a virtual synthesizer to the channel and chose a preset sound called "electric piano." The sounds, too, were disorganized, containing no apparent pulse or rhythm; there was no perceivable order of the pitches and no recognizable form. I watered the plant out of both an act of care (I had been ignoring this plant) and a hope that it might elicit a change in the plant's behavior and, thus, the data. Almost immediately, the range over which the notes occurred became limited to an octave instead of random pitches and timings over six octaves. After letting the recording run, a shape began to emerge visually; the clusters of notes were slowly descending, and as more time passed—about 30 minutes—a curve began to appear as the clusters of notes were moving downward on the piano roll.

The descending clusters curving down the piano roll, which are easily perceived by the eyes, can only be heard as pitches that slowly lower in frequency over a space of about ten

minutes. As Ableton continued to record MIDI data, I attempted to constrain the randomness in pitch and rhythm and create predictability by attenuating the MIDI signal and audio output with plugins. I used a plugin called Scale to convert the random MIDI data into the pitches of a G-flat major pentatonic scale. Another plugin, Arpeggiator, was used to shape the rhythm—snapping the arhythmic timing to an identifiable grid or pulse. I used more channels with synthesizers and additional plugins to further add rhythm, melody, and harmony and to further modulate the synthesizer's timbre. Put simply, I used plugins to create a system, or set of rules, to process the apparently random data generated by the aloe plant to make sounds that could loosely slot into the genre of generative ambient music.

I have spent a great deal of time with computers and electronic music instruments, creating, editing, and playing with recorded audio, synthetic sounds, and visual data to make music. I find this to be an engrossing, immersive, and pleasurable experience. While the process of making electronic music was familiar, using a plant to generate data provided an element that was—for the time being at least—exciting due to its novelty. Further, it raised the puzzle of how to turn chaotic data and organize it into music. Options are abundant within Ableton Live, and I used only a few out of the scores of possible procedures. My understanding and imagination of the design of Plant Wave's presets informed my decisions. Regarding the raw data, I became most curious about not the sound but the visual pattern. While I understand the basic process of plant data generation—the MIDI Sprout measures and converts the electrical resistance in a plant's leaf (which corresponds to the leaf's water content) into MIDI data—I do not have a deep understanding of plant biology or the intricacies of the MIDI Sprouts circuit design. In short, it is still somewhat mysterious why the data manifests as it does. This lack of knowledge leaves me with questions I am unable to answer. Why does the combination of plant and MIDI Sprout

generate data that looks and sounds like this? What aspects of a plant's biology are represented by the data? Is this data useful in understanding plant biology? I stayed curious and engaged because, in part, I could not answer these questions.

I continued to record the aloe plant, hooked the MIDI Sprout up to a Ficus plant, and found new ways to manipulate the data and sounds to make music. I wanted to see and hear how the data would emerge over longer periods of time, even if I had no idea if it represented anything of import. I tried techniques gleaned from Cleve Backster, Tom Zahuranec, and Joe Patitucci. I attempted to direct positive and loving thoughts toward the aloe, and I thought about harming the aloe, even going so far as getting a lighter and holding the open flame about an inch away from the leaf. Maybe the plant was genuinely psychic, as Zahuranec claimed, and it could tell that both my love and a desire to harm were insincere. I watched a comedy video, hoping my legitimate laughter and glee might inspire the aloe to react—no luck. In the face of my insufficient scientific knowledge and the gamified MIDI Sprout and Ableton setup, I seemed to be resorting to a combination of magical thinking, playfulness, and creativity.

To qualify the sounds I made with the aloe as making a "mouth for a plant" (Motherboard 2014), as giving it a voice, or as plant music, in the sense that plants literally generate the sounds, is disingenuous and, at best, a poetic appellation. Even though the data originated in the aloe, and materially, the aloe is an essential component of the music I made, the plant was subject to my use of Ableton and the limitations of the designs of the MIDI Sprout, Ableton Live, and my Apple computer. However, while I am cynical about claims that the plant is making music either literally or poetically, I also find the sonification process a compelling and fun way to engage with the vegetal. Further, my attitude toward the aloe is characterized by ambivalence; it is both a musical collaborator and a prisoner trapped in my home and reliant on me for survival. While I

had an immersive, playful, and inventive experience sonifying the aloe plant, the process, at best, brought me only minutely closer to engaging with the vegetal world at large in a more reciprocal and sustainable manner. On a positive note, the aloe is now thriving, and a few small jade plants have also been nursed back to health since my experiments in plant-data sonification. Based on my experience, sonification can indeed bring one into closer relationships of care with the vegetal world.

While the ideologies, imaginaries, and some practices I write about might facilitate new modes of connection (or re-connection) and point toward more ethical and hopeful relations with the more-than-human world, my concern is that these practices—plant sonification in particular—are more performative than they are practical. While they include acts of care for the vegetal, they do relatively little in the face of climate change. However, while I assert that sonification at worst is an empty techno-fix, an attempt to solve a problem that it is utterly reliant upon—it is also a fun computer game or electronic tool that is no better or worse than any similar instrument or plaything. If you have a sense that I am somewhat disheartened and struggling to be optimistic, that would not be inaccurate. The tools I used to engage sonically with the aloe plant relied on extractive and exploitive economies, raising not just ethical issues but highlighting how even if personal experiences with house plants facilitate individual acts of care, they are incommensurate with acts of care to the vegetal world at large that is under threat by extractive economies. Despite my critiques of my research participants, I am heartened by their efforts, passion, love, creativity, and, most often, good intentions. I have only begun to explore Eileen and Tamalyn's practices and imaginaries; both are thoughtful and self-reflexive, and I hope to continue to correspond and work with them.

On the other hand, I remain highly critical of PlantWave. In just the past day, I received a marketing email from them stating, "What Happens When You Connect a Plant to a Piano? Nature becomes a musician. Watch this smoky mariposa tap into a world of sound we rarely get to hear—its own musical fingerprint, translated through PlantWave" (PlantWave 2025). What was originally a curious device created by an art collective has become a mass-produced wellness accessory with duplicitous marketing—it both frustrates and fascinates me, and I am eager to dive further into the historical processes of which it is just a node. Further, I still hope to explore plant sonification and its adjacent practices ethnographically.

The practices and ideas of my research participants reveal a novel position for plants in music studies as subjects that extend notions of the sonic, social, and communicative into a realm that is most often considered silent and passive. The imaginaries of communicative plants expressed by my research participants require imagining communication—more generally—as something ethereal and energetic that is not easily explained via discourse. Further, while work like Beyer's (2010) that explores mestizo shaman's sonic relationships with plant life in the Amazon and Seeger's (2017) exploration of the notion of animal and plant personhood among the Amazonian Suyá may resemble the practices of my research participants, the practices and imaginaries of my research participants are nodes in very different historical processes and social lives, thus providing both a compliment and departure from existing scholarship and revealing novel imaginaries and worldviews.

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