

# Towards a Methodology for Co-creating Artistic Acoustic Ecologies with the Great Lakes

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## Abstract

This paper will discuss the early stages of the development of a methodology for co-creating artistic acoustic ecologies with the Great Lakes. It explores some initial philosophical, technological, creative/musical, and ethical concerns involved in my PhD research-creation project entitled: *Sounds Like Water, To Me*.

In the paper I ask how we might come to understand these bodies of water as animated actors in their own rights, with their own unique subjectivities? By doing so I hope to facilitate a greater understanding of human impact on, relationships to, and responsibilities toward the lakes and all other waters. I will discuss the philosophical framework around perception and being and then explore some technical, artistic and ethical thinking towards a methodology and investigate which tools, techniques, and protocols can be developed or adapted to achieve these goals. The article also puts forward some early experiments, guided by the literature review, and future areas of research.

My research-creation project draws on my experiences as a composer and visual artist, to employ sonic data gathering techniques such as biodata sonification and field recordings, alongside embodied and Indigenous-informed research methodologies in order to undertake a co-created artistic acoustic ecology with the Great Lakes.

## Keywords

Research-creation; eco art; phenomenological analysis; participatory co-creation; conceptual art; acoustic ecology; generative art; biodata sonification; non-colonial research methods, symbiosis.

## DOI

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## Introduction

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The Great Lakes hold 21% or more than 1/5th of the world's freshwater, 43 million humans depend on the lakes for drinking water. Despite this, human-generated water contamination, commodification, scarcity, all combine to present increased threats to the survival of human and non-human species. Water access, extraction, governance and sovereignty represent points of contention between Indigenous First Nations, and the settler governments of the United States and Canada.<sup>1</sup>

The lakes have witnessed and experienced centuries of geographical, geo-political, environmental, industrial and colonial activities and events. As a kind of "colonial super-highway," they are the very means by which much of the colonizing activities in North America could thrive.

For some time now I have imagined a dialogue with and between the five Great Lakes and what humans might learn from these exchanges. What would they tell us about the exploitation and colonization they have witnessed and experienced and what deeper understanding and empathy might we gain?

I had considered this idea as the premise for a work of narrative fiction, whereby characters would be modeled after histories and traits of each of the lakes, each character knowing they would inevitably be coming together in confluence with the other four. Attempts at personifying the natural world are not new. Western poets have long used the Pathetic Fallacy to attribute emotions to natural phenomena and objects. It is common to perceive something like a mood originating from a body of water. It stands to reason that those who live on the shores of the Great Lakes may be well suited to describe these emotional characteristics. But this Western tradition of *describing, representing and being separate from*, falls short of my objectives of developing communication and collaboration between human and non-human actors towards creating more sustainable relationships with the natural world.

I have come to shift my initial curiosity from creating a *representation* of the lakes to one of co-creating experiences with them through musical collaboration. Acoustic ecology is the study of the interrelationship between sound, nature and society.<sup>2</sup> It affords a space to explore this symbiotic nexus through the co-creation of sound and music—*artistic acoustic ecologies*.

I am a white settler of European ancestry, with an educational background in Western arts and music. I am interested in building different relationships with nature

and I believe a necessary step is the development and use of decolonizing methodologies.

I situate my art practice and research-creation project on land within the Dish with One Spoon Territory and as a newcomer I have been invited into this treaty in the spirit of peace, friendship and respect, and within the context of human-induced climate change. The Dish with One Spoon wampum discusses a shared responsibility to take care of the land—including the waters and their ecosystems.<sup>3</sup> I see care for water as a reciprocal responsibility I can take on through my art practice.

In *Making Love with the Land*, Canadian First Nations artist Joshua Whitehead discusses the sentience of the land and water: "*The land is an archive, is a library, is a genealogy—a body of land is a body of literature. Water remembers, it maintains memories, it recalls the substances it has previously dissolved; trees remember, and in their wounds is a witnessing of wars past, diseases eradicated. If the land can witness it too, it can listen. And it talks through what we might call living stories...*"<sup>4</sup>

In order to hear these stories, and to prepare for my own "conversations" with the lakes, I am researching technological, creative and ethical frameworks for engaging non-human actors. This has led me to key research in these respective areas such as Tim Ingold's concept of "wayfinding,"<sup>5</sup> Donna Haraway's *Situated Knowledges*,<sup>6</sup> Natalie Loveless' contributions to the field of research creation,<sup>7</sup> Michel Serres' considerations on noise,<sup>8</sup> the soundscape composition practices of Hildegard Westerkamp<sup>2</sup> and R. Murray Schafer,<sup>9</sup> among others. I also interviewed currently active experts related to the fields of music composition, production and biodata sonification for this paper. They included Dr. Scott McLaughlin,<sup>10</sup> and Sam Cusimano.<sup>11</sup>

## Representation, Perception and Being

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There has been marked evolution in western art moving from objective representation to today's embodied notions. This shift was very much at the core of the modern visual arts movement of the early 20th century. Representation gave way to abstraction as in Cubism and the whole realm of isms that followed. These movements moved away from the figure being the focal point, collapsing it into the background and eventually abstraction.

Multiple shifts were taking place to try to awaken in the public a dialog about life and the paint stroke as a means to express instead of represent our worlds. But their approach was rooted in colonialist humanist culture. This meant that these concepts remained fixed in representation of a subject, neither embodied nor alive.

Rebecca Belmore's site-specific sculptural installation, *Wave Sound*, from 2017, is a powerful example of how a work can invite embodied experiences. *Wave Sound* is a set of four site-specific sculptural installations, one of which is large cone cast from the rock surface on the north shore of Lake Superior. The cone faces out to the vast lake and quietly invites the viewer to listen to the land by lying down on the rock such that one can place an ear over the small opening at the small end of the cone, in hopes of hearing something beautiful. The listener enters into a sympoietic relationship with the situation the piece creates, physically as well as intellectually. The 'artwork' is a means not an end.<sup>12</sup>

## Noise

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What is noise, what is music, what is sound, what is silence and how does our situatedness inform our perception of this? These questions have pervaded contemporary composition and inspired composers to employ processes with which to move away from *mimesis*, the representation or imitation of the real world in the arts.<sup>13</sup> Similar fundamental queries have surfaced in other areas of creative practice such as the Visual Arts.

Michel Serres' story, *Noise*, articulates concepts in both visual art and sound that specifically identifies an interesting challenge of describing the threshold of perception: *"The agitation is everywhere to be heard, beside the signals, beside the silence. The silent sea is misnamed. Perhaps white noise [bruit de fond] is at the heart [fond] of being itself. Perhaps being is not at rest, perhaps it is not in motion, perhaps it is agitated. White noise never stops, it is limitless, continuous, perpetual, unchangeable. It has no grounding [fond] itself, no opposite. How much noise has to be made to still the noise? And what fury orders fury? Noise is not a phenomenon, all phenomena separate from it, figures on a ground [fond], as a light in the fog, as any message, cry, call, signal must each separate from the hubbub that fills the silence, just to be, to be perceived, sensed, known, exchanged. As soon as there is a phenomenon, it leaves noise, as soon as an appearance arises, it does*

*so by masking the noise. Thus it is not phenomenology but being itself."*<sup>8</sup> Serres acknowledges the body's role in perception through this figure/ground metaphor but he takes it further.

The situation Serres sets up is a space for a deeper exploration of aesthetics, perception, and experience and to relate broadly across the arts. In poetic fashion he engages us to measure the infinite gradation between figure and ground in our own minds, in the visual arts, in the mythological soundscape of the sea.

As Serres gradually evolves this symbiotic figure ground relationship, he also overlays these ideas onto the evolution of modern art through his referencing of the 3 painters in Balzac's *The Unknown Masterpiece*, a story that was highly influential to Post-Impressionist artists—namely Cezanne. The Balzac piece recounts an era where *"... the categories of beauty, verisimilitude and mimesis were disappearing, where questions about the relationship between artwork and thought were coming to the fore, becoming more and more central in relation to the technical limits of painting."*<sup>14</sup>

As Serres weaves in his thoughts on representation, perception, and being, he provocatively asks: *"Who has ever seen a meeting between the real and the symbolic in the story?"*

In tandem with phenomenology, Serres questions the symbolisms of storytelling. He blurs our efforts as a reader to keep track of the narrator's position and challenges our perception of what is true, what isn't and what is intended, as if to emerge and recede from the noise of his own story.

His complex presentation of this multi-sensorial challenge is in itself a layering of historical figures and ground relationships. His somewhat Borgesian strategy, which weaves the authors' identity, role and tone in and out of characters, past, present, fact and fiction, artfully fogs our lens.

The figure is part of the noise. It emerges sometimes briefly, and you can recognize it, some of us better than others, Serres notes, but it always recedes back into the noise, and the noise is always there. The noise is, to me, this bed of just *being*, always present.

## The Body Electric

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While Serres kept to the world of ideas, moving away from representation also gained popularity in music. The determination of figure and ground, noise and sound

have major implications in several fields of contemporary cultural practice. When noise becomes sound and a sound becomes musicalized as a note, is a focus of rich investigation in avant-garde and electronic music.

Brian Eno's *Ambient 1: Music for Airports*, is music designed to blend with an existing soundscape and blur the boundary of where his participation as the composer begins and ends.<sup>15</sup>

Eno was not the first to make what we now identify as *ambient music*, but he was the first to name it. Erik Satie completed *Gymnopédie No. 1* in 1888—110 years before Eno's time. "Furniture music" was the way Satie described the role of the music in the context of its environment—part of, inclusive of the sounds in it, not the main focus.<sup>15</sup> This idea later became a major area of interest for John Cage, who in 1952 released *4'33*, which intended to capture the ambient noises inherent in a given performance space.<sup>16</sup>

Mechanical processes and technologies have also played a significant role in altering how we perceive sound. In 1948, Pierre Schaeffer had coined the term *musique concrète* and had been experimenting with tape loops and "music systems." The early tape phasing experiments of Steve Reich certainly present a process for coaxing musical ideas from noise, figure from ground. His tape pieces introduce what Eno would later call *Generative*. Eno describes the experience of listening to Reich's "It's Gonna Rain", as revelatory in how the piece allows for open and asynchronous music events to happen as a seminal influence in his future work.<sup>17</sup>

The tradition of taking hypothetical technical and theoretical positions to arrive at novel and surprising results, beginning with Satie, has become well established in avant-garde and electronic music. Alongside the adoption of these more cerebral and conceptual strategies, innovation leading to 'uncode' its creation has also emerged as a pervading trend in electronic music.

Many early electronic instruments were designed to diminish the need to *play* an instrument or have knowledge of musical theory. The body became centered as the primary inter-actor with the instrument. This can be argued as entering the world of relational aesthetics, a movement that introduces the symbiosis of relationships as a central occupation in western art practices.

For example, the Theremin, sometimes derided as a novelty item, removes a layer of interface to play it. Also reduced is the codified knowledge one requires to play,

say a keyboard instrument, which is a heavily codified, Western mechanism. The Theremin relies on the body in space and its relationship to the instrument's two (usually) antennae. The Theremin player interacts less intellectually and in a more physical way, as the direct communication method. The music comes, closer than other codified interfaces, from the sympoiesis between the performer and the instrument. Their relationships alter the quality of the air in their environment, this noise is then captured by the machine and translated into sounds.

Theremin playing enjoyed perhaps its most elevated period in the hands of Clara Rockmore, a virtuoso violinist who adopted the Theremin as her main instrument and challenged the notion that it was a substandard instrument. Of her Theremin technique she has remarked: "*You can't play air with hammers, you have to play with butterfly wings.*" [18] Her description clearly emphasizes the physicality of the activity.

In the 1950s Daphne Oram, British composer and early electronic music pioneer, was the first woman to set up an independent music studio and design and construct an electronic instrument. She also created Oramics, which is a way to generate electronic sounds from drawn wave forms. Tape-based and electronic instruments introduce a move away from orchestral instruments towards synthesized sounds which don't require the skills associated with classical instruments.<sup>18</sup>

Another compelling expression of the freedom perceived by musicians as a result of this 'uncoding' comes from Suzanne Ciani who says: "*In electronics, you're not dealing so literally with the architecture of nodes or harmonics, those building blocks of classical music, you're dealing in energy.*" Describing a performance from 1974 in which she is performing a composition on an early Buchla synthesizer she states: "*I think they are so sensual. The machine was alive. It was warm. It communicated. It was sensitive. You could move something just the littlest bit and then a whole new expression would open up.*" Again, the embodied, participatory and more experiential aspects of playing the instrument come to the fore.<sup>18</sup>

Mileece has pushed the boundaries of relational aesthetics into the realm of ethics with non-human beings. Her work *I Oracle: Dreaming in the Future Ancient*, questions humans' capacity to exist in systems in holistic ways. Like Natalie Loveless, who moves art practices into embodiment of ecological ethics, Mileece is embedding the symbiotic relationships of her own

body to plants in a data language that develops within ethical concerns. She tries to create a new language through AI and code, getting plants to direct AI.<sup>19</sup>

Is it possible to un-code humanity's relationships to nature? Are the generative processes inherent in algorithmic based music a way forward? Is letting go of compositional control through the use of open algorithms a way to uncode? The cycles of the planet are like an open algorithm, in that the seasons repeat based on specific conditions and symbiotic relationships of ecosystems inform the outcomes.

The technological aspects of my methodology are influenced and in line with questioning and the practices I've mentioned here. Moving forward, I will be exploring ethical concerns and how to fold these into a methodology. I am particularly interested in the discussions about ways of making kin with technology, discussions shared by Donna Haraway and Jason Edward Lewis' writing about Indigenous futurisms.<sup>6, 20</sup> How might I incorporate this into my work?

Haraway, in her essay, *Situated Knowledges*, challenges the long defended position of the objectivity of Western science, the "god trick" as it is colloquially known. For Haraway the observer can never be extracted from a situation, pointing out that science is different when different individuals are doing it. She centers this idea that perspective matters and that it is important to acknowledge that we bring our situated perspectives with us as observers.<sup>21</sup>

## Sound Methods

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These ideas change creative methodologies. How can I establish a methodology that focuses on: visiting with, harmonizing with, listening with, and co-creating with, during my fieldwork. I am moving away from *mimesis*, (or representing the lakes in songs, sounds, or images), towards *methexis* (participating in what the lakes are doing).<sup>8</sup>

UK based composer, Scott McLaughlin, offers one approach. He has incorporated Tim Ingold's idea of *wayfaring* in his creative methodology. Ingold likens the *wayfaring* process metaphorically to following trails through a landscape, finding new trails that will take you further. This is in contrast to a process of navigation Ingold calls this method "transport", where one plots a direct path from A to B, in hopes of traveling as fast as possible, where any obstacle in between is simply in your way.<sup>10</sup> McLaughlin notes that, colloquially,

*wayfaring* is more about the journey and the knowledge accumulated and carried than the destination.<sup>5</sup> In this way McLaughlin creates scores where, rather than the performer's job is to bend the instrument to their will, the performer activates and supports the material and design characteristics of the instrument. McLaughlin crafts situations where performers participate with what he calls the "material agency" of an instrument.<sup>10</sup>

## Artistic Methods

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### Acoustic Ecology

Interest in acoustic ecology began as a form of 'acoustic activism' on the part of like-minded faculty at Simon Fraser University in the late 1960s and early 1970s.



Figure 2. Still from *Resonate Body #2* (Author)

Of practicing acoustic ecology, R. Murray Schafer states that: "*Ecology is the study of the relationship between living organisms and their environment. Acoustic ecology is therefore the study of sounds in relationship to life and society. This cannot be accomplished by remaining in the laboratory. It can only be accomplished by considering on location the effects of the acoustic environment on the creatures living in it.*"<sup>9</sup> Led by Schafer, the group gained early recognition through the creation of Soundscapes of Canada, a 10-part series of one-hour radio programs based on the sounds of Canadian acoustic environments—essentially a recorded "sound-walk" across the country and was first presented on CBC-FM "Ideas", in 1974.

Central to soundscape composition is the concept of conscious listening. As illustrated by a quote from Hildegard Westerkamp, one of the group's founding composers/researchers explains: "*To compose with environmental sound implies a relationship—a dialogue—between soundscape and listener in daily life. No matter what the composer's intent may have been from the start, the materials inevitably speak with their own*

language, whose deeper meanings may only emerge with repeated listening and sound production. And that in itself has the power to shift the composer's intent."<sup>2</sup>

## Graphic Notation

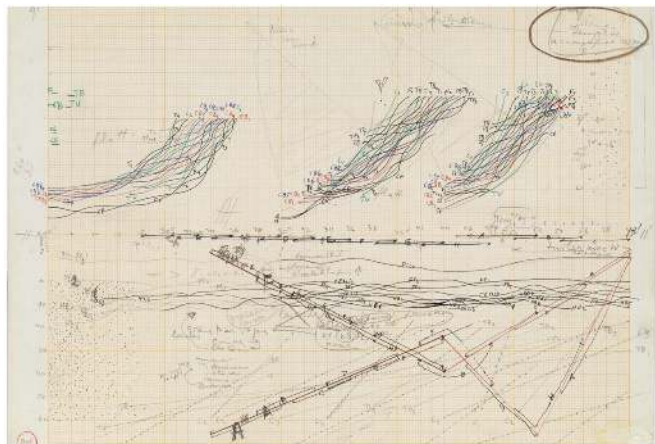


Figure 3. Graphic notation example (Iannis Xenakis)

I will use graphic notation while visiting various sites around each lake as a way to “poetically inquire” and capture immediate impressions of each place and space, from a sonic perspective.<sup>22</sup> These will aid my work later as I begin the musical collaborations with the field recordings gathered on each respective site. The graphic notation will also serve as a potential score which I may choose to share with other musicians or composers to interpret. The visual notations will act as perceptual barometers, diaristic in nature, of a time and place from which I will be able to reflect on my own perceptual shift as my empathy for the lakes evolves. Graphic notation is an alternative access point to musical composition and dissemination—operating somewhat outside of Western conservatory traditions, which are limited in their ability to relay emotional content and remain somewhat elitist in terms of who is able to access the education required to become literate. Sight reading traditional western musical notation, for example, requires years of tutoring and practice.

## Technical Methods

### Biodata Sonification

Data is a sea of noise and humans have oceans of it. How can we make sense of it? How can we feel its significance? How can we better become kin with the tools and technology to better understand it?<sup>21, 20</sup>

This past year I have been conducting tests and experiments with a biodata sonification device designed and built by Sam Cusimano. Cusimano's device reads micro-changes in conductivity within organic matter in real time. An Arduino inside the device reads those changes in values over time and expresses the fluctuations as MIDI notes and the degree of change in conductivity is correlated to pitch such that higher degree of change gets expressed as a higher pitch. The device also has the ability to assign various types of scales such as: the 12 tone chromatic scale, pentatonic and minor scales. The device is equipped with a MIDI output as well as wireless bluetooth output. The device is able to send data to a MIDI recorder as well, such that the MIDI notes can be played on an instrument at a later time.

There are many similar devices available that provide the same functionality but I chose Cusimano's as he was repeatedly referenced by several artists working with biodata sonification and he was also very knowledgeable and accessible.

While visiting sites around the lakes I intend to use this device to make recordings of the data I encounter, as part of a larger ensemble of the other elements I've mentioned, which I will combine later.

It should be noted that this realm of sonification is emergent and thus the shared knowledge is evolving, limited, and to a degree, and more often disseminated through non-academic channels.

One of the key challenges facing this technology is that the multitude of MIDI capable instruments are able to reproduce just about any sound imaginable—sample or synthesized. How then does one decide which sound to select for a given organism to use? Assigning or *mapping* any voice/instrument thus becomes arbitrary and potentially misleading. There is not a way to get around the *translation* of the MIDI impulse into a sound. One could argue that this is also the case when a human plays an instrument as well, the main difference being the human has agency in selecting the instrument, the scale, notes, key signature, or whether to play at all.

Unlike more traditional uses of data sonification, where data is sonified such that it becomes easier to interpret or analyze, my hope is to see if we can perceive something like an emotional feeling from the biodata generated sounds, which notes are played and how they are played. MIDI can carry parameters such as: volume, pitch, attack, decay, timbre, Surely, there is still enough going on with those parameters to generate some vibe? But how do I achieve this without subjecting the data to

my own aesthetic priorities? In his brief article, *No Mapping* (2016), James Saunders suggests that when this arbitrary mapping is presented as a truth, that the listener is hearing the actual true sound of a phenomenon like a solar flare or climate change, the arbitrariness compromises both the data and the sound.<sup>23</sup>

Imparting “humanisms” onto other living things to convey complex emotions also raises concerns associated with *Interpellation*.<sup>24</sup> In the field of Visual Studies, it’s a concept coined by Louis Althusser, that describes the way media can make you feel like you identify with what’s being presented to you and belong to a value system—or even an ideology.<sup>25, 26</sup> Moving forward, this is an important issue to consider. Embedded in the act of interpellation are culturally specific values and norms that are not universal and assuming so may risk alienating potential audiences.

## Conclusions

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Several recommended methods for addressing the concerns raised here have emerged from the research. Regarding the assignment of an abstract tone or sound to the MIDI notes being generated, one should consider using neutral sounds and avoid effects that may impart additional subjective information (like reverb for example).<sup>27</sup> Another recommendation is to ensure that the listener can understand what is triggering the sound being made and that the mechanism is as exposed as possible.<sup>27</sup> Another thought is to create an installation environment where listeners can hear a chorus of the data sonification events happening simultaneously, such that the abstractness of the voicing assignments becomes less important than how the the voices interact together.<sup>10</sup> Lastly, an interface could be created such that the listener could select and assign voices themselves, revealing the abstractness of the mechanism of selection and potentially deepening their engagement with the listening experience.



Figure 3. Still from *Resonant Body #?* (Author)

I have recently begun experimenting with recording the MIDI generated sounds in the soundscape they are occurring as well as recording the audio of the same soundscape. In this way, I am able to listen to both simultaneously and aligned in real time. In this way, the connection between different types of recorded sounds (data generated and audio) in a given space are more strongly associated.

A key area of future focus is to explore an ethical methodology. How am I impacting those I am being with in my actions? How might I gain consent from the non-human actors?

This article does not present a comprehensive or complete methodology but rather a first step towards one. There is still the area of ethics to more deeply research and consider. I will be interviewing Diane Whalen and Bonnie Devine to discuss being on the land and visiting methodology from settler and indigenous perspectives respectively. I will also be further evaluating my situatedness, particularly in consideration of Dylan Robinson’s concerns brought forward in *Hungry Listening*, as to “...how your positionality guides the way you listen to musical subjectivity.”<sup>28</sup> I will also begin researching the many treaties and covenants that describe the agreements I may need to be aware of as I visit various sites. I am going to explore incorporating ceremony into my activities on the land and water and will be researching ethical issues around this. I know well that there is much to learn in the field as well and that whatever I do in preparation needs to incorporate nimbleness, adaptability and openness to what unfolds.

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