

# Audiovisual Installation as Ecological Performativity

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## Abstract

This paper stems from my practice-based research as a composer of collaborative multimedia works. The majority of artifacts that result are audiovisual installations that explore new relationships from an ecological perspective—that is—the perspective that considers the world to be a network of interconnected and interdependent phenomena. In an attempt to contextualize my research and explore new possibilities for creative practice, I have become interested in a number of theories about the agency and performativity of living and non-living systems. I present several of these theories within a historical context, and describe the audiovisual installations *Aspects of Trees*, *Undercurrent*, and the work-in-progress, *Bridgings*, all of which illustrate my evolving practice and ontological notion of *Ecological Performativity*.

## Keywords

Audiovisual Installation; Ecological Performativity; Agency; New Materialism; Systems Theory; Ontology; Autopoiesis; Cognition; Interconnectedness; Practice-based research.

## Introduction

Over the past twenty years, my creative practice as a composer has increasingly become a multidisciplinary and collaborative endeavor. This work has been an enriching enterprise covering numerous perspectives that have expanded both my artistic practice and philosophical thoughts on creativity. In order to develop a supportive discourse for these creative activities, and explore new patterns of inquiry and networks of communication, I have recently been drawn to several scholarly discussions about the agency and performativity of living and non-living systems. In this paper I present several of these dialogues in their historical context, and give a descriptive account of the audiovisual installations, *Aspects of Trees*, *Undercurrent*, and the work-in-progress, *Bridgings*, which illustrate my evolving practice and ontological notion of *Ecological Performativity*.

## Historical Background

The idea of agency and performativity in Western thought evolved from a variety of philosophical, scientific and artistic research, the majority of which took place over the last century and continues into the 21<sup>st</sup> century. [1] This work reflects a paradigmatic shift away from a mechanistic, representational model to one of an interrelated, per-

formative network in which the “stuff of the world” is considered an operative agent. [2] From emergent properties, cybernetic theory, autopoiesis, and systems theory to the new paradigms of expression in creative practice, a shift in ontological thinking had begun—away from representational models to a more performative, time-based and non-linear practice. [3]

Advances in mechanical and computational technologies influenced this transformation and are well documented in Chris Salter’s book, *Entangled: Technology and the Transformation of Performance*. He writes: “Technology does something in and to the world by modifying existing relations and constructing new ones between humans, tools, processes and the environment which are deeply entangled.” [4] Within a few decades theatre, dance, literature and music responded to the shift in ontological thinking, fostering the convergence and synthesis of artistic forms. [5] Salter suggests that “...these new relationships and interactions of discrete aspects of experience [opened] deeper understandings of the nature of consciousness and the workings of the mind...the reorganization of human interaction and the reimagination of interrelatedness.” [4]

To briefly summarize this shift, we need only look at a selection of fine art works throughout this time period. Picasso’s *The Old Guitarist* of 1904 was completed just one year before Einstein published his “Special Theory of Relativity.” This singular perspective painting is remarkably different from his *Guitar Player* of 1910; we can note the transformation of a static representational viewpoint to that of a “multipositional dialect of space and time.” [5] Kandinsky’s *Composition VIII* from 1928 was completed three years after C. D. Broad first proposed his idea of emergent properties, whereby properties of a system emerge at higher levels of complexity due to the relationship of all parts. The more common research approach at the time focused on the smaller parts of a system rather than the whole—that is, its dissection. Broad’s theory encouraged an ecological perspective that later became known as systems thinking. [6] From this as well as from cybernetics theory, Roy Ascott’s artistic efforts developed. [7] Ascott introduced cybernetics into art education during the 1960s and believed this theory “opened the door to understanding the nature of mind as a systems phenomenon and became the first successful attempt in science to overcome the Cartesian division between mind and body.” [8]

It was from cybernetics theory that Humberto Maturana began to develop his theory of autopoiesis (*self-creation*).

He explored this notion while researching visual perception and the organization of living systems posing the question, “How do I do what I do as an observer in observing?” [10] In reply, he proposed a new concept of circular organization claiming that “living systems are cognitive systems, and living as a process is a process of cognition.” [10] All of his subsequent research came from this basic epistemological and ontological shift of thinking, which eventuated into the Santiago Theory of Cognition. With this theory, Maturana, along with Francisco Varela, proposed that “to live is to know” and that cognition is a “continual bringing forth of a world through the process of living.” [11] The particular world that is brought forth depends, first, on the structure of the organism, and, second, on its relationship to its environment. [12]

This theory was a profoundly new view of cognition that included all processes of life such as perception, emotion, action, and emergence. It involved the concept of mind as a process, not a thing, and extended the act of cognition to all living systems including organisms that do not have a brain, such as simple-celled organisms. [12] At the time of its introduction, the Santiago Theory of Cognition provided the comprehensive scientific framework necessary to challenge the Cartesian division between mind and body, and afforded a “new synthesis of mind, matter, and life.” [9]

Maturana<sup>1</sup> and Varela, respectively, expanded on this theory of cognition that, in Varela’s case, would evolve into what is now widely accepted in cognitive science as the “embodied mind.” [14] Varela *et al.* introduced this term in the early 1990s with the central thesis that cognition, including knowledge, meaning, and emotion, is intrinsically linked to our body, to the active living of that body, and to the environment in which these activities, or “enactions” take place. [14] Since then, the concept has widened to include the very structure of human reason as arising from our bodies, brains and bodily experience evoking a quality of emergence and agency. The concepts “embodiment” and “enaction” are now part of the lexicon of contemporary creative researchers.

## Recent Theoretical Discourse

Currently there is a rigorous discourse throughout the arts, humanities and sciences about the interconnected agency, or “performativity” of living and non-living systems, and between the human and non-human—so much so that “formerly fast held distinctions between the inert and the

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<sup>1</sup> In the context of this conference, it is interesting to note Maturana’s own reflections on technology and art: “As different technologies open and close different relational dimensions, they offer different possibilities for social and nonsocial coexistence, as well as different possibilities for the artist to create the relational experience that he or she may want to evoke. In all cases, though, whatever he or she does, the artist will be a participant creator of some virtual reality that may or not become a grounding reality in the course of human history.” [13]

active, the human and the non-human and life and matter are cracking.” [15]

Noted contributors to this discussion include Chris Saltzer, who, as previously mentioned, has written comprehensively on the trajectory and development of agency and performativity in the arts. His recent publication, *Alien Agency: Ethnographies of Nonhuman Performance*, continues this enquiry by describing works in which the materials of art—the “stuff of the world”—behave and perform in ways beyond the creator’s intent. They each encourage “a radically different vision of the world—dynamic, temporally emergent, contingent, and performative.” [2]

Andrew Pickering joins the discussion with his notion of the “dance of agency.” This is Pickering’s attempt to move away from the idea that agency is specific only to humans, or to what he refers to as “human exceptionalism.” He suggests that the world, in all its heterogeneous multiplicity, is full of agency and processes of emergence. By exploring these processes and performative relationships between things, including those beyond the human realm, Pickering suggests that we invite the “possibility of a non-modern stance of revealing rather than enframing which, in turn, invites open-ended extensions.” [16]

Karen Barad elaborates on the notion of performativity in her substantial book *Meeting the Universe Halfway*. Here, Barad introduces the term “intra-action” which refers to the idea that “existence is not an individual affair [where entities] pre-exist their interactions,” but rather, an ongoing ebb and flow of agency where individuals and things emerge through and as part of their entangled intra-relating. [17]

Similarly, Jane Bennett’s concept of “thing-power” gives voice to the energetic vitality intrinsic to matter and the active, earthy, and complex entanglements of humans and non-humans. [18] She fosters the notion of “greater recognition of the agential powers of natural and artifactual things, greater awareness of the dense web of their connections with each other and with human bodies, and, finally, a more cautious, intelligent approach to our interventions in that ecology.” [19]

Timothy Morton expands the discussion to include his idea of the “hyperobject,” meaning agents or objects “so massively distributed in time and space as to transcend localization, such as the biosphere, global warming, or the sum of all the whirring machinery of capitalism.” [20] Morton argues that these objects are the result of “the mesh”<sup>2</sup> of human and non-human agency, particularly those which took place during and after the Industrial Revolution. He further suggests that art in the time of the hyperobject can function as an attunement to the reality of the coexistence of all things on Earth:

Thus the art in the time of hyperobjects explores the uncanniness of beings, the uniqueness of beings, the irony and interrelationships between beings, and the ironic secondariness of the intermeshing between beings. [22]

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<sup>2</sup> In Morton’s writing, “the mesh” substitutes words such as interdependence and interconnectedness. [21]

Fritjof Capra and Pier Luigi Luisi weigh in with their 2014 publication, *The Systems View of Life: A Unifying Vision*. The authors present a coherent systemic worldview that integrates the biological, cognitive, social, and ecological dimensions of life. They discuss the philosophical, social, political and spiritual implications of such a unifying vision, in an attempt to overcome, what they define as “a crisis of perception,” or a human-centric use-value worldview. [23] The broader intention of this book is to provide an appropriate framework for discussing one of the “great challenges of our time—the building and nurturing of sustainable communities.” [23]

While all of these concepts and discussions resonate at their own frequency, the fundamental ideas are similar: the world is a mesh of agency, and because of this, a host of ecological, social, cultural, and political observations and concerns are raised and challenged.

### Ecological Performativity

The intention of my research, or, “mode of artist practice,”<sup>3</sup> is to contribute to this discourse in an artistic, experiential, and dynamic way. I do so in an attempt to develop a creative practice that I refer to as *Ecological Performativity*. I introduce this term to bridge my creative research with the ideas outlined above, that is, the ecological perspective of interconnectivity, the cognitive components that include all processes of life, the “dance of agency,” the intra-action of living and non-living systems, and the complex systems and entanglements of humans, nonhumans, and hyperobjects. Beyond technical and aesthetic choices, my research attends to the performative substance of place and time. It stems from the premise that artistic practice can enable different perspectives of the world and become, in and of itself, an apparatus of change—promoting what I (and other practitioners) consider to be “a long overdue ontological shift in how we exist in the world.” [25]

*Ecological Performativity* has resulted from a series of collaborative mixed-media audiovisual installations. Similar to other ecologically-grounded creative practices,<sup>4</sup> these installations explore the relationships of environment, material, and process, and are derived from an intensive data-gathering procedure and immersion within the respective environments. At the same time, by considering the interdependent performative agency of all components involved (the cognition, environment, and autopoietic units), *Ecological Performativity* attempts to explore new networks of communication and meaning from a systemic

<sup>3</sup> I borrow this turn of phrase from Manning and Massumi in which they claim: “Every practice is a mode of thought, already in the act. To dance: a thinking in movement. To paint: a thinking through color. To perceive in the everyday: a thinking of the world’s varied ways of affording itself.” Each is a technique, or, springboard that sets in motions “a practice from within.” [24]

<sup>4</sup> Terms used to denote other ecologically-grounded creative practices include *ecomposition*, *sonic ecologies*, *EcoSon*, *ecosystems*, and *audible ecosystems*. [26, 27, 28, 29, 30]

understanding; in other words, its pattern of organization (Figure 1).

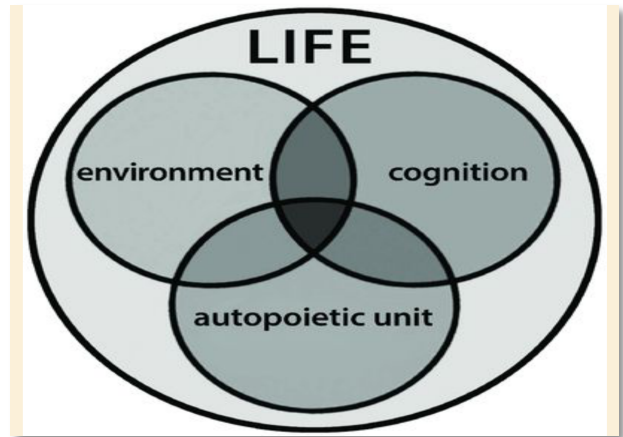


Figure 1. The Trilogy of Life. [31]

### Studio Practice

For the purpose of my creative research, the generative audiovisual installations are understood then as “the embodiment of the shared meaning generated by the networks of communications.” [32] These networks include multimedia collaboration as the creative field of activity, which nurtures an environment where the ‘possibility of something to happen’ is cultivated. From a philosophical perspective, this touches on Stuart Kauffman’s notion of “the adjacent possible—” that within the components of any given moment, many untapped possibilities are available. [33]

The strange and beautiful truth about the adjacent possible is that its boundaries grow as you explore those boundaries. Each new combination ushers new combinations into the adjacent possible. [34]

These possibilities emerge from the creative interactions of practices, processes and potentials activated by the visceral, in-person experiential engagement with the chosen environments. Immediacy, unpredictability and surprise register in this relational liveliness of matter and material, forming an open-ended experimentation process that embraces the unexpected. Salter suggests that experimentation, as process, “takes its materials or entities as active, dynamic, and changeable, rather than passive, inert, and immutable...[transforming them] into agents...that have actual effects in the world.” [2]

In my research, the exploration of materials is done in part through the development of specifically designed computational systems. These systems vary in construction and are intrinsically linked to the collected location data that include audio field recordings, moving images and photos, as well as weather, meteorological, and environmental data. What emerges does so in an iterative, non-deterministic manner, which affords a holistic interaction



Figure 2. *Aspects of Trees* - opening section. Photo: Andrew Denton

between material, practice and process. This interaction subsequently involves the recording of live musical improvisations in response to the developed system. Recordings have taken place in live multimedia concert improvisations, studio settings, and their respective environments. What this provides is a cumulative database that in turn folds back into the final installation system. The ‘performativity of improvisation’ becomes an active agent in the process and evolution of the artifact.

From the systems theory perspective, Capra and Luisi suggest that process is the link between organization and structure. Here, they speak to the emergent and agential qualities of living and non-living systems and to the interdependent and fundamental interconnectedness of all levels of life. They do so through a conceptual synthesis of what they consider to be the four perspectives of life: *form, matter, process, and meaning*. [32] In general, *form* corresponds to patterns of organization, or self-generating networks of communications, of which through *process* the material embodiment, or *matter* of the form emerges. *Meaning*, which relates to the inner world of reflective consciousness, is generated by extending *form, matter, and process* into the social dimension, including “rules of behavior, values, intentions, goals, strategies, designs, and power relations.” [32] Human action, then, is understood to flow from the *meaning* we attribute to our surroundings. This meaning, in turn, gives rise to material structures in a process of continual embodiment.

In this context the initial engagement with the chosen environments, the creative experimentations, and the cognitive experience of the resulting artifact become part of the co-evolution of the process and meaning. Reflection, contemplation, and consciousness are then considered part of the network. This evokes a cyclical aliveness and an empathic discourse<sup>5</sup> that extends to include the larger biosphere, and contributes to the flow of internal and external networks of communication and meaning. In modern sci-

<sup>5</sup> Jeremy Rifkin suggests that empathy is the “invisible hand” that allows us to stretch our sensibility to all life. He proposes that more technologically advanced cultures have evolved into that of *homo empathicus*, which is ushering in a biosphere consciousness. This evolution has occurred due to the diversity of human interaction, creating a more complex system of communication and emergence [35].

ence this cyclical process of life is called metabolism, or the “breath of life.” [36]

The following descriptive accounts of the audiovisual installations *Aspects of Trees*, *Undercurrent* and the work-in-progress *Bridgings* will illustrate the creative practice, informing the conceptual development of *Ecological Performativity*.

### Aspects of Trees

*Aspects of Trees* (2013 installation version) is my sixth collaboration with filmmaker Andrew Denton, and is an extension of our previous artistic explorations of human impact on the Earth’s landscapes and ecologies. The subject of this work is the escalating pine beetle epidemic that has decimated forests on the west coast of North America. Due to the increase of pine beetle activity in this location, this devastation has more of a human touch than global warming alone. Western Canadian reforestation practices during the latter half of the 20<sup>th</sup> century implemented a mono-species program, which has resulted in a pine-tree-only forest. The combination of these mono-species plantations and the increasing average winter temperatures have cultivated an environment for the beetle to flourish. Currently, over 16 million hectares of British Columbia forests alone have been destroyed.

Initiated by Denton, *Aspects of Trees* is the result of a two-year field recording process that comprises video footage and stills from the decimated forests, as well as audio captured inside and on the surface of affected pine trees.<sup>6</sup> Having both worked in BC reforestation before, during and after the epidemic, Denton and I have a visceral and multi-layered engagement with this landscape. Because of this, a contemplative practice emerged during the collection process of which Denton writes: “Once time is taken to absorb [the location], I attempt to record material that communicates my sensations and experiences of being there.” [37] He reflects that by “letting go of a need to understand, comprehend, and categorize, ... the intensity of the making–feeling–thinking [could] take over in the moment of capture, leave[ing] the reflection and reinterpretation for a

<sup>6</sup> David Dunn and Felix Wilson provided additional field recordings of internal and external tree sounds.

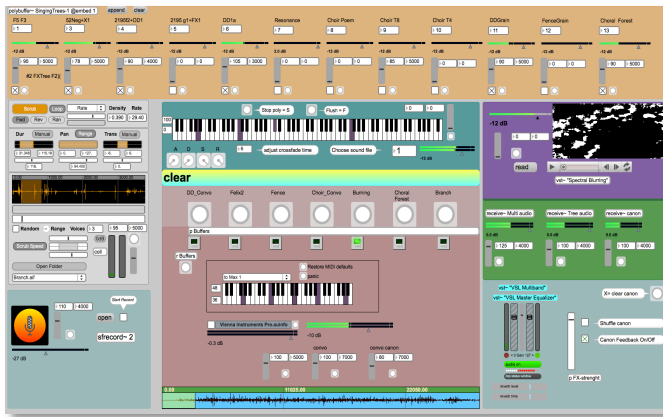


Figure 4. The 'tree instrument' Max6 patch.

later distanced encounter with the material during post-production.” (Figure 2) [37]

From these field recordings, and coinciding with Denton’s post-production visual experimentations, I began the development of the ‘tree instrument.’ Constructed in Max6, this portion of the research developed and amalgamated sonic material and computational processes for the purpose of live improvisation with cello, laptop performer (Max6 patch), and visual projections (Figure 3). Components of the ‘tree instrument’ include sonification of still and moving images, live convolution of cello with field recordings, an eight-part canonic system based on the numerical ratios taken from tree growth, and live granulation and transposition. [33] A series of improvisations took place in studio settings and live concerts, featuring myself, cellist Charlotte Ketel (New Zealand), and cellist Anna Bourne (Canada). Recorded and incorporated into the final installation, these improvisations fostered the relational potentials between subject, material and the cognitive agency of improvisation in which the performativity of components co-composed the resulting artifact: a system of engagement.

The final installation comprises multi-projections with composite images, surround sound and a 30-minute looping sequence, the trajectory of which moves, uncannily, from known to unknown, or rather, concrete to abstract. “It is melancholy and loss for an idea and a fantasy of nature that is no longer there...the invisible made visible, the unsayable now hearable. It is a eulogy.” [37]

Observations made during this research focused on the need for open-ended exploration in the chosen environ-

ment, in the iterative interactions with the material, and in the methods, pathways, and techniques employed in the creative practice. [37] These observations underscored the conceptual, philosophical, and artistic notion of *Ecological Performativity*. The stimulus was equally informed by the questions that surfaced: If we broaden our understanding of agency and performativity, is it possible to explore different vocabularies and networks of communication? Can this encourage, as Morton suggests, an attunement to the reality of the coexistence of all things on Earth? If so, as a creative practitioner, what then is my response?

## Undercurrent

As it was presented at the *Balanced/Unbalanced 2015 International Conference* in Tempe, Arizona, *Undercurrent* is a generative installation that features multi-channel video projections and surround sound. It is my third collaboration with media artist Shannon Harris, and is an interpretation of the ecological and personal landscape explored through moving image, video tracking, improvisation and data sonification.

*Undercurrent* emerged from what was initially a personal journey for Harris. Shot in the Yalakom River, British Columbia, her visit became a pilgrimage in memory of her recently deceased father, as they had camped often in this region. She writes: “I had no intention of filming on this pilgrimage but usually bring my cameras wherever I go. As I spent time by this quick river listening to the ‘shrush and bubble’ I was filled with a profound sense of completion: of cycles and patterns, beginnings and endings. I started shooting. Watching light.” [38] Harris’s still photography and moving images are known for their exquisite and evocative use of light and landscape. Her creative process is embedded in presence, place, and time in which the camera “becomes embodied, my eye/I, my experience.” [38]

Through refined experimentation, and with breaks to warm her hands from the glacial freeze, the *Undercurrent* footage was eventually captured while “try[ing] to find the light under water.” [38] It was the quality of light that prompted my decision to use video tracking as a generative tool. Imbued with a hypnotic play of light, these underwater shafts of sunlight become the triggering agents that afford an interaction between experience, material, and creative process. With no prior knowledge of Harris’s intention of a “pilgrimage,” my visceral response to the play of light was additionally influenced by a concurrent audiovisual



Figure 3. *Undercurrent*.

collection process throughout the Southwestern drought regions of the United States. This was a grueling three-week journey with collaborator Andrew Denton that brought us to many bleakly sunbaked landscapes found in this region. Water, or lack thereof, was at the forefront of our minds.

With this in mind, a single underwater video was selected and subsequently divided into five panels (Figure 4). Through the movement of light, each video panel randomly triggers a databank of sonic material: hydroponic recordings from the primary river location; sonification of Acoustic Doppler Current Profiler data<sup>7</sup> using piano samples; vocal snippets from on-line media in which global warming is debated; and, a catalogue of pre-recorded short improvisation using bassoon, cello, and Bb clarinet convoluted with underwater recordings. Constructed in Max7, these accumulated resources layer into a web of emergent realizations. With no beginnings, middles, or ends, this generative installation becomes more of a contemplation on time and place, process and meaning, or, a meditation in the time of crisis.

### Bridgings

I include this descriptive account of the work-in-progress, *Bridgings*, as it occurs at a noteworthy place in the development of *Ecological Performativity*. Having benefitted from the observations made in the previous collaborations, and having absorbed the varied contemporary discourses on agency and performativity, *Bridgings*, is, I believe, a synthesis of different modes of thought: everyday perception, artistic practice, and philosophical thought—“creatively in the act.” [24] As research is often reported on after the fact, describing this work-in-progress affords a view into the middle-of-the-making.

*Bridgings* is Stephanie Symns and my first collaboration, and is the result of data collection that took place on the Granville Street Bridge in Vancouver, BC, Canada between 2013 and 2014. This work-in-progress, in part, was conceptually inspired by the following quote found in *The Sketchbooks of Paolo Soleri*:

Of all things that are man-made, bridges are, with dams, the most “structural,” single-minded, and imposing. As connectors at a breaking point, they have a heroic force that is aided by a challenging structuralism. As a strand of continuity in a non-continuum, the bridge is full of implied meanings. It is the opposite of deviousness[sic], separation, isolation, irretrievability, loss, segregation, abandonment. To bridge is as cogent in the psychic realm as it is in the physical world. The bridge is a symbol of confidence and trust. It is a communications medium as much as a connector. [39]

The initial research began with a series of weavings, designed by abstracting photo images of the Granville Street Bridge. The original image was taken underneath the bridge and manipulated in Photoshop. By posterizing the

<sup>7</sup> Provided by Stephens Scott of NIWA Taihoro Nukurangi.

image to a certain number of layers that later corresponded to weave structures, the image was subsequently mirrored, both horizontally and vertically, to form a singular pattern unit. Of this process Symns writes: “I am inspired by minimalist architecture and the interrelationship of people, space, and structure. The intention with this series was to create compelling, graphic designs that would make a strong statement with the repetitive use of pattern and geometry.” (Figure 5) [40]



Figure 5. Sample design and weaving. (photo/weaving Stephanie Symns)

These would eventually transform into a number of large-sized weavings realized with the use of copper thread (Figure 6). Coinciding with the developments of these weavings, a number of audio recordings were captured on the bridge with the use of contact microphones that were attached to the metal components of the bridge. These recordings took place at different times of day and in varying weather conditions, resulting in a folder of sonic materials influenced by the movement of traffic, the bridge vibrations, and the movement of air through the cylinder components of the bridge.



Figure 6. Copper weaving (photo/weaving Stephanie Symns)

Satisfied with the initial collaborative processes, Symns and I envision the final installation to include a series of similarly rendered copper weavings embedded with motion sensors that, once triggered, will randomly select from the following components: images generated from visual data captured from the Granville Street Bridge Webcam (Figures 7 and 8) and a databank of sonic materials developed from the initial field recording and subsequent vocal improvisations. The webcam images will be displayed on small monitors mounted throughout the installation space along with a multichannel surround sound system. One additional consideration is the development of a computational system based on the architectural design of the bridge that would become a performative agent during the vocal improvisations. As such, this would be similar to the ‘tree instrument’ developed for *Aspects of Trees*. In this case, the ‘bridge instrument’ would afford an interaction between the architectural matter of the bridge and the agency of improvisation.

With these combined components, then, the final installation might be considered an immersive space of “emergent collectivities,” or, “an event-based ecology of experiences” [24] which co-evolves between object and collaborators, material and process, and structure and meaning: a “dance of agency.” [16]

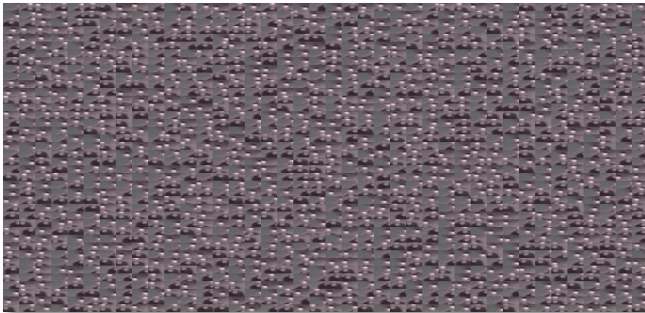


Figure 7. Generated from solo pedestrian image obtained from the Granville Street Bridge Webcam.

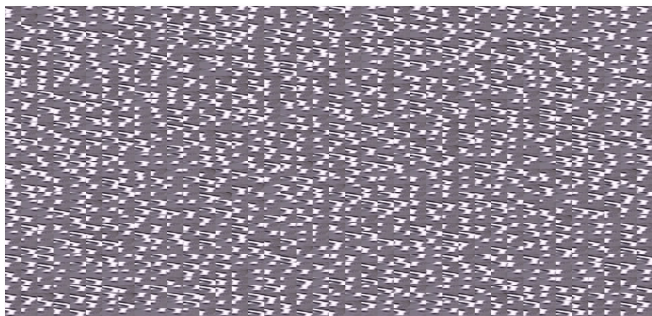


Figure 8. Generated from street marking image obtained from Granville Street Bridge Webcam.

## Conclusion

Ultimately, my practice-based research is a multimodal endeavor deeply entangled in the mesh of the world: matter, material, and modes of thinking. In line with the discussions on agency and performativity, this research considers the complex, emergent, and dynamic encounters available through experience and experimentation. By considering the world as a network of phenomena that are fundamentally interconnected and interdependent, the result is a performative engagement and attunement with the world that can function as an aid to the imagination. Human activity is placed into a larger environmental context by intersecting with forces greater than those of human design, which provides a multi-layered point of creative enquiry. This, I believe, works towards an artistic philosophy that considers how we imagine the world and how we act in it reciprocally informs one another. [16] As such, the concept of *Ecological Performativity* has developed alongside the iterative creative practice, the trajectory of which will continue in two future collaborative installations: *Flight Variant* with Andrew Denton and *Signal to Noise* with Shannon Harris.

## Acknowledgements

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## Author Bibliography

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