

Sonic Kinesthetic Forest: Listening to and Dancing With Trees

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Abstract

Sonic Kinesthetic Forest is an interdisciplinary research project and pedagogical investigation that uses sensory-based, creative methods of drawing, sound, and movement for connecting humans more viscerally to trees and forest landscapes. Our work responds to David Abram's premise in *The Spell of the Sensuous* that sensory practices are vital for mitigating human disembodiment, desensitization and disconnectedness from nature in contemporary life. Resilience, as a means of adapting to and recovering from extremes, may offer a form of bodily reconnection that reinforces human and more-than-human relations, especially between humans and trees. We approach resilience as a relational state of being that can be achieved by stimulating sensory modes of expression. In this paper we draw from our respective disciplines as landscape designer, sound artist, and choreographer/movement analyst to explain and reflect on the sonic kinesthetic methodology we developed for exploring the sensory attributes of trees through the embodied acts of listening, moving and drawing. We describe how the methodology was applied in two pedagogical projects: Listening to Trees, a workshop for undergraduate landscape architecture students at California State Polytechnic University Pomona (USA) and Dancing with Trees, a choreographic piece created for adolescent dancers as part of the Guelph Youth Dancers project (Canada), and how the proposed sonic kinesthetic methodology was demonstrated as a case study during the ECADE conference. We also discuss how project participants cultivated a deeper understanding of the aliveness of trees, ultimately enhancing their own sense of resilience by forging a more reciprocal relationship with the sentient world.

Keywords: Landscape Architecture, Drawing, Dance, Movement, Sound Art, Embodiment, Ecology, Sensory-Based Methods, Pedagogy

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Introduction

Desensitization, disembodiment, and disconnection from nature are all widespread issues in today's world that can contribute to an anxiety-laden sense of responsibility for 'saving the planet.' To counteract these paralyzing feelings, we assert that it is not enough for humans to be in nature but, rather, we must be together with nature to achieve a more productive sense of calm purposefulness that can then lay the foundation for individual and collective agency towards sustainable action. As such, it is particularly vital for human beings to establish symbiotic relationships with nature and critical to cultivate embodied ecological engagement through creative explorations.

Sonic Kinesthetic Forest is an interdisciplinary collaboration across landscape architecture, sound art and choreography/movement analysis. Through our ongoing collaborative project, we explore the question: How can ecological empathy and agency be fostered using integrative experiences of landscape design, sound art, and dance choreography? The deeper connection that we seek is a key step towards ecological empathy and embodied engagement with nature.

The Sonic Kinesthetic Forest project is motivated by ecologist and philosopher David Abram's claim in *The Spell of the Sensuous* (1996) that: "[n]onhuman nature seems to have withdrawn from both our speaking and our senses." and he asks, "[i]f perception, in its depths, is truly participatory, why do we not experience the rest of the world as animate and alive?" (p. 62). Our project serves as a platform for bringing these issues to the foreground, prompting conversations about how humans can better support and nurture resilient forest landscapes around the world. We are interested in how our three disciplines and their affiliated modes of expression can together connect humans more viscerally to trees and forest landscapes.

Shared Aliveness and Resilience

"There is no element of the landscapes that is definitively void of expressive resonance and power: any movement may be a gesture, any sound may be a voice, a meaningful utterance." (Abram, 1996, p. 117)

The interconnectedness of landscape, sound and movement expression as recognized in the words of David Abram above, is also a central theme in the work of acoustic ecology pioneer, R. Murray Schafer. He claims that for children under the age of five, life and art are entwined, but that once youth enter school the two separate (Schafer, 1986). Listening to natural soundscapes, he asserts, heightens human beings' appreciation for the unique and ephemeral qualities of human and non-human existence. Referring to listening practices of societies in the past for whom the recording of sound was not possible, Schafer claims that reducing the number of sounds one is listening to at one time is a way to achieve an experience of authentic fidelity that can only be possible in real time. In the short film *R. Murray Schafer: Listen* (New, 2009), Schafer states: "When you listen carefully to the soundscape it becomes quite miraculous," (0:35) and he encourages humans of all ages to focus on listening to their natural environments in order to enrich their lives (1:26).

For anthropologist Tim Ingold, being in the world "could be described as a condition of being alive to the world, characterised by a heightened sensitivity and responsiveness, in perception and action, to an environment that is always in flux, never the same from one moment to the

next” (Ingold, 2021, p. 84). In employing sensory expression to develop the shared aliveness that Ingold describes, our project proposes methods operating across landscape, sound and movement that have the potential to foster resilience of human and more-than-human bodies adapting to extreme conditions. The Sonic Kinesthetic Forest project draws from Ingold’s notion that engaging in active sensory perception to tune in to the changing elements of landscapes and sounds can help us to grasp and better understand the constant flux and transformations of our world. This state of openness to the world through a heightened embodied engagement across senses can provide us, as Ingold discusses, with the “strength, resilience and wisdom [...] to respond to the flux [...] with care, judgement and sensitivity” (Ingold, 2021, p. 93).

Social anthropologist Doerte Weig also explores an ecosomatic aliveness between human and more-than-human stating that “[b]odily perception and awareness ground knowledge, wisdom, self-awareness and self-security as much as potentials for aliveness and co-presence” (Weig, 2021, p. 167). For Weig, listening and moving responsiveness beyond “the controlling human, individual, ego perspective, [...] is an attunement to aliveness, to the ecosystemic perspective” (Weig, 2021, p. 152).

Artist, educator, and filmmaker Sarah Abbott examines a collaborative mode of interaction between trees and humans, highlighting the potential to restore the environmental and climate balance of the Earth (Abbott, 2021a). On a related trajectory, dance scholar Maxine Sheets-Johnstone’s writings on ‘moving in concert’ underscores the value of moving together with others in relation to a state of common aliveness:

Moving harmoniously with others indeed has the possibility of ever heightening awareness and knowledge of the bodies one is not, of hearing others in a different medium. The experience of hearing ourselves kinesthetically and hearing others kinetically puts us in touch with our common aliveness. (Sheets-Johnstone, 2017, p. 8)

Choreographers Ann Cooper Albright and Anna Halprin describe the potential for dance and movement practices to foster resilience by mobilizing social, political, and personal change. Heather Houser reinforces the positions taken by both choreographers in this statement:

They offer manuals for placing dance in contexts of exchange that produce *resilience*—another keyword of our times. What are the movement vocabularies that can cultivate resilience not as the act of bouncing back (yet another movement metaphor) but as the practice of being open, paying attention, shifting directions, and using touch and strength to create community?...Dance, for Albright, cultivates the flexible agency essential for resilience. (Houser, 2019)

Environmental change scholars Kaitlyn J. Rathwell and Derek Armitage (2016) argue that “artistic processes [can act] as mediators to bridge knowledge systems about social-ecological change”. For Rathwell and Armitage (2016), artistic expression involved in collaborative and performance art “can help participants to better understand each others’ values in the context of changing social and ecological conditions”. These authors highlight the importance of art in the communication and exchange of shared stories through space and time in response to change. Art making and artworks have the capacity “to nurture local social-ecological resilience” and “move through social networks, from local to global levels” (Rathwell & Armitage, 2016). As Weig discusses,

Can we change the system, by changing the way we move and think-perceive with each other, by organising and relating sensitively? Such potentials and capacities are shaped by and shape the local and global systems we are nested with. These potentials are also shaped by rhythms of breathing and moving-sensing, which are both beautifully unique and at the same time intimately and inextricably embedded with qualities of, not fitness, but joy and aliveness of ecosystems. (Weig, 2021, p. 171)

Drawing on the above resources, the Sonic Kinesthetic Forest project conceptualizes resilience in terms of adaptation and recovering from extreme conditions through a bodily reconnection of humans and trees; as a relational and adaptable state of being that can be achieved by active engagement with sensory modes of expression in order to recognize and foster a shared aliveness between human and tree bodies. We seek to activate embodied processes of attunement to somatic sensation through moving, listening and drawing. We engage in these practices in response to and in a reciprocal relationship with trees so that mutual resilience can occur.

Sonic Kinesthetic Methodology

Since beginning our collaborative Sonic Kinesthetic Forest project in 2020, we have brought together a set of methodological tools for research and teaching purposes with the aim of generating novel or alternative understandings about trees and forests in sonic and kinesthetic ways. These methods are used in practice and in a reflective manner in order to create and make meaning from multi-sensory and transformative experiences.

Drawing

Landscape architecture research may be best positioned somewhere in between embodied and representational ways of knowing (Tang, 2021, p. 60). Inherent to representational drawing is the scalar gap between the drawing and the subject being drawn; the necessity to pictorially translate the live subject to a representation that fits on a piece of paper reduces the scale of the drawing and focuses on the art. This gap creates a distance between the designer and the actual place, situation or sensation they are trying to represent. In the work we have been doing with students we move away from representational drawing toward embodied drawing so students are always working at 1:1 scale.

The medium of charcoal has proven to be a highly effective tool for this type of drawing because of its versatility as an instrument - any side of the stick can be used to draw - and its powdery texture which responds well to the weight, speed and movement of the charcoal as it is applied to paper. Choreographer Trisha Brown used charcoal in her dance performances (Eleey, 2014), allowing the black stick to become an extension of her body while charcoal markings index the extent and quality of her movement. A digital version of Brown's work can be seen in William Forsythe's *Improvisational Technologies* (1999) where his movements are made visible through a computer-generated linework appearing as if the space around him were a canvas.

On the other hand, embodied drawing is not predicated upon the visual but rather the sensorial. It is a form of drawing that seeks to capture the sensory attributes of a subject through the act of drawing. The use of charcoal is particularly significant because of its association with trees i.e. charcoal is typically made from willow tree branches and its tactile qualities. For example, all sides of the charcoal can be used (side, edge and tip) to create

different line thicknesses, the amount of weight applied to the charcoal creates different gradients of blackness and the speed at which the charcoal is moved changes the line density and consistency; in other words, the relationship between the body and the charcoal plays a critical role in its effectiveness as an expressive medium.

Sounding

Sound is a medium that can provide us with alternative understandings about relationships between landscapes and bodies. Sound reveals information across human and more-than-human, ecological and geological, historical and geographical dimensions of landscapes. In listening and responding to, as well as transforming frequencies related to landscapes, we can reconsider our relationships with trees and organisms from an embodied and sensory perspective (Barclay, 2019).

Drawing from the fields and creative practices of acoustic ecology, environmental sound art and music inspired by or composed for landscapes and gardens, we use methods including: active, in situ listening and listening from the perspective of other organisms; field recording and sound-making activities with found objects; vocalization, metaphors and translational processes as well as verbal descriptions for articulating acoustic qualities of listening and sound-making experiences; and scoring processes across sound, landscape and movement. These methods are employed to promote an active and embodied engagement with trees and forest landscapes through listening and sound-making while moving. The objective of such experiences is to produce novel understandings of plants, organisms, materials, weather and ongoing transformations of the environment through their own frequencies and in response to these soundings.

Our approach to sound moves beyond solely observational towards sonic experience and action. With movement, sound-making actions, drawing-related sounds of gestures as reflected through charcoal on paper and their dynamic qualities, we explore sound as a “phenomenon of *experience* – that is, of our immersion in, and commingling with, the world in which we find ourselves” (Ingold, 2021, p. 170). Sonic Kinesthetic Forest encourages us to focus our listening on the interactions between trees and humans as a means of forming a symbiotic relationship. Such sonic engagements are not only concerned with sounds of the vegetal, but those aural traces that reveal the aliveness and ongoing transformation of forest landscapes and how these are shared with humans.

Moving/Dancing

The moving/dancing aspect of the Sonic Kinesthetic Forest project follows a lineage of embodied movement and somatic sensing approaches. We promote physical practices that are in accordance with Indigenous principles of attunement to nature as expressed by choreographer Santee Smith. Smith maintains that dancing helps human beings appreciate that “nature actually does call out and we need to listen, especially when we’re dealing with a lot of climate change issues, disregard for Mother Earth, and a lack of connection” (TO Live, 2019, p. 1). The Sonic Kinesthetic Forest project relies on the idea that one significant way to improve our ability to listen to nature is to develop greater awareness of our own physical presence. We facilitate processes of listening to our own bodies through sensory attunement in order to recognize what movement pioneer, Irmgard Bartenieff called “our inner impulse to move” (Bartenieff and Lewis, 1980, p. 51). Thus, sensory attunement can “activate and

motivate” us to move expressively and to engage in dance improvisations that deeply connect our bodies to our environments (Bartenieff and Lewis, 1980, p. 1).

Taken together with embodied sound art and drawing practices, dance and movement within the Sonic Kinesthetic Forest methodology are approached under the premise that bodies are always moving. Whether our movements are so subtle that they are almost imperceptible to a single onlooker as is the case of shallow breathing, a heartbeat or the flow of blood through the body, or so expansive or specialized that they are considered to be virtuosic or spectacular by an audience in a dance performance or sporting event, we recognize that bodies are constantly in motion. This means that when we ask participants in our workshops to listen to their bodies and to move in response to their own sensations, we are confident that they may discover or rediscover their own sense of aliveness through dynamic movement.

Human beings move in response to their own inner sensory impulses but they also move to react to outer stimuli acting on their bodies. As theorized by Bartenieff and Lewis, movement always happens on a continuum of inner focus to outer connectivity, and humans move to adapt or cope with various elements in their environments (Bartenieff and Lewis, 1980, p. 51). Likewise, trees, forests and other elements of the natural world move in response to environmental stimuli. A tree may twist, turn or lean as a result of wind or sun and its roots may run deep or shallow, depending on the consistency of the soil and rocks beneath it. Forests respond and adapt through the gradual movements of growth and decay to environmental pressures coming from humans including irrigation, climate and urban sprawl.

Following this premise, the Sonic Kinesthetic Forest methodology involves moving together with trees. Participants of our workshops are asked to observe the particular dynamics, qualities, patterns, and shapes arising from the movements of individual trees or particular tree species, and respond to those movements through their own improvisational dancing. These movement/dance explorations often take place in forest environments where deeper connections can be facilitated, but they can also happen through creative visualization of trees when it is not practical to arrange an immersive forest experience.

Pedagogical Projects: Listening to Trees and Dancing with Trees

While our pedagogical projects took place in two different cities: Pomona, USA and Guelph, Canada, online technology allowed us to collaborate from the three locations where we teach: Toronto, Canada (Lisa Sandlos), Pomona, USA (Rennie Tang) and Paris, France (Eleni-Ira Panourgia). In particular, exchanges of ideas and facilitation of the sensory interactions necessary for our pedagogical methodologies were accomplished through video conferencing and shared media files (Figure 1).



Figure 1: The three collaborators in action

Listening to Trees

Listening to Trees was a workshop for undergraduate landscape architecture students at California State Polytechnic University (Pomona, California, USA). Workshop leaders, Lisa Sandlos and Eleni-Ira Panourgia, joined Rennie Tang and her students in Pomona via Zoom. They began the workshop by providing some insights about their respective practices and research as dancer/movement analyst and sound artist. They also shared several references for movement and sound projects that students could explore further. The primary aim of the workshop was to introduce landscape architecture students to topics and artistic works outside their own discipline to stimulate their thinking about alternative approaches to landscape design.

The presentations were followed by a series of small group activities involving the activation of word prompts. Lisa started by sharing some tree-related movement words (for example: leaning, spreading, twisting) and asked students to interpret these words through the movement of their body; they were encouraged to use all parts of their bodies as expressive instruments. Students were given some time to explore their movement interpretations in small groups and then present them in front of the camera on Zoom.

After the movement activity, Eleni-Ira gave the students another set of word prompts, this time focused on tree-related sounds (for example: rustling, crackling, absorbing) and asked students to interpret these words through sound-making. They were encouraged to use their voices, bodies, clothing or found objects to generate sounds. Eleni-Ira noted that vocalizations can be used in two ways 1) to imitate existing sounds and 2) to create more abstract sounds to interpret phenomena or a given state of an ecosystem through transforming sound qualities i.e., pitch, rhythm, density. Students were given some time to explore their sound interpretations and then present them in front of the camera on Zoom.

For the final activity students were asked to explore combinations of sound and movement. One team performed sound while another team performed movement and the playfulness of the unexpected juxtapositions and overall lively atmosphere of the room was palpable (Figure 2). It was clear that many students were taken out of their comfort zone and felt awkward using their bodies in ways they were not used to in a classroom setting. Many of them dealt with this by giggling or smiling as a way to release their nervous energy which had the effect

of creating a more uplifting energy in the room. Evident in this shift was a sense of shared resilience that encouraged students to adapt to their discomfort by doing the activity together with their peers. This activity clearly demonstrated the effectiveness of embodied pedagogy in deepening students' level of engagement, understanding and appreciation for the material they had learned through the opening presentations.



Figure 2: Cal Poly students exploring movement activity

The final project for the *Listening to Trees* seminar was the creation of a podcast episode that would feature a group of trees having a conversation with each other, with each student assigned to one tree and speaking from their own tree's point of view in first person. For example, an excerpt from one of the yet-to-be-published podcasts created by Cal Poly students features four trees talking about their 'emotions' as trees¹. To accompany each 20-minute podcast episode students were asked to create a 1-minute video trailer for their podcast². This was an opportunity for them to incorporate some of the visually-based explorations such as movement and drawing with their audio work. In the video trailer that accompanied the podcast episode above, students layered footage of tree leaves gently swaying in the wind with soft swirling hand movements followed by large arm gestures to create a clapping rhythm. This is one example of how students were able to artistically intertwine elements from each of the three disciplines to create a work that evokes emotion and reflects their deepened understanding of human-tree relations.

Working directly with sound and movement was a highly valuable experience for the landscape architecture students. Since they are more familiar with physical, rather than sensory/ephemeral, dimensions of space, these exercises open up new possibilities for non-verbal expression that can be incorporated into their future design projects.

Dancing with Trees

Dancing with Trees is the title of a choreographic piece and video project featuring youth and adolescent dancers in the Guelph Youth Dance Company (Guelph, Ontario, Canada). The dancers involved in the project were between the ages of 9 and 17. Lisa worked in the studio with the dancers while Eleni-Ira and Rennie were virtually present via a pre-recorded

¹ Excerpt of the podcast created by Bryan Covarrubias, Brian Espinoza, Dudley Myer and Ramon Napoles: https://streaming.cpp.edu/media/Podcast+excerpt+Cal+Poly+camphora+tree/1_7c6719ya

² Video trailer created by Bryan Covarrubias, Brian Espinoza, Dudley Myer and Ramon Napoles: https://streaming.cpp.edu/media/Video_Trailer_Ray%2CBryan%2CBrian%2CDudley/1_k46epah4

instructional video that they had created prior to rehearsals. While Eleni-Ira and Rennie were not able to instruct the dancers live on Zoom due to the time differences, they demonstrated activities and appeared on the screen as if speaking to the dancers.

The structure of the instructional video was based on a forest landscape in Guelph that would be the site where the video was filmed. After learning about the forest through Lisa's descriptions, photographs, maps and online research, Eleni-Ira and Rennie developed video prompts that would help the dancers imagine themselves moving through four different parts of the landscape: field, pathway, forest and river. For each part, there was a sound-making exercise paired with a charcoal drawing exercise. Eleni-Ira invited the dancers to explore sound-making with tree branches, body percussion and vocalization activities (Figures 3 & 4). Rennie demonstrated four different expressive charcoal drawing techniques for the dancers to try on large pieces of paper laid out across the floor. The dancers were encouraged to treat the charcoal sticks as extensions of their body and to 'dance' with the charcoal.



Figures 3 & 4: Dancers performing sound-making and drawing activities

The entire sound-making and charcoal drawing session was filmed so that sections could be used for the video project. Eleni-Ira used sounds recorded during the rehearsal in the studio and in the forest as well as sounds from nearby forests, to create a sonic environment for the dance piece and the video project. The sound material was processed and arranged in response to the rhythms of the bodies and their interaction with the trees and other forest organisms.

Elements of the session were incorporated into the choreography that was created collaboratively by Lisa and the dancers. The dancers used sensory response and movement improvisation to express their relationships to individual trees. They moved to express the aliveness and interconnectedness of trees within forests and to integrate these characteristics into their own embodied experience of performing, both in the live dance production and the videotaped version of the final choreographic piece.

Working in small groups, movements emerging from improvisations were woven together to set the choreography. The older dancers developed a section using cooperative weight support combined with a series of tilts and reaches to explore the notion that forests provide a model of cooperation and mutual support - a model that human beings would benefit from emulating. They also created a section based on rising and falling to show patterns of growth, destruction and regeneration that happen in forests as the result of natural processes and human activity. The younger dancers worked with pine boughs as handheld props. They

interpreted the smells, textures and shapes of the boughs through their dancing while drawing movements of the forest and exaggerating them across the space.

The final section in the dance piece was the culmination of all of these movement motifs: all twenty-six dancers moved harmoniously together in a complex formation of rotating, concentric circles while also rising and falling, leaning and reaching, and drawing expansively in the space with the pine boughs. During the videotaping which took place in a forest environment, the participants of Guelph Youth Dance attempted to embody particular trees through movement which allowed them to imagine their role as caretakers of trees and vice versa, from a new perspective (Figure 5). The final video production, titled *Sonic Kinesthetic Forest*³, documents the integration of drawing, sound and movement and it has been presented at multiple venues to showcase our research.

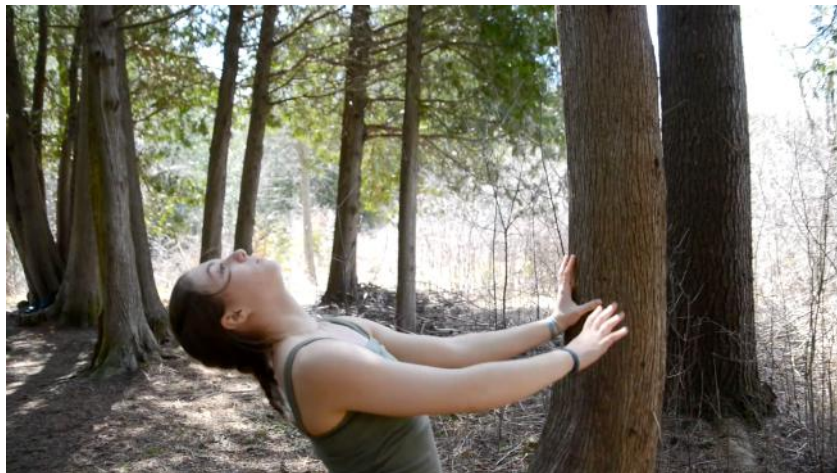


Figure 5: Dancers interacting and moving with trees

Case Study: Conference Activity

As part of our panel presentation at the European Conference of Art, Design and Education (ECADE) in Porto, Portugal in July 2022, we invited participants to experience our sonic kinesthetic methodology by moving, sounding and drawing with their body following the score below:

Movement: Close your eyes, notice the shape of your body, stand vertical like a tree, notice the exchange of oxygen and carbon dioxide through breathing, ground yourself through your feet like roots, allow swaying and free movement of upper body and arms like branches of tree, open your eyes and observe movement of the tree before you. Honor your own impulse to move and respond to the tree's movements. Touch the tree, express the sensation of touch through movement of your body, respond kinesthetically to smells and sounds of the tree.

Sound: Now imagine the sound of these textures. Try humming or whistling or mimicking sounds in other ways with your mouth or use your hands, body and objects around you to make sound to express the quality of those textures. The textures can be rough, bumpy, patchy, striated, peeling. And what about the leaves? Are they dry and crackling, are they

³ This video has been presented at several conferences in 2022: *Children, Youth, and Performance Conference (CYP)*, *dance and the child: international (daCi)* and *The European Conference on Arts, Design & Education (ECADE)*: https://streaming.cpp.edu/media/SKF_FINAL_052022_1.mov/1_bf0f12gq

rustling in the wind, are there other creatures sounding through them? Skittering, chirping, buzzing. Now imagine what it might sound like underground: what are the sounds of the roots as they reach, absorb, trickle.

Drawing with movement: Continuing your journey below the ground, trace the network of roots with your fingers, hands, wrists and arms as if you are drawing. Draw the entanglement and spreading of roots on the imaginary canvas in front of you. Gradually find your way above the ground, now using the palms of your hands side-by-side as a single thick paint brush. Move your brush upwards, pressing against the canvas in front of you so you can feel the weight of the tree trunk rising towards the sky. Once your brush reaches the canopy you can separate your hands so that you can encircle the canopy of the tree. Trace its outer shape- is it round, wide, jagged, pointy or twisted? Once your palm brushes meet at the top of the tree begin to explore the interior of the canopy, now using your fingers to create finer strokes to explore leaf margins and texture, branching patterns, and canopy density. When you are ready to bring your tree drawing to a close, bring your hands and arms into a neutral position next to your body. Feel the weight of your palm brushes dangling beside you.

The score allowed participants to imagine themselves as trees (i.e. embodiment) or to relate to the trees through their bodies (i.e. relational), while expressing their experience through movement, sound and drawing. Participants used their voices, found objects and surfaces in the room to improvise movements, create sounds and draw with hand gestures to explore dynamics of rhythm, density, texture, pressure, shape, pitch and volume. With their eyes closed, participants listened to a score that evoked sensory qualities of the experience and facilitated participant imagination. They sounded, drew and danced with their imagined trees or from the perspective of the trees. The drawing exercise added a visual component to their exploration of their imagined trees as if their hands left a residue on the surface of an imaginary canvas, making tangible the sound and movement sensations from the previous exercises.

Following the three parts of the score presented above, we invited participants to perform an improvised combination. This space of improvisation invited free experimentations with our sonic kinesthetic forest methodology whereby participants explored human-tree interactions with their bodies and imagined landscapes. Comments made by participants included the sharing of memories about trees that were familiar to them from their personal experiences. Participants also reported discovering new links between their experimentations within the sonic kinesthetic methodology and their own pedagogical and research processes in art and design.

Conclusions

We believe that new pedagogical methods for connecting humans and especially youth, more deeply to trees and forests are necessary and timely. Rather than learning about resilience through studying abstract concepts and theories, our work proposes that resilience is best embodied through interdisciplinary practices that have the potential to form multi-sensorial interactions between humans and the vegetal world. It is important for youth and all learners to experience embodied manifestations of resilience in order to further enhance their perception and appreciate the importance of human-vegetal symbiosis. As we continue this research we plan to investigate potential affinities between sonic kinesthetic experiences and Indigenous epistemologies and methodologies (Abbott, 2021b).

Our pedagogical experiments reveal the value of multi-sensorial, intergenerational and interdisciplinary approaches to environmental education. While different senses might be activated through conventional lessons in music, dance or art, it is the blending of all three sensory actions detached from a structured disciplinary framework - for example, sound rather than music, movement rather than dance and drawing rather than art - that allows for encounters and resilient juxtapositions to unfold unexpectedly. From an intergenerational standpoint, the intentional mixing of dancers of different age groups from the Guelph Youth Dance Company and the multi-year level seminar at Cal Poly created a non-hierarchical space that embraced difference and acknowledged our common aliveness as humans. Instead of dividing people up by year or competency level, a horizontal system of organization versus a vertical one evolved. Furthermore, the mixing of age groups was synergistic with the diversity of trees, in both age and species, in the forest landscape, thus reinforcing the sense of community and reciprocity that exists between all living beings. Lastly, the Sonic Kinesthetic Forest project supports interdisciplinary methods where students and collaborators are continually developing hybrid epistemologies and languages.

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