

Edgelands

by

Amy Wilson

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Approval

Name: Amy Wilson

Degree: Master of Fine Arts

Title: Edgelands

Examining Committee: **Chair:** Peter Dickinson
Professor

Claudette Lauzon
Senior Supervisor
Assistant Professor

Elsbeth Pratt
Supervisor
Associate Professor

Amber Frid-Jimenez
External Examiner
Associate Professor, Emily Carr University of Art and
Design

Date Defended/Approved: November 14, 2019

Abstract

In a time of ecological collapse, *Edgelands* (2019) considers the potentialities of making, speaking, mourning, caring, and growing with beings and forces that are other-than-human. Moving between soil communities on the Northwestern coasts of Scotland and Canada, my research focuses on the life-ways of plants and the vegetative microorganism mycelium indigenous to these regions to ground my interdisciplinary and collaborative enquiries. This research has been concerned with the ways in which practices of human and nonhuman making and care might meet. Combining human-nonhuman weavings, a soundscape and series of care-taking gestures, *Edgelands* is a performative installation that asks, how can multispecies alliances engage an ethics of care? As rhythms of human and nonhuman construction enfold, so too do landscapes, weaving together care practices within and across species, lands and timescapes.

Keywords: Nonhuman; Ethics of Care; Weaving; Soundscape; Installation; Performance

Edgelands is dedicated to the life of Helen Wilson. Missed, much beloved.

For the Clan Wilson-Adams,

to the nonhuman at the edge-limits,

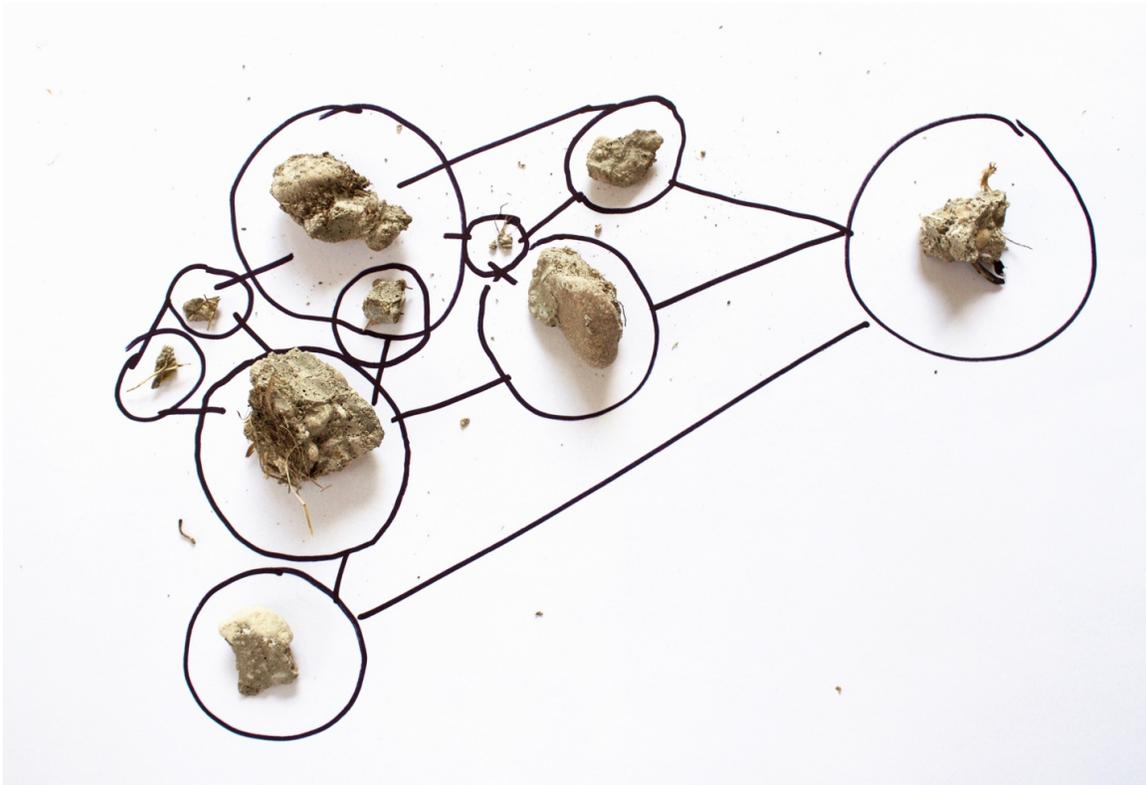
and to my sister, my greatest love and care.

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Thesis Statement

Introduction

In a time of ecological collapse, *Edgelands* considers the potentialities of making, singing, mourning, caring, and growing with beings and forces that are other-than-human. As such, it engages in contemporary art's nonhuman turn, bringing to the fore the agential nature of nonhuman lives and the ways they intersect with our own through new modes of interdisciplinary creative research and practice.¹

Moving between soil communities on the Northwestern coasts of Scotland and Canada, my research focuses on the life-ways of plants and the vegetative microorganism mycelium indigenous to these regions to ground my interdisciplinary and collaborative enquiries.² Mycelium (mushroom root) dwells within our soils, its collective body acting as a crucial metabolic agent with the capacity to produce and distribute vital energies across soil dwelling species and the landscapes they call home. As a living web of conduits, mycelia bind and weave with those they come into contact, operating at the edge-limits of how landscapes are made and unmade. Their labours help to articulate the passage between the living and dead and to instigate material transformations with the capacity to rearticulate relationships across ecosystems that enable biodiverse life to flourish. My research has been concerned with the ways in which practices of human and nonhuman making and care might meet. My initial lines of enquiry in the studio produced a series of installations titled *Living Objects* (2017-2018), which presented assemblages of living mycelial biocomposites within woven, floor-based and wall-hanging habitats.

¹ The *nonhuman* is a term that functions as a nexus of departure for life that includes but is not limited to land, plants, microorganisms, animals and elemental forces.

² Soil communities are the interwoven web of living organisms which constitute our soils. As Maria Puig de la Bellacasa explains "Soil is not just a habitat or medium for plants and organisms, nor is it just decomposed material, the organic and mineral end-product of organisms activity. Organisms *are* soil. A lively soil can only exist with and through a multispecies community of biota that *makes* it." See Maria Puig de la Bellacasa, "Making Time for Soil: Technoscientific Futurity and the Pace of Care," *Social Studies of Science* 45, no. 5 (2015): 701.

Emerging from *Living Objects*, the production of *Edgelands* (2019) marks the culmination of my research period at Simon Fraser University and the first performative installation in a new series of works and body of research which will be taken forward in 2020. Combining human-nonhuman weavings, a soundscape and series of care-taking gestures, *Edgelands* asks, how can multispecies alliances engage an ethics of care? As rhythms of human and nonhuman construction enfold, so too do landscapes, weaving together care practices within and across species, lands and timescapes.

Mats, Matter and Gardens

Mycelia occupy almost every ecosystem on Earth, from forest floors to tundra meadows, even dwelling in sites of extreme heat, toxicity and ecological devastation.³ They are a member of a community of microorganisms which make up the digestive system of soils, aiding in the breakdown of chemical, mineral and organic compounds within rotting matter.⁴ Mycelia grow, bind and at the same time distribute nutrients and moisture to other forms of life with whom they come into contact, forming a collective body referred to as a mycelial mat. As mycologist Paul Stamets states, “If you were a tiny organism in a forest’s soil you would be enmeshed in a carnival of activity, with mycelium constantly moving through subterranean landscapes like cellular waves, through dancing bacteria and swimming protozoa with nematodes racing like whales through a microcosmic sea of life.”⁵ Like humans, mycelia rely on a self-sufficiency honed not from alienation but on a capacity to survive through interdependent relationships with other organisms. Science and Technologies Studies theorist Donna Haraway describes such relations as *sympoietic* in nature - the way we actively make-

³ See Swedish Polar Research Bibliography research portal for more information about mycelium in arctic conditions. Swedish Polar Research Secretariat, “Expedition: Tundra Northwest: Biodiversity in the Arctic”, Swedish Polar Research Bibliography in DiVA, 1999, <https://polarforskningsportalen.se/en/arctic/expeditions/fungi-arctic-diversity-species-adaptation-cold-climate>.

⁴ They do this by secreting enzymes into their surrounding environment from their hyphae (the single cell tendrils that make up their collective body). They then ingest nutrients and water through this metabolic process back into their cells.

⁵ Paul Stamets, *Mycelium Running: How Mushrooms Can Help Save the World* (Berkeley: 10 Speed Press, 2005), 10.

with others in and across species.⁶ Works like *Arduenna Silva* (2015), by artist Sonia Levy in collaboration with architect Alexandra Arènes, make visible these intertwining networks of human and nonhuman making, living and dying that constitute the ground around us. Their use of terrestrial photogrammetry on the surface of Parc de Belval in northern France allows us to depict human-nonhuman pathways, those of growth and decay as the camera maps the forest floor in three dimensions.⁷ There is at first glance a static architecture to the pathways depicted in these video documents; however as Haraway points out, such interwoven traces of human and nonhuman construction are generated through disruptions. To make-with others, she continues, is to acknowledge that our interactions occur within a shared life/death vulnerability.⁸

Contemporary art's nonhuman turn brings to the fore the agential nature of nonhuman lives and the ways they intersect with our own through engaging in what Richard Grusin describes as an "assemblage" of diverse theoretical discourses from across the humanities and social sciences which "argue (in one way or another) against human exceptionalism, expressed most often in the form of conceptual or rhetorical dualisms that separates the human from the nonhuman."⁹ The contribution of New Materialisms to the nonhuman turn take on such a task by depicting humankind's interrelatedness/interdependence to other forms of life rather than our alienation from them whilst also acknowledging the precarity of the material indeterminacy which we share in with nonhumans. Theories evolving from contemporary quantum physics have

⁶ The concept of sympoietic relations was constructed by Haraway via Beth Dempster, a Canadian systems thinker whose work on landscape design and environmentalism in the 1990s helped her coin the term. On Donna Haraway's work on multispecies companionship see *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press, 2014), 61.

⁷ Levy's work is in part inspired by Anna Tsing's ethnographic study on the relationships between matsutake mushrooms, marginalized mushroom forager communities in Oregon, and mushroom commodity chains between Japan and North America which offers unique insight into the ways mushroom and human modes of production coexist within the precarity of ecological and social instability. See Anna Lowenhaupt Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton: Princeton University Press, 2015). See also <http://sonialevy.net/arduenna-silva.html> for more details of the project and to access the digital archive.

⁸ Haraway is keen to point out that sympoiesis "is not a synonym for mutually beneficial." See Haraway, *Staying with the Trouble*, 60.

⁹ Richard Grusin, "Introduction," in *The Nonhuman Turn*, ed. Richard Grusin (Minneapolis: University of Minnesota Press, 2015), x.

been of particular interest to me in my research as they instantiate that all material objects (including human beings) are situated and emergent complexes of lively matter formation.¹⁰ Feminist theorist Karen Barad illustrates these complexes as a “congealing of agencies” that “unmoor” the human from being able to conceive of itself as set apart in a position of agential exclusivity from the material world around us.¹¹ Intra-action is a key term coined by Barad to characterise the interactions of quantum level phenomena which produce contingent yet individual material objects. As Barad elaborates, “It is through specific agential intra-actions that the boundaries and properties of ‘individuals’ within the phenomena become determinate and particular material articulations of the world become meaningful.”¹² If all material objects are collectively and animatedly constituted in the matter of their being, then agency is not a property that one is external of and with which one can be endowed or not. It is instead the state of ongoing possibility-making within which we are already, always materially entangled with others.¹³ My interest in mycelium as a mycological species is rooted in the kind of vital material entanglements that Barad illustrates and in the moves she and others make to shift our understandings of, in Mel Chen’s words, “proper mediums of affect.”¹⁴ Shifting our understandings matters because our encounters with humans and nonhuman are imbued with non-innocent touch. Our current times can attest to this. Humankind has

¹⁰ Most relevant to my research are the challenges such practices bring to the divisions between the (human) subject and material objects. This is referred to as the Cartesian-Newtonian divide. The nonhuman turn can be characterised as engaging in ongoing challenges to both nineteenth-century empiricism and the linguistic turn of the twentieth century by rearticulating the joints of how we come to understand the inert, agential, individual and collective.

¹¹ Karen Barad, “Intra-actions,” interview by Adam Kleinmann, *Mousse* 34 (2012): 79.

¹² Ibid. 77.

¹³ “Phenomena,” explains Barad, “are entanglements of spacetime matter, not in the colloquial sense of a connection or intertwining of individual entities, but rather in the technical sense of *quantum entanglements*, which are the (ontological) inseparability of agentially intra-acting components.” See Karen Barad, “Nature’s Queer Performativity,” *Qui Parle: Critical Humanities and Social Sciences* 19, no. 2 (2011): 125. In accordance with Barad’s intra-agential realism, this relationship of matter formation is conceived as the “intra-agential becoming” of an individual. Ibid., 77.

¹⁴ Animacy hierarchies shift through time and amongst cultures and language users; they generate space within which we structure our meaning-making, they move through our utterances finding solidity in our linguistic and bodily joints and in our relationships with others and to our material worlds. Chen’s work in queer affect questions how these slippages might challenge structures of power which oppress agency in both human and nonhuman worlds. Mel Chen, *Animacies: Biopolitics, Racial Mattering, and Queer Affect* (Durham, NC: Duke University Press, 2012), 41.

become a forceful momentum unto the world, a condition of change with the weight to shift Earth's elemental forces. We are dramatically shaping and reshaping the ecological and climatic relationships which sustain conditions of life on Earth. Such is our impact that our present time can be characterised by the diminishment of biodiverse life through human attributed ecological collapse. We are, as paleontologist Michael Novacek states, entrenched in the realities of the Sixth Age of Extinction.¹⁵ This insistent momentum toward a future in which human progress stands paramount to that of other species can be rendered visible in the scarification of the nonhuman and in their increasing absences from our ecosystems.¹⁶ My first step in my research was to acknowledge that human-nonhuman relations are open to potentialities - of violence, erasure, ambivalence and negligence, just as much as vital interdependence. If it is through our material entanglement with others that we manifest and are shaped, how do we make-with in ways that enable diversity and difference to flourish?

In initially considering the ways that mycelium and human construction methods might meet I turned my attention to the relationships between mycelium and researchers within interdisciplinary projects such as *Fungal Futures* (2015-18).¹⁷ Facilitated by Utrecht University in the Netherlands, the project explored the capacities of mycelium to operate as a potential alternative “biopolymer” to petroleum-based materials. In their biocomposite exhibition *Fungal Futures/Growing Domestic Bio-Landscapes* (2016), prototypes such as hybridized mycelial textiles, utility vessels, 3D printed mycelium chairs and construction materials were sealed inside glass vitrines within the subtropical greenhouses of Utrecht University.¹⁸ The display methods deployed aimed to express a

¹⁵ See, Michael J. Novacek, *Terra: Our 100-Million-Year-Old Ecosystem and the Threats That Now Put It at Risk* (New York: Farrar, Straus and Giroux, 2007).

¹⁶ *Scarification* is a term generally used to refer to body modifications carried out upon the surface of the human body through cutting or rending the skin. This term also extends to a process of excavation of Land and its mineral resources as well as the scarring of seeds and soil to aid in the process of germination.

¹⁷ See <http://www.fungal-futures.com> for details.

¹⁸ *Fungal Futures/Growing Domestic Bio-Landscapes* (2016) was a curatorial project led by participating designer and researcher Maurizio Montalti to showcase the range of innovative mycelial-biocomposite design ideas and prototypes which were realized throughout the *Fungal Futures* research project *Mycelium Design* (2014-15). See <http://www.corpuscoli.com/projects/fungal-futures> for documentation of the *Fungal Futures/Growing Domestic Bio-Landscapes* exhibition.

living museum yet favoured the stability required to render the human utility of the prototypes visible; here the conditional constraints placed on mycelial objects - both in display and method - created quarantines which denied further material transformations along the mycelia's life cycle from taking place. By opening up the sensorium to the human-nonhuman agential dynamics that occurred within laboratory, studio and exhibition conditions participating designers such as Jonas Edvard worked to widen the reach of his research to consider how mycelium's reproductive cycles help form life sustaining alliances with other soil reliant organisms. His mycelium lamps, for example, were created to engage mycelium along key transformational thresholds, from binding and weaving (to create a light diffractor), to their production of fruiting bodies (to use the lamp as food source) and onwards to their contribution to the production of healthy, biodiverse soils (by reintroducing them into the earth) to continue their role as organic matter recyclers.¹⁹ Barad's thoughts on the feminist ethic of response-ability have helped to ground me in my own path towards opening up my sensorium in similar ways. "Responsibility," writes Barad, "is not about the right response, but rather a matter of inviting, welcoming, and enabling the response of the Other. That is, what is at issue is response-ability - the ability to respond."²⁰ My studio research has therefore sought to refine a range of cultivation and construction methods focused on the material, formal, and affective manifestations which can occur within the reproductive rhythms and life cycles of mycelium.

Living Objects

Living Objects (2017-2018) is a series of installations which started as floor-based habitats that simultaneously function as suggestive molds and microclimates. Most often woven frames, these habitats mirror cultivation methods employed in the activation of mycelial spores with the intention to extend conditions conducive to mycelial life into the gallery space. This produced a series of floor-based and wall hanging mycelial mats and petite floor growths presented on and inside of weavings created from industrial and

¹⁹ See <https://jonasedvard.dk/work/myx/> for more details.

²⁰ Barad, "Intra-actions," 80.

agricultural waste materials such as angle irons, recycled plastic and paper fibers, compost and vegetative matter. This gathering and binding mirrored the recycling practices at which mycelium are constantly at work within their soil communities. Displayed at various stages of maturity and even at stages of mummification or decomposition, these assemblages of woven beds and mycelia aimed to create the opportunity for a temporal and material diversity to manifest within the gallery space. The channeling of elemental forces such as light, heat, air, and water required labour over the course of the mycelial life cycle. Care is positioned by Maria Puig de la Bellacasa as a collection of everyday labours which inform, propagate and refine our relationships to others. Care, she writes, is “a necessary practice, a life-sustaining activity. An everyday constraint.”²¹ That the survival of the mycelia within the sterility of a gallery space hinged on my labours of care made me very aware that in order to propose further iterations of human-nonhuman constructions, obligations of care were becoming at stake. The key ethical principles of Permaculture - *care of Earth, care of others and return of the surplus*, Puig de la Bellacasa explains, are helpful to forming multispecies alliances as they bring to our attention nonhuman practices of care which might otherwise be overlooked and from which we may better learn to care. Practitioners of permaculture ethics, she argues, develop capacities of care and response through sustained attentiveness to the rhythms of multi-species interdependence at work in the soil communities they are a part of and in so doing, space is created to “search for alternative technologies that work with natural mechanisms rather than against them.”²² The intention of formulating a vocabulary of gestures of care moving forward in my work was to continue to open up the sensorium to mycelium in ways that cultivate an ethics of care. As Aryn Martin, Natasha Myers and Ana Viseu express, there exists a “a field of potentialities ... indeterminate subjects and objects, and expansive possibilities for form and temporalities” which precede the development of obligation of care, what they refer to as a space of *critical care*: an opportunity to develop “a capacity or willingness to

²¹ Maria Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More than Human Worlds* (Minneapolis: University of Minnesota Press, 2017), 166.

²² Maria Puig de la Bellacasa, “Ethical Doings in Naturecultures,” *Ethics, Place & Environment* 13, no. 2 (2010): 152.

respond, to be called into action, to be hailed by that object or phenomenon. In short, a person who cares must first be willing and available to be moved by this other.”²³

²³ Aryn Martin, Natasha Myers and Ana Viseu, “The Politics of Care in Technoscience,” *Social Studies of Science* 45, no. 5 (2015): 635.



Figure 1. Amy Wilson, *Living Objects (selected)*, 2017, dimensions variable. 611 Visual Arts Studios, School for the Contemporary Arts, Simon Fraser University.



Figure 2. Amy Wilson, *Living Objects (selected)*, 2017, dimensions variable. 611 Visual Arts Studios, School for the Contemporary Arts, Simon Fraser University.

My previous work with island communities on the West Coast of Scotland concluded with the creation of a series of micro gardens which were designed for nonhumans as part of the restoration of landscapes endangered by human settlement.²⁴ In order to extend my understanding of the ways mycelia help weave and unweave landscapes, my collaborative enquiries as a visitor to Canada turned to the care practices of plants indigenous to the landscapes bordering the Salish Seas (the Garry Oak Ecosystem) organisms that, like mycelia, aid in the restoration of landscapes endangered through the ongoing legacy of colonial expansionism.²⁵ “Gardens,” writes Natasha Myers, “are sites where it is possible to get a feel for the momentum that propels people to involve themselves with plants. Where evolution describes those *longue durée* events that find species diverging from one another, *involution* offers a way to story the ongoing, improvised, experimental encounters that take shape when beings as different as plants and people involve themselves in one another’s lives.”²⁶ By staying in this tension within the gallery space, where obligations of care become at stake, my graduating project *Edgelands* seeks to create space “to slow care down, to expose and question the self-evidence that would otherwise prescribe its proper objects, as well as its seemingly necessary direction, temporalities, intensities and forms of action.”²⁷ The edgelands are

²⁴ Creating health and wellbeing gardens for nonhumans, the project also offered human participants the opportunity to develop ecological awareness and literacy through sustained intimacy with nonhumans through learning encounters in these gardens. The Bee Wild Project, for example, was constructed in partnership with the Royal Botanical Gardens at Kew and Grow Wild UK to create havens for endangered local bees through the reintroduction of native wildflowers species to the Isle of Gigha. See www.amywilsonarts.com/works for more details.

²⁵ The Garry Oak Ecosystem acts as a transitional zone between sea and forest on the coasts of the Salish Seas. This ecosystem manifests in a broad range of habitats from beach and maritime meadow to coastal bluffs, vernal pools, grasslands, rock outcrops and transitional forests. The ecosystem is named after the Garry Oak tree whose uninterrupted canopy allows direct sunlight to reach the floor of the forest throughout the year enriching the landscape through creating opportunities for high levels of biodiversity to emerge beneath its branches. See Nancy J. Turner, *Ancient Pathways, Ancestral Knowledge: Ethnobotany and Ecological Wisdom of Indigenous People of Northwestern North America* (Montreal: McGill-Queen’s University, 2014), for more insight into this ecosystem.

²⁶ Working within an involutionary momentum, according to Myers, means paying attention to rhythms of nonhuman productivity and treating nonhumans as practitioners in their own right who are “living active lives with extraordinary sensory dexterity and a penchant for innovative behaviors.” See Natasha Myers, “From the Anthropocene to the Planthropocene: Designing Gardens for Plant/people Involution,” *History and Anthropology* 28, no. 3 (2017): 297. See also Natasha Myers and Carla Hustak, “Involutionary Momentum: Affective Ecologies and the Science of Plant/Insect Encounters,” *Differences: A Journal of Feminist Cultural Studies* 23, no. 3 (2012): 74-118.

²⁷ Martin, Myers and Viseu, “The Politics of Care in Technoscience,” 635.

an amalgamous and porous border-land between human settlement and nonhuman landscape. As a performative installation, *Edgelands* brings together, through exhibition, the human and nonhuman relationships and affective ecologies that have informed my research on the unceded, ancestral and traditional territories of the x^wməθkwəyəm, Skwxwú7mesh, and Səlílwətał Nations. *Edgelands* is both entangled in the landscapes between settlement-sea and the liminal space between the West Coasts of Canada and Scotland, and is therefore a hybridised landscape, not a cultivated field of study for discrete, alienated and withdrawn objects but rather a co-created space of human-nonhuman material entanglement where labours of making and care meet across species, times and landscapes.

Edgelands - Between Settlement and Sea

Within an open-sided vitrine at the entrance to the Audain Gallery at SFU Woodward, madder and elder-soaked fibers encase mounds of soil creating a hill that moves downwards towards rock and sand. On this bedrock, dehydrated mycelium mats form a dry bed near which seedlings, sprouts and sunburnt plants grow. Nestled on this bed, surrounded by junegrass, sand and stonecrop, a TV monitor is playing, casting a glow. In this edgeland, plants are growing and dying, setting seed, sprawling, weaving and hungering.²⁸ Along the border (facing in toward the gallery), soil and plant matter spill into the gallery entrance way. A speaker is buried up the neck inside the top of the ridge and headphones hang from a pillar at the centre of the vitrine. From them a woman's voice can be heard singing in Gaelic: "*Càit' a bheil thu air a bheinn? Dè tha ruid tha dhìth orm? An cluinn thu mi? O ho hu a. Am fairich thu mi? O ho hu a. 'S e ban-ogha Eilidh a th' annam. Dè ruid a chaill mi? A thairring thusa thugam? Caomhneas na*

²⁸ The list of plant actants in *Edgelands* includes but is not limited to: Reshi mushroom spores, juniper, elderberry, madder, nootka rose, stinging nettle, goldenrod, wooly sunflower, coastal sage, lance-leaved stonecrop, coastal strawberry, fireweed, field mint, field chickweed, blue wildrye, meadow barley, californian aster, nodding onion, yarrow, dewey's sedge, tufted tragrass, mountain sneezeweed, junegrass, lady fern, pumpkin and garry oak. The plants present in *Edgelands* were grown with the support of the farmers, conservationists and growers at Saanich Native Plants on Vancouver Island who specialise in cultivating Garry Oak Ecosystem plants that aid in habitat restoration. I cultivated several plants including the garry oak seedlings over the course of my studies at Simon Fraser University.

buaille?”²⁹ A refrain utters back in response to these verses and many more. Occupying the gaps created by her inhaling breath, women respond singing: “*Elie le ho ro ho o hu a.*” The song unfolds in a looped cycle that echoes in the entrance way and through the headphones. It can also be heard in the distance, luring the listener through the gallery space towards the smell of fruiting reshi mushrooms that permeate the air in a narrow corridor with high glass windows overlooking West Hastings Street. It is the smell of ozone and nutty rot. Antler puffs of rusty red and pail cream mushrooms undulate in chandelier-like structures and sprout along the edge-limits of two 8’ x 4’ weavings. The weavings sway in the center of the narrow corridor. Hung suspended by rope, they are spread along poles of hemlock wood. To enter the space means to occupy their space, to brush up against them, to have their masses move by your presence as air currents list them gently. These masses are held together by the strength of hyphae which are feasting, getting stronger by the day, distributing weight across fibers and tendrils which in turn produce fruits which swell and (on reaching maturity) burst with seed. At a distance, these expanses form twin landscapes of stone islands and seas as if viewed from a great height. These weaving bodies of root and vegetation are alive but in slow motion. Exposed to the eye, on closer inspection, the weaving of hyphae tendrils reveals clandestine behaviors that would otherwise be obscured by layers of foliage and soil. Two folded echo chambers of plastic encompass these weavings; moisture accumulates with the heat of the collective inhale and exhale of the mycelium root - oxygen in, carbon dioxide out - just like the human body. The folds of plastic are open at the edges, held together by jute twine soaked in medicinal-rich dyes. Hues of juniper gold (for the guts), madder red (for the treatment of blood and open wounds) and elder moss-green (for immunity) pierce in and out of the plastic creating openings. Pulling ropes into its webs, mycelial pathways interpenetrate these landscapes and seek out its gaps. None of this weaving is straight; instead form is generated through emergent rhythms of vibration and breath, moved by hunger and longing. Someone is watering the plants, work boots are set aside and bare feet walk on soil. Botanical fragrances fill the air, the smell of wet earth as

²⁹ The following verses from *Edgelands - Songs for the Edges* translates to: “Where are you on the mountain? What am I missing? Can you hear me? Can you feel me? I am the granddaughter of Helen. What did I miss? To lure you to me? The tenderness of the fold?”

summer gives way to autumn and rotting leaves. Someone is humming along to the refrain as they tend to the fruiting bodies, spraying them with water, piercing holes into the plastic through which they can continue to grow. Moulding, binding, singing, weaving, watering, feeding, aerating, retreating, rending, mulching, burying; gestures of care join the rhythms of the refrain. *Edgelands* is enfolding.



Figure 3. Amy Wilson, *Edgelands*, 2019, dimensions variable. Audain Gallery, SFU Goldcorp Centre for the Arts, Vancouver, Canada.



Figure 4. Amy Wilson, *Edgelands*, 2019, dimensions variable. Audain Gallery, SFU Goldcorp Centre for the Arts, Vancouver, Canada.



Figure 5. Amy Wilson, Video still from *Tha Mauld tha Mauld: Waulking of the Tweed*, 2019. Archival footage loan from The School for Scottish Studies Archival Collection, The University of Edinburgh, Edinburgh Archival Ref: VA1970.01, Recorded: South Uist, Scotland, 1970.



Figure 6. Amy Wilson, *Edgelands*, 2019, dimensions variable. Audain Gallery, SFU Goldcorp Centre for the Arts, Vancouver, Canada.



Figure 7. Amy Wilson, *Living Objects 36 and 37*, 2019, dimensions variable. Audain Gallery, SFU Goldcorp Centre for the Arts, Vancouver, Canada.



Figure 8. Amy Wilson, *Edgelands*, 2019, dimensions variable. Audain Gallery, SFU Goldcorp Centre for the Arts, Vancouver, Canada.

Edgelands - Songs for the Edges

Edgelands (2019) draws on the rich traditions of weaving and wool making on the West Coast of Scotland as a way of generating momentums through which nonhuman-human practices of care and making can entangle.³⁰ Waulking is a weaving practice which finds its origins in Scotland's highlands and islands and is carried out by a group of women in order to ready the weaving for being cut and used in garment creation.³¹ The weaving undergoes a tenderization process, during which it is hit and rolled on a flat surface in a kneading motion. Heading in a clockwise direction each participant beats a section of fiber before passing on their section to the woman next to them. Reaching, passing, touching, passing, beating, passing, the cycle continues creating a rhythm to the work. Waulking gains its momentums, cultural and ceremonial significance from the songs that are inseparable from its labour which are also composed and performed by women.³² Constituting one of the many electronic textural elements of *Edgelands*, the archival footage playing on a monitor in the *Edgelands* garden sees the weaver Kate Nicolson and her friends seated around a wooden table in a stone bothy on the Isle of South Uist where they prepare the tweed through waulking.³³ The footage illustrates waulking and its songs as a complex system of call and response wherein verses and actions are proposed by a leader and are therein responded to by the group at large.³⁴

³⁰ Highlander culture and knowledge is preserved in rural communities across the highlands and islands of Scotland. Waulking was mostly eradicated through the mechanisation of the 1950s but there are still specialists on Islands such as Harris and Islay, Orkney and Shetland who produce artisan weaving and wool informed by waulking techniques and protocols.

³¹ After being removed from the loom, the weaving is looped and sewn into a circle before being soaked in a potent mordant mixture often including human urine.

³² Waulking songs are part of a rich oral heritage of storytelling within the highlands and islands of Scotland and form some of our oldest (and best preserved) remnants of ancient highlander heritage. Digital archives such as those facilitated by the School for Scottish Studies at The University of Edinburgh, BBC Scotland and the National Trust for Scotland, like *Tobar an Dulchais*, also play an important role in preserving such knowledge.

³³ This archival footage was gifted to *Edgelands* from The University of Edinburgh's School for Scottish Studies. *Tha Mauld tha Mulad: Waulking of the Tweed* was sung and performed by Kate Nicolson and friends and was recorded on South Uist, Scotland, 1970. Archive Ref : VA1970.01. A bothy is a stone building erected to provide basic shelter and work space for labourers and gardeners who work on the Land and within estates. Bothys are traditionally left unlocked to allow for travelers to use of them freely.

³⁴ The first verses of the song, sung by the leader for example, indicate the vocable phrase selected for a particular waulking. These vocables have survived within the oral tradition by being passed down within island communities. They vary from region to region and isle to isle through changing Gaelic dialects.

Crucial to waulking songs are the vocables employed as a response to the call which hold no literal translation to spoken words in English or Gaelic. These phrases bind the labours of the waulking together by occupying the spaces created by the leader's inhale or resting period.

I composed and performed the waulking song titled *Songs for the Edges*, originating from poetry composed in English and translated into Gaelic with the support of Richard Hill of Ossian Music and Joan Black of the Isle of Lewis. Waulking songs are often songs of longing; for a lover, land, life or situation, one that is not processed and longed for or one that was processed but is lost.³⁵ In the case of *Songs for the Edges* the call to bind and weave, to make, mourn, resist, grow and care is directed from me to nonhuman actants who are weaving the landscapes of *Edgelands* with me in the gallery. In this way, I sought to compose like a tendril, like a hyphae reaching in invitation to a tangle of human and nonhuman subjects of personal affection along the movement from mountain, to shore to edges - a movement that is echoed in the poem's structure and the landscapes within *Edgelands*.³⁶ Amplified through a headphone and speaker system, *Songs for the Edges* created a soundscape within the gallery that connected human-nonhuman rhythms of making separated by the gallery's main exhibition space - from the *Edgelands* garden full of plants from the Garry Oak Ecosystem, to the reishi mycelium mat weavings in the front window of the gallery.

These vocal forms find their natural progression in the labour songs of the 1950's in Scotland's fishing, mining, factory and milling industries. *Eile le ho ro ho o hua* is a vocable most often heard on the Isle of Barra.

³⁵ Directed toward both human and nonhuman subjects of affection, waulking songs can be composed as lamentations, as opportunities to air out grievances and grief, to mark scorn and to celebrate present or potential unions or relationships. They are most often site-specific, drawing into their composition landscapes and their inhabitants of particular import to those taking part in the waulking.

³⁶ The pitch of the leader in *Songs for the Edges* was inspired by waulking songs from the Isle of Lewis and Isle of South Uist where a deeper more mature voice is deemed as both attractive and a prized quality. The depth was also chosen to carry the weight in subject matter which makes up the longings expressed in *Songs for the Edges*. Poignantly, for example, is a lament that calls from the living to the dead. Eilidh is the Gaelic name for my grandmother, towards which a call for response is directed with no answering call. Expressions of *Cianalas* are also present in *Edgelands*. *Cianalas* is a Gaelic word which expresses a longing for the labours which constitute someone's duty of care to a place. It is used most often when expressing feelings of homesickness when someone is on the move or longing for a sense of belonging to a place.

The chemical/material transformations set in motion during a waulking seek to strengthen and intensify the relations between the formal elements of a weaving as well as to cleanse, shrink and waterproof it. The leader of a waulking holds the responsibility of channeling a focused attention towards the weave, its fibers, materials and their subsequent responses to the potency of finishing liquids and touch, sensitivity to changeable climatic conditions, as well as the emotional and physical wellbeing of waulking participants. A focused attention to the caller is likewise required of those who answer the invitation to respond. They must not only attend to the openings or gaps created in the call for response but to the cues and directions which are vocalised in the changing tone or subject matter of a song. The aim of all parties in the waulking is to ensure that the weaving reaches the peak of its strength. There is therefore both a propositional, improvisational and emergent quality to waulking as participants' labours fluctuate to adjust to the affectual ecologies which emerge through ongoing material transformations which take place over the course of a waulking.

A practice of call and response was not only deployed through the construction of habitats which offered environments that nonhumans could grow, weave within and exceed the limits of, but also through a performance of gestures of care which took place over the course of 38 days. Bringing my tools and equipment into the gallery space I performed caretaking labours based on the changing environmental conditions and needs of the nonhuman actants in the gallery. When I was performing, the volume of *Songs for the Edges* was raised to signal my presence in the space. The vitrine and West Hastings Street windows (which are a part of the physical edges of the gallery) provided opportunities for people to observe the weaving and care at work in the gallery even when it was closed. As encounters between me and nonhuman actants unfolded in the gallery space, the constraints of the gallery presented both opportunities and limitations. For example, by drawing on the horticultural and weaving practices I had refined within indoor conditions over the course of my research, changes in form, sound, texture, smell and colour could emerge over the course of *Edgelands*, creating a sensorially rich experience for gallery visitors without instigating the premature mortality of the mycelium. On the other hand, conducting physical labours of care that sought to meet the momentums and needs of mycelium (which operate on timescales and seasons of growth

which exceed yet at the same time interpenetrate my own) challenged me in ways that made me question the limits of my physicality and perceptual field. Gaps or a lack of connection through straightforward or symmetrical reciprocity take up space in *Songs for the Edges* and in *Edgelands*. This speaks most poignantly to the asymmetrical reciprocities which enliven and characterise the care practices of soil communities, particularly organisms like mycelia whose role within the food web takes place at the threshold between the living and the dead.

Waulking can take place over minutes and hours at a time, but is never stopped until completed. If one were to enquire as to the duration of a waulking an appropriate response would be to direct the enquiry towards the cloth itself: “How many songs will you take?” Along with the donning and removal of work boots, the handling of the juniper plant in *Edgelands* signals the start and end of each care cycle. Fresh juniper sprigs were cut and worn on the chest during *Edgelands* as I carried out gestures of care. It was a way of centering the call for response in a proposition of alliances across species.³⁷ The juniper stems then formed temporal markers which traced the labours performed in the gallery, a time-line marked both in the number of sprigs per-a-cycle and their physical transformation as they began to dry. Similarly, the edge-limits of the reshi-human weavings in *Edgelands* are sewn with juniper, madder and elder-soaked fibers. Over the course of the exhibition these fibrous borders became visual markers for the growing processes taking place as mycelial fruiting bodies slowly enveloped and transformed the borders over time by exceeding the porous thresholds they created. Such transformations in the fruiting bodies, the fresh to dry juniper stems, plants setting seed and diminishing, and increasingly worn watering, feeding and cleaning implements, flowerpots, medicinal and pruning tools over the course of *Edgelands* activated the

³⁷ Predating the adoption of tartan weaves, flora was worn on the body to signify familial relationships. My family is a sept of Clan Gunn whose traditional territories include Caithness, Sutherland and the Orkney Isles. Roseroot and juniper denote our sept affiliations. Using juniper as a marker in this way evokes the sept system which formalises family bonds between members of communities who are not necessarily related by blood or social standing. Juniper is also directly called to in *Songs for the Edges* as it is used ceremonially to sain households or unions (where a branch is lit aflame and the smoke is wafted over objects, doorways and bodies) as a means to invite protection against evil and invite blessings during seasons of transition. Juniper is therefore treated with great caution and care in its employ.

gallery as a construction site, in which ongoing work was being carried out by both human and nonhuman makers.

Being a caregiver has been an important part of my life from a young age. It is through my relationships with plants that I have been able to work through my personal struggles with my own health and wellbeing and have built capacities that enable me to create opportunities for others to do the same. As a queer, neuro-diverse artist, gardener, poet and educator, practices that engage in opening up the sensorium to other ways of knowing and being in the world are of great importance to my life, work and the communities to which I am apart. *Edgelands* marks the start of a new personal journey, of coming to know better the ways care and responsibility can be cultivated through my relationships with plants and microorganisms and the new landscapes I find myself in through new forms of interdisciplinary artistic practice. The end of a waulking is traditionally marked by the consecration or blessing of the weaving and the labours (both human and nonhuman) that have gone into its creation through the giving of an offering to the Land. In this way *Edgelands* differs: there is not really a resolution for the longings expressed in *Edgelands*, nor a concluding ceremony, but rather the cultivation of an invitation to join with the kind of labours of care that might bring it about in the collectivity of touch, breath and attention that refuses alienation. The future development of *Edgelands* will seek to direct this invitation (via continued land-based research practices) towards the intergenerational communities both here in Vancouver and on the West Coast of Scotland of which I am a part. Central to this will be carving out space and time to care in which involvement with mycelia can take shape from the moment of their activation to their reintroduction to the Land. *Edgelands* is an offering, a landscape that is woven and unwoven through careful and attentive responses towards the ecological and material relations within which I am enmeshed with nonhumans.

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Edgelands - Songs for the Edges

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Càit' a bheil thu air a bheinn?

Eile le ho ro ho o hu

Dè tha ruid tha dhìth orm?

Eile le ho ro ho o hu a

An cluinn thu mi? O ho hu a

Eile le ho ro ho o hu a

Am fairich thu mi? O ho hu a

Eile le ho ro ho o hu a

'S e ban-ogha Eilidh a th' annam

Eile le ho ro ho o hu a

Dè ruid a chaill mi?

Eile le ho ro ho o hu a

A thairring thusa thugam?

Eile le ho ro ho o hu a

caomhneas na buaille?

Eile le ho ro ho o hu a

Càit' a bheil thu air a bheinn?

Eile le ho ro ho o hu

Dè tha ruid tha dhìth orm?

Eile le ho ro ho o hu a

An cluinn thu mi? O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Where are you on the mountain?

Eile le ho ro ho o hu

What am I missing?

Eile le ho ro ho o hu a

Can you hear me? O ho hu a

Eile le ho ro ho o hu a

Can you feel me? O ho hu a

Eile le ho ro ho o hu a

I am the granddaughter of Helen

Eile le ho ro ho o hu a

What did I miss? O ho hu a

Eile le ho ro ho o hu a

To lure you to me?

Eile le ho ro ho o hu a

The tenderness of the fold?

Eile le ho ro ho o hu a

Where are you on the mountain?

Eile le ho ro ho o hu

What am I missing?

Eile le ho ro ho o hu

Can you hear me? O ho hu a

Eile le ho ro ho o hu a

Am fairich thu mi? O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Ògan O ho O ho hu a

Eile le ho ro ho o hu a

Sùth searbh an talamh

Eile le ho ro ho o hu a

Luibheanach fuil O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Càit' a bheil thu air a bheinn?

Eile le ho ro ho o hu

Dè tha ruid tha dhìth orm?

Eile le ho ro ho o hu a

An cluinn thu mi? O ho hu a

Eile le ho ro ho o hu a

Am fairich thu mi? O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

deanntagan searbh O ho hu a

Eile le ho ro ho o hu a

Can you feel me? O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Tendrils O ho O ho hu

Eile le ho ro ho o hu a

A bitter earth sap O ho hu a

Eile le ho ro ho o hu a

Blood weeds O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Where are you on the mountain?

Eile le ho ro ho o hu

What am I missing?

Eile le ho ro ho o hu a

Can you hear me? O ho hu a

Eile le ho ro ho o hu a

Can you feel me? O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Nettle-bitter O ho hu a

Eile le ho ro ho o hu a

sgobag spìochach

Eile le ho ro ho o hu a

Ith thusa leam

Eile le ho ro ho o hu a

An lus le sgiath

Eile le ho ro ho o hu a

measgachadh na snàthainn

Eile le ho ro ho o hu a

Aig an fhìr oir O ho hu a

Eile le ho ro ho o hu a

Smùid O ho hu a

Eile le ho ro ho o hu a

Ceò O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Màdair O ho ho ho hu a

Eile le ho ro ho o hu a

A giosgail geur O ho hu a

Eile le ho ro ho o hu a

cruaichainn cruinn ròs

Eile le ho ro ho o hu a

s'a pronnagh, nighe

Eile le ho ro ho o hu a

Am bheil thu deisel?

Eile le ho ro ho o hu a

Biter-stinger

Eile le ho ro ho o hu a

Eat with me

Eile le ho ro ho o hu a

the plant with shields

Eile le ho ro ho o hu a

As threads mingle

Eile le ho ro ho o hu a

at the edge-limits O ho hu a

Eile le ho ro ho o hu a

A haze O ho hu a

Eile le ho ro ho o hu a

A mist O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Madder O ho ho ho hu a

Eile le ho ro ho o hu a

sharp gnashing O ho hu a

Eile le ho ro ho o hu a

Rose-Fat-Hips

Eile le ho ro ho o hu a

pounding, washing.

Eile le ho ro ho o hu a

Are you ready? O ho hu a

Eile le ho ro ho o hu a

cruaichainn cruinn?

Eile le ho ro ho o hu a

Eilidh mo ghaoil Yo Ha

Eilidh mo ghaoil Yo Ha

Eilidh mo ghraidh Yo Ha

Eilidh mo ghraidh Yo Ha

Dè reub thu bhuaim? Ho Ha

Eilidh mo ghraidh Yo Ha

Am bàs caiseach? Ho Ha

Eilidh mo ghraidh Yo Ha

Dè ruid a chaill mi? Ho Ha

Eilidh mo ghraidh Yo Ha

Dè reub thu bhuaim? Ho Ha

Eilidh mo ghraidh Yo Ha

An astar caiseach? Ho Ha

Eilidh mo ghraidh Yo Ha

Dè ruid a chaill mi? Ho Ha

Eilidh mo ghraidh Yo Ha

Dè reub thu bhuaim? Ho Ha

Eilidh mo ghraidh Yo Ha

Gun anail gu dearbh? Ho Ha

Eilidh mo ghraidh Yo Ha

Dè ruid a chaill mi? Ho Ha

Eilidh mo ghraidh Yo Ha

Eile le ho ro ho o hu a

Fat hips?

Eile le ho ro ho o hu a

My beloved Helen Yo Ha

My beloved Helen Yo Ha

My love Helen Yo Ha

My love Helen Yo Ha

What rends you from me? Ho Ha

My love Helen Yo Ha

No death surely? Ho Ha

My love Helen Yo Ha

What did I miss? Ho Ha

My love Helen Yo Ha

What rends you from me? Ho Ha

My love Helen Yo Ha

No distance surely? Ho Ha

My love Helen Yo Ha

What did I miss? Ho Ha

My love Helen Yo ha

What rends you from me?

My love Helen Yo ha

No breath surely? Ho Ha

My love Helen Yo Ha

What did I miss? Ho Ha

My love Helen Yo Ha

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a
Càit' a bheil thu air a cladach?
Eile le ho ro ho o hu
Dè tha ruid tha dhìth orm?
Eile le ho ro ho o hu a
An cluinn thu mi? O ho hu a
Eile le ho ro ho o hu a
Am fairich thu mi? O ho hu a
Eile le ho ro ho o hu a

Eile le ho ro ho o hu a
Eile le ho ro ho o hu a
Deasaich leam craiceann gorm
Eile le ho ro ho o hu a
òla suathadh air an tràigh
Eile le ho ro ho o hu a
a' ruigsinn O ho hu a
Eile le ho ro ho o hu a
dol seachad O ho hu a
Eile le ho ro ho o hu a
làimhsachadh O ho hu a
Eile le ho ro ho o hu a
dol seachad O ho hu a
Eile le ho ro ho o hu a
Bualadh O ho hu a
Eile le ho ro ho o hu a
dol seachad O ho hu a

Eile le ho ro ho o hu a
Where are you on the shore?
Eile le ho ro ho o hu
What am I missing?
Eile le ho ro ho o hu
Can you hear me? O ho hu a
Eile le ho ro ho o hu a
Can you feel me? O ho hu a
Eile le ho ro ho o hu a

Eile le ho ro ho o hu a
Eile le ho ro ho o hu a
Prepare with me blue hue skin
Eile le ho ro ho o hu a
The oils of rubbing beaches
Eile le ho ro ho o hu a
Reaching O ho hu a
Eile le ho ro ho o hu a
Passing O ho hu a
Eile le ho ro ho o hu a
Touching O ho hu a
Eile le ho ro ho o hu a
Passing O ho hu a
Eile le ho ro ho o hu a
Beating O ho hu a
Eile le ho ro ho o hu a
Passing O ho hu a

Eile le ho ro ho o hu a

gèarrach O ho hu a

Eile le ho ro ho o hu a

dol seachad O ho hu a

Eile le ho ro ho o hu a

Ag èiridh sàmhach O ho hu a

Eile le ho ro ho o hu a

stuth mìn O ho hu a

Eile le ho ro ho o hu a

sealladh a mach O ho hu a

Eile le ho ro ho o hu a

càradh O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Na do chumadh O ho hu a

Eile le ho ro ho o hu a

Na do bhroilleach O ho hu a

Eile le ho ro ho o hu a

Gheibh sinn ammanan domhainn

Eile le ho ro ho o hu a

A' fighe càirdeas dlùth

Eile le ho ro ho o hu a

Cutting O ho hu a

Eile le ho ro ho o hu a

Passing O ho hu a

Eile le ho ro ho o hu a

Tender rising O ho hu a

Eile le ho ro ho o hu a

soft tissue O ho hu a

Eile le ho ro ho o hu a

Tending O ho hu a

Eile le ho ro ho o hu a

Mending O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

In the shape of you O ho hu a

Eile le ho ro ho o hu a

In the touch of you O ho hu a

Eile le ho ro ho o hu a

We find deep times

Eile le ho ro ho o hu a

We weave fine caring

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Càit' a bheil thu air an fhìr òir?

Eile le ho ro ho o hu a

Dè tha ruid tha dhìth orm?

Eile le ho ro ho o hu a

An cluinn thu mi? O ho hu a

Eile le ho ro ho o hu a

Am fairich thu mi? O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Nas làidir nas domhainn nas cuimair

Eile le ho ro ho o hu a

Mis' an sàs O ho hu a

Eile le ho ro ho o hu a

Thus' an sàs O ho hu a

Eile le ho ro ho o hu a

sealladh-tìr annasach

Eile le ho ro ho o hu a

Ag obraichadh ri chèile

Eile le ho ro ho o hu a

pàirtean dhiam sa O ho hu a

Eile le ho ro ho o hu a

pàirtean dhuit sa O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Where are you at the edges?

Eile le ho ro ho o hu a

What am I missing?

Eile le ho ro ho o hu

Can you hear me? O ho hu a

Eile le ho ro ho o hu a

Can you feel me? O ho hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Stronger. Deeper. Shapelier.

Eile le ho ro ho o hu a

You tangle me O ho hu a

Eile le ho ro ho o hu a

and I tangle you O ho hu a

Eile le ho ro ho o hu a

A Queer landscape

Eile le ho ro ho o hu a

together making

Eile le ho ro ho o hu a

parts of me O ho hua

Eile le ho ro ho o hu a

pieces of you O ho hua

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Eile le ho ro ho o hu a

Appendix A.

Research Paper. Fall 2018.

Introduction

Human-kind has become a momentum unto ourselves, and unto other forms of life, pushing forward with increased force towards a present in which we have become a condition of change alongside Earth's elemental forces. We are dramatically shaping and reshaping ecological and climatic systems which sustain conditions for life, to the extent that our present time is dominated by the diminishment of *all* life on Earth through human attributed ecological collapse. We are, as paleontologist Michael Novacek states, entrenched in the realities of the Sixth Age of Extinction.³⁸ This insistent momentum toward a future in which human progress stands paramount can be rendered visible in the scarification of that which constitutes life-beyond-the-human.³⁹ The term nonhuman functions as a nexus of departure for such life; this includes but is not limited to Land, plants, microorganisms, animals and elemental forces. Developing new ways of reorienting our awareness of the nonhuman and the ways in which this scarification occurs presents us with the opportunity to configure a sensitivity to the life generating and life ending relationships that characterise our times of trouble under this new epoch.

Contemporary art's nonhuman turn, brings to the fore the agential nature of nonhuman lives and the ways in which they intersect with our own. As such this turn articulates a myriad of interventions at the level of the bios, radically offering new interdisciplinary modes of artistic practice that heighten our attentiveness to the ecological and material relations within which we are enmeshed. This research paper considers *the ethics of human-nonhuman collaboration* within this emergent field, with a particular focus on the life ways of the microorganism Mycelium. Mycelium forms vegetative, mycological networks within the forest floor, simultaneously binding with

³⁸ See Michael J. Novacek, *Terra: Our 100-Million-Year-Old Ecosystem and the Threats That Now Put It at Risk* (New York: Farrar, Straus and Giroux, 2007).

³⁹ *Scarification* is a term generally used to refer to body modifications carried out on the surface of the human body through cutting or rending the skin. This term also extends to the excavation of mineral resources from the Land and the scarring of seeds and soil to aid in the process of germination.

and breaking down its environment as a crucial metabolic agent. As such, its collective body acts as a web of conduits through which vital energies are produced, stored and distributed to other soil reliant species. In this way mycelium acts as a gateway species that enables other forms of biological life to exist and flourish.

Moulding, binding, weaving, watering, feeding, aerating, retreating, rending, mulching, burying; my latest works have culminated in a series of installations titled *Living Objects* (2017-18), which presents cultivated mycelium biocomposites in woven, propositional habitats. In merging speculative and lived modes of making, this series has set forward a line of enquiry which considers how human-nonhuman making might engage ethics of care. Is it possible to make, think, speak, mourn, resist and grow with beings and forces other than human in times of ecological collapse? Are processes of collaboration with the nonhuman even possible? Should they be attempted? As a framework to enable further making and study, this research paper will engage these questions with the purposes of aiding the formulation of a speculative proposal of human-nonhuman collaboration which will be enacted as a durational installation event in the fall of 2019. As such, this paper will move along the following movements: matters, mats, fields, rhythms and edgelands.

Matters

In Animacies: Biopolitics, Radical Mattering, and Queer Affect, Queer scholar Mel Chen grapples with how our conceptions of animate/inanimate life are shaped, enacted and reified through everyday utterances. In so doing Chen first introduces (through the linguistic studies of John Cherry) the ways in which “language users, use animacy hierarchies to manipulate, affirm and shift ontologies that matter the world.”⁴⁰ As Chen explains, Cherry’s proposal of animacy hierarchies would position the human male, who is capable of speech, “able-bodied” and free, to stand upright in a position of animate authority at the top of the animacy scale. Animals, inanimates such as matter and objects (to which we would include plants and microorganisms) and incorporels (such as

⁴⁰ Mel Chen, *Animacies: Biopolitics, Racial Mattering, and Queer Affect* (Durham, NC: Duke University Press, 2012), 42.

elemental forces, states of being, time, happenings/or events) are organised below.⁴¹ It is through such hierarchies (that shift through time and amongst cultures and language users) that we create holding places for meaning-making, knowledge production and our engagement with the material world. Animacy, according to Chen is that which slips through the cracks of such holding places and it is within such slippages she argues conceptions of animate life are cut, rearticulated, held and lived continually to produce new ways of being and seeing in the world. It is here, in the slippages, that the *nonhuman turn* gains initial traction by setting challenges in regard to, in Chen's words, "who the proper mediums of affect are."⁴²

Most relevant to my line of enquiry has been the challenges to the division between the (human) subject and material objects/world known as the Cartesian-Newtonian divide, which rose to dominance in the classical, euro-western ontologies of the nineteenth century. As introduced by Diana Coole and Samantha Frost in their introduction to *New Materialism: Ontology, Agency and Politics*, "According to this model, material objects are identifiably discrete; they move only upon encounter with an external force or agent."⁴³ This presumes material objects, as passive and as inert as the matter that constitutes them, subject only to "the linear logic of cause and effect."⁴⁴ In separating human beings from our environment, its other inhabitants, material forces and objects, a radical humancentric frame is produced which conceives of the human and our life ways as not only exclusively sentient but also exclusively agential. Theories evolving from developments in contemporary quantum physics have been particularly influential within the nonhuman turn as they alternatively instantiate that all material objects (including human beings) are situated and emergent complexes of lively matter formation. Feminist theorist Karen Barad illustrates these complexes as a "congealing of agencies" that "unmoor" the human from being able to conceive of itself as set apart from

⁴¹ Ibid. 26-7.

⁴² Ibid. 41.

⁴³ Diana Coole and Samantha Frost, "Introducing the New Materialists," in *New Materialisms: Ontology, Agency, and Politics*, ed. Diana Coole and Samantha Frost (Durham: Duke University Press, 2010), 7.

⁴⁴ Ibid. 7.

the material world.⁴⁵ We are, in fact, collectively and animatedly constituted in the matter of our very being. *Intra-action* is a term coined by Barad to characterise the processes through which a congealing of agencies *within* quantum level phenomena manifests towards individual material objects. As Barad elaborates, “It is through specific agential intra-actions that the boundaries and properties of ‘individuals’ within the phenomenon become determinate and particular material articulations of the world become meaningful.”⁴⁶ In accordance with Barad’s intra-agential realism, these relationships of matter formation are conceived as the “intra-agential becoming” of an individual. Agency in this regard is not a property that one is external to and with which one can be endowed or not. Instead it is the ongoing relationships of possibility making within which we are always and already entangled in the matter of our being with others.⁴⁷ The nonhuman turn engages in rearticulating the joints through which we come to understand what we ascribe as inert and agential, individual and collective. As we shall see, this offers new possibilities for developing our understandings of our relationships to life-beyond-the-human within the biological realm.⁴⁸

Mats

Mycelia occupy almost every ecosystem on Earth, from forest floors to tundra meadows, even dwelling in sites of extreme heat, toxicity and ecological devastation.⁴⁹ Mycelial rooting systems grow, bind and weave through subterranean landscapes. As part

⁴⁵ Karen Barad, “Intra-actions,” interview by Adam Kleinmann, *Mousse* 34 (2012): 79.

⁴⁶ Ibid. 77.

⁴⁷ “Phenomena,” explains Barad, “are entanglements of spacetime-matter, not in the colloquial sense of a connection or intertwining of individual entities, but rather in the technical sense of *quantum entanglements*, which are the (ontological) inseparability of agentially intra-acting components.” See Karen Barad, “Nature’s Queer Performativity” *Qui Parle: Critical Humanities and Social Sciences* 19, no. 2 (2011): 125.

⁴⁸ For more insight into Barad’s intra-agential realism see Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham, NC: Duke University Press, 2016).

⁴⁹ See Swedish Polar Research Bibliography research portal for more information about mycelium in arctic conditions. Swedish Polar Research Secretariat, “Expedition: Tundra Northwest: Biodiversity in the Arctic”, Swedish Polar Research Bibliography in DiVA, 1999, <https://polarforskningsportalen.se/en/arctic/expeditions/fungi-arctic-diversity-species-adaptation-cold-climate>.

of the digestive system of a terrain, mycelium's single cell tendrils (called hyphae) break down chemical, mineral and organic compounds, through secreting enzymes into their environment and at the same time distribute nutrients and moisture to other forms of life with whom they come into contact.⁵⁰ Though pervasive and clandestine as a mycological species, their resilience does not rely on a self-sufficiency honed from exclusivity; on the contrary, their capacity to survive is interdependent on what Science and Technologies Studies theorist Donna Haraway calls the way we *make-with* others; our *sympoietic* relationships.⁵¹ "Critters," writes Haraway, "interpenetrate one another, loop around and through one another, eat each other, get indigestion, and partially digest and partially assimilate one another, and thereby establish sympoietic arrangements that are otherwise known as cells, organisms and ecological assemblages."⁵² As Haraway is keen to point out, sympoietic relations are not without disruption, nor are they "a synonym for *mutually beneficial*."⁵³ As Barad's intra-agential realism discusses at the level of subatomic intra-actions, disruptions can be seen to be an essential quality of phenomena as it manifests materially. Intra-actions produce what she refers to as *agential cuts*, every cut is imbued with the potential for particular material relations to manifest and others not. To live in the precarity of such material indeterminacy means we are vulnerable to the changing conditions that relationships with others bring about. Anna Tsing's ethnographic study *The Mushroom at the End of the World: (The Possibilities of Life in Capitalist Ruins)* speaks to this kind of non-innocent touch in her exploration of the relationships between matsutake mushrooms, marginalised human communities of mushroom foragers in Oregon and mushroom commodity chains between Japan and North America. "We are contaminated by our encounters," writes Tsing; "they change who we are as we make way for others. As contamination changes world-making projects, mutual worlds - and

⁵⁰ See Paul Stamets, *Mycelium Running: How Mushrooms Can Help Save the World* (Berkeley: 10 Speed Press, 2005) for more insight into the ways mycelium weave and unweave landscapes and their role in creating healthy soil communities.

⁵¹ The concept of sympoietic relations was constructed by Haraway via Beth Dempster, a Canadian systems thinker whose work on landscape design and environmentalism in the 1990s helped her coin the term. On Donna Haraway's work on multispecies companionship see *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press, 2014), 61.

⁵² Ibid. 60

⁵³ Ibid. 60.

new directions - may emerge. Everyone carries a history of contamination; purity is not an option. One value of keeping precarity in mind is that it makes us remember that changing with circumstances is the stuff of survival.”⁵⁴

I want to keep in mind for us as we progress - in thinking about the relationships between the atomic and biological - that multispecies life worlds have and continue to be threatened by the expansion of human progress on Earth. As outlined by Heather Davis and Etienne Turpin in their introduction to the collection of essays *Art in the Anthropocene*, the remnant traces of this progress are visible in the scarification of Earth and its inhabitants through; the emergence of deforestation practices with the development of human agricultural practices and the “uninterrupted rise in carbon dioxide emissions” that date back to origins in the eighteenth century, and in the hallmarks of the Great Acceleration; with its “postwar spike in population growth, consumption and technical development” including the “irradiated soil” following the first use of Nuclear Power and the Atom Bomb.⁵⁵ Discussing the ways human techno-economic expansion reshapes and reifies living systems Haraway writes, “one must surely tell of the networks of sugar, precious metals, plantations, indigenous genocides, and slavery with their labor innovations and relocations and recompositions of critters and things, sweeping up both human and nonhuman workers of all kinds.”⁵⁶ In seeking to make and grow with beings and forces other-than-human *within* the troubles of our time, we must acknowledge that not all relations lead to the kind of disruptions that move us towards increased liveliness with others. Making-with and its relations are open to potentialities; of harm, erasure, refusal and ambivalence just as much as vital interdependence.

⁵⁴ Anna Lowenhaupt Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton and Oxford: Princeton University Press, 2015), 28.

⁵⁵ See Heather Davis and Etienne Turpin, “Art & Death: Lives Between the Fifth Assessment and the Sixth Extinction,” in *Art in the Anthropocene: Encounters Among Aesthetics, Environment and Epistemologies*, ed. Heather Davis and Etienne Turpin (London: Open Humanities Press, 2015), 5.

⁵⁶ Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham and London: Duke University Press, 2014), 48.

Throughout history, mycelia have overcome extinction level events by increasing the reach of their haptic nets to form cellular, mineral and chemical level transformations within and across species. Without mycelia there would be no soil and no plants, there would be no organs such as skin, stomach, brain and lung.⁵⁷ In the case of mycelia, their interactions create lures within which a multitude of species become entangled, but as Tsing says, their practices of making-with ensure “multispecies life worlds remain in place.”⁵⁸ Mycelia thrive in precarity. That they have enabled us, amongst a vast community of life, to do the same demonstrating the kind of interdependent relationships that we must attune our attentions to if we are seeking to learn how to make-with other species in ways that enable diversity and difference to flourish. It is within Haraway’s proposition, that one can become-with nonhumans through sympoietic relations, that I have begun to start thinking of *collaboration* as an expression of material and ecological entanglements which manifest as we make-with nonhumans. Becoming-with others for Haraway is the way we “render each other capable.”⁵⁹ This rendering of ourselves and others builds momentum from the formation of the feminist ethic *response-ability*; the generating of our capacity for care and response. As Haraway elaborates, response-ability does not pre-exist relations, it “is not something you have towards some kind of demand made on you by the world or by an ethical system or by a political commitment. Response-ability is not something you respond to, as if it is already there. Rather, it’s the cultivation of the capacity of response in the context of living and dying in a world for which one is for, with others.”⁶⁰ Science and Technologies Studies theorist Maria Puig de la Bellacasa writes in *Matters of Care: Speculative Ethics in More than Human Worlds*, “ethics is not a matter of applying moral principles by a subject to a senseless and soulless “material” universe: ethicality in the making resides in messy, muddled, concrete

⁵⁷ See, Paul Stamets, *Mycelium Running: How Mushrooms Can Help Us Save The World* (Berkeley: 10 Speed Press, 2005), for more information about the evolutionary history of mycelium.

⁵⁸ Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*, 5.

⁵⁹ Haraway, “Anthropocene, Capitalocene, Chthulucene: Donna Haraway in conversation with Martha Kenney,” in Davis and Turpin, 258.

⁶⁰ Ibid. 256-257. For Haraway this process resonates with biologist Marc Bekoff’s exploration of making-with as a form of play. In an interview with Martha Kenney she makes the connection that “play is one of the activities through which critters make-with each other that which didn’t exist before. It’s never merely functional, its propositional. Play makes possible futures out of joyful but dangerous presents.” Indeed, this is not to say that such play is not one of risk and high stakes. Ibid. 260.

situations in which an obligation of care becomes at stake.”⁶¹ In this way, care is positioned by Puig de la Bellacasa as a collection of everyday labours which inform, propagate and refine our relationships towards others.⁶² As she elaborates, “acts of caring for are never isolated, we care in an entangled way with what a specific situation requires care from and lures care for but this doesn’t mean that what we care for is predetermined by given conditions. If to care is to be attracted, to be entangled with the recipients of (our) care in a relationship that not only extends (us) but obliges (us) to care, then a world is being made in that encounter, that rather than determining (us), shifts (our) priorities.”⁶³ In seeking to focus attention to practices of cultivation that might lead us into greater care and response towards nonhumans such as mycelia, it is therefore important to sensitise ourselves to practices of nonhuman making which might otherwise be overlooked and through which we may better learn to care.

Fields

Mycelia, and the community of agencies to which they are entangled, live along the porous threshold of surface/body of Earth. When we think of cultivation we usually think of this threshold; of fields and the crops which grow within their boundaries. In the face of human attributed ecological collapse, there is an urgency to develop new technological innovations which aid us in reducing our impact on Earth and its climatic systems. Mycelium’s adhesive qualities have called it to the attention of artists, designers, architects and engineers as a potential alternative biopolymer to petroleum-based materials such as plastics. This has led to an upsurge in interdisciplinary research projects which explore mycelium as a *living technology* through the cultivation of mycelium biocomposites. One such project is *Fungal Futures* facilitated by Utrecht University, Officina Corpuscili and Stichting Mediamatic. Their networked environment of skills/knowledge exchange between creatives and scientists is focused on exploring the

⁶¹ Maria Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More than Human Worlds* (Minneapolis: University of Minnesota Press, 2017), 166.

⁶² “Care is a necessary practice,” writes Puig de la Bellacasa, “a life-sustaining activity. An everyday constraint.” Ibid. 161.

⁶³ Ibid, 167.

cross-fertilization between human and nonhuman forms of construction.⁶⁴ *Fungal Futures/Growing Domestic Bio-Landscapes* (2016) was a curatorial project led by Officina Corpuscili's director Maurizio Montalti to showcase a range of innovative mycelial-biocomposite design ideas and prototypes which were realized throughout their research project *Mycelium Design* (2014-15). That these outcomes were exhibited within the subtropical greenhouses at Utrecht University seems fitting as the biocomposite prototypes presented involved mycelial spores being activated, cultivated and deactivated within laboratory conditions. For example, fashion designer Aniela Hoitink's textile designs resulted in a bodice of hybridised mycelial-textile samples whilst collaborating designers Maartje Dros and Eric Klarenbeek's mycelium chair demonstrated the convergence of 3D printing with mycelial growth. Designer Jonas Edvard's mycelial vesicles and artist/inventor Philip Ross's range of sculptures allude to the conventional brick or everyday-use implement.⁶⁵ The prototypes were exhibited within glass vitrines positioned amongst trees, plants and floating along the surface of a boggy pond. These conditional and material controls acted to prevent further mycelial transformations from taking place, as dormancy and reactivation can occur at almost any stage of mycelial life cycles when living. The display methods deployed by Montalti aimed to express a living museum yet favoured the stability required to render the human utility of the prototypes visible.

Shifting our attention towards the ways that mycelium make-with other species within their soil communities one considers what might be lost in the mummified remnants within the greenhouse exhibition; and what might manifest if given the opportunity to escape this mode of preservation. Mycelium is not an organism that functions as an easily controlled living technology when grown in artificial conditions without eradicating it, genetically enhancing it or changing the way we come to regard construction practices and nonhuman life cycles. What we may find most compelling about the projects of *Fungal Futures* were the slippages or leakages in the human-

⁶⁴ See <http://www.fungal-futures.com> for details.

⁶⁵ See <http://www.corpuscoli.com/projects/fungal-futures/> for documentation of the *Fungal Futures/Growing Domestic Bio-Landscapes* exhibition.

nonhuman agential dynamics which occurred within laboratory conditions. Through rejection, escape, resistance and ambivalence towards the controlling influence of the human, mycelia brought to attention a new assemblage of needs, practices of making and care which altered the way the collaborators proposed human *and* nonhuman needs might be met in the production of objects. It is to this that we can attribute many of the innovations which took place during the ongoing development of the research projects. Attention to these slippages produced new kinds of proposals.⁶⁶

It is here that I have been working, within the slippages that manifest when modes of human and nonhuman construction meet. My installation series *Living Objects* (2017-18) presents mycelium biocomposites in hand-woven habitats where the traces of human-human contact are rendered visible. In contrast to *Fungal Futures/ Growing Domestic Bio-Landscapes* my cultivation and presentation methods hinge on creating livable conditions for mycelium, where I can investigate the multisensory, material, formal, and affective manifestations which can occur when working within their reproductive rhythms and life cycles. Contained within recycled plastic sacks, sterilised agricultural waste is combined with mycelium spores, water and flour to invite, within a matter of days, mycelial growth. The sacks not only act as moulds but also produce microclimates within which the mycelium adheres to their growth environment. I have not sought to fake organicism or produce an organic/inorganic binary through this process, nor is my touch concealed. Most often woven frames, the habitats are created from industrial and natural waste materials such as angle irons, LDPE, plastic fibers, compost and vegetative matter as well as elemental forces such as light, heat, air, and water. These propositional habitats therefore extend livable conditions into the gallery space. By gathering and binding recycled materials in this way I wanted to mirror the transformational practices to which mycelia are constantly at work within their soil communities, reconstituting

⁶⁶ Dros and Klarenbeek's practice evolved to combine land-based research methods which engage the circular economy, most notably through their algae vessels. See their algae lab project at <http://www.ericklarenbeek.com>. In Edvard's case, he cultivated a lamp which exemplified the care practice of mycelium. See <https://jonasedvard.dk/work/myx/> for more details. Hosting collaborator, Montalti is currently involved in a collaboration titled *Caskia/ Growing a MarsBoot* with Liz Ciokajlo, This work will be exhibited in an upcoming show commissioned by MOMA titled *Item: Is Fashion Modern?* The project builds on their past research collaboration with the European Space Agency to design prototypes for mycelial space boots. See <http://www.corpuscoli.com/projects/caskia/> for more details.

materials in ways which create space for multiple forms of life to meet. Mainly deployed as floor-based structures, these frames act to set contingent limits for encounters with the public whereby they are encouraged to slow down and observe the material entanglements at play. These entanglements are at once visible in real time occurrences and at others readable as traces of past touch and involvement that manifest materially in the present through colour, form, texture, smell and taste. These frames also invite the human body to fluctuate from stances of vertical dominance to a horizontal orbiting which oscillates between distance and closeness. Displayed at various stages of maturity and even at stages of mummification or decomposition, these assemblages of frames and mycelia aim to create space for temporal and material diversity to manifest within the gallery space. The intimate and sustained involvement in the life cycles and ways that mycelia create landscapes has sensitised me to the extent to which *touch leads to transformation*. Sometimes one is met with fruit and other times, futility. One of the main outcomes of this installation series has been a commitment to ongoing iterations that will consider what forms of ethicality - of response and care - are capable of moving and making within this particular intimacy.

Rhythms

Fertile soil exists because of a diverse community of organisms whose sustained and situated labours take place over durations which exceed yet interpenetrate our own. Puig de la Bellacasa's studies of permaculture ethics as expressed in *Matter of Care* demonstrate the ways care is exhibited by soil communities yet treated as "*unproductive* in the dominant futuristic drive."⁶⁷ Enclosed through the use of technological innovations such as chemical fertilizers, pesticides and genetic modifications, practices of human cultivation consistent with the supply of global agricultural markets and their rapid expansion, operate as Puig de la Bellacasa explains, by "increasing soil's efficiency at the expense of all other relations."⁶⁸ For Puig de la Bellacasa such cultivation practice "reduces care from a co-constructed interdependent relation into mere control of the

⁶⁷ Puig de la Bellacasa, *Matters of Care*, 177.

⁶⁸ Ibid. 186.

object of care.”⁶⁹ This instrumentalization effectively interrupts, alienates and obscures nonhuman practices of care from view. In the case of soil communities, this obscuring extends to the disappearance of lives, in that they cease to exist. This can be seen as just one of the many systematic acts of environmental violence which continue to characterise our current ecological crisis, in that, cultivation takes time and sustained attention to nonhuman lives, land, climate, seasonal changes and the transformations which occur through their rhythms. As discussed, such rhythms are essential to the biodiverse ecosystems which we rely upon for survival. Permaculture practices produce obligations of care through engaging in these rhythms. Central to these practices, according to Belacassa is the opportunity for one to develop the capacities of care and response through a “search for alternative technologies that work with natural mechanism rather than against them.”⁷⁰

Pierre Huyghe’s installation *Untilled* (2011-12) invited viewers to stumble through a landscaped compost heap. In amongst garden/construction waste and hazardous planting (in form and in substance due to their medicinal toxicity) a dog with a painted leg runs around, humans (gardener, artist, dog minder, visitors) transverse the space or carry out gardening tasks whilst a reclining statue is noisily claimed by bees. *Untilled* for Huyghe was set in motion by “identifying the presence, finding its own presentation, its own appearance, its own vitality rather than being submitted to pre-existing models.”⁷¹ His involvement in the landscape (feeding the dog, planting seeds, turning compost) framed the site as “a set of topological operations,” everyday instances of human-nonhuman labour which set in motion material and temporal transformations, actively contributing to the production a landscape.⁷² Within my line of enquiry the work’s strength lies in the instances of attentiveness and gestures of withdrawal Huyghe enacted, that enabled rather than enclosed nonhuman labours. In his essay, *All Object are Deviant:*

⁶⁹ Ibid.186.

⁷⁰ Maria Puig de la Bellacasa, “Ethical Doings in Naturecultures,” in *Ethics, Place & Environment* 13, no.2, (2010): 152.

⁷¹ Pierre Huyghe. “Pierre Huyghe Explains His Buzzy Documenta 13 Installation and Why His Work is Not Performance Art” interview by Sky Goodden. *ARTINFO CANADA*, August 30, 2012.

⁷² Ibid.

Feminism and Ecological Intimacy, Timothy Morton suggests that individual material objects exist as *rifts*. Rifts are not figured in terms of space-time but rather paradoxically exist because of a strange, if not deviant intimacy which springs from the fact that we are all so wrapped up in one another, so close and materially intertwined, that our being and that of another cannot be fully perceived.⁷³ I do not therefore present gestures of withdrawal as neglectful but rather propose withdrawal in alignment with Puig de la Bellacasa's ethics of care; as an act of response-ability that acknowledges that a key part of becoming involved with those we care for is learning how to let go of a controlling touch. Withdrawal is a necessary movement in fostering greater care and response towards the nonhuman and illustrates for us Barad's proposition that "Response-ability flows out of cuts that bind."⁷⁴

Practices of care exhibited by soil communities see labours of care exceed the limits of human sight and sense, yet the benefits of these labours are rendered sensible through the enfolding momentums of reciprocity that entangle the ecological and material relations we share in with nonhumans. Such reciprocity moves us. It transforms us and the landscapes we inhabit. In the case of mycelium the benefits of their care contribute to the production of an abundance to which we all benefit. As Puig de la Bellacasa states, "that these relations are not reciprocally symmetrical doesn't make them less vibrant with ethicality."⁷⁵ In reconsidering collaboration as the ways we make-with others, it matters what kinds of making-with we commune in and how the borders of these acts are upheld, how they exclude, enclose, enfold and diffract. I speculatively propose that human-nonhuman modes of construction gain in strength, intensity and vibrancy through gestures of ongoing, refined labours of attentiveness and withdrawal. Labours of care produce time and space to care. In paying attention to the ways mycelium weave and

⁷³ See Timothy Morton "All Objects are Deviant: Feminism and Ecological Intimacy," in *Object-Oriented Feminism*, ed. Katherine Behar, (Minneapolis: University of Minnesota Press, 2016), 65 - 82.

⁷⁴ Barad, 81.

⁷⁵ Maria Puig de la Bellacasa, "Ethical Doings in Naturecultures," *Ethics, Place & Environment* 13, no.2, (2010): 156.

unweave landscapes perhaps we may better learn how to care and become involved in the lives of others.

Edgelands

Edgelands are an amalgamous and porous borderland between human settlement and nonhuman landscape. They are often despised as sites of neglect, damage and decay. It is precisely these spaces in which nonhuman life is constantly at work, transforming and building new landscapes and demonstrating resilience to violence and conditional change. It is here in the edgelands where I propose mycelial-human constructions might meet, not as a field of study of discrete, alienated objects but as a becoming-with the nonhuman.

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Appendix B.

Audio File: *Edgelands – Songs for the Edges*

Edgelands - Songs for the Edges is a waulking song written, composed and performed by Amy Wilson. *Edgelands - Songs for the Edges* was translated from English to Gaelic with the support of Richard Hill of Ossian Music and Joan Black of the Isle of Lewis, Scotland.

File Name: Edgelands - Songs for the Edges by Amy Wilson.

Duration: 9 min 38 sec