Rat, Plastic, Wood

An exhibition of hybrid sculptures

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

ABSTRACT

Rat, Plastic, Wood is an exhibition of hybrid sculptures centering the physical manifestation of interspecies intra-action and natural forms of contamination-as-collaboration. In the gallery space a central structure of wood and plastic becomes the locus of boundaryless activity where soil, yeast, plants, fermentation, hardtack and garbage all share space and interact. While making your way, you may collide with fruit flies while inhaling the aromatics of fermenting pine, noodles, dirt, and rotting banana. You may hear the low rumble of a dehumidifier, ultrasonic rat communication, and possibly the wet sizzle of dry soil sucking up water.

Taking direction from the artmaking process I have chosen to approach the writing of my support paper in a hybrid manner, combining the conventional essay with moments of irregularity—dialogue, manifesto, material and dialogical lists, recipes— forms of writing that resist conformity. In this way, the paper not only supports the work, but occupies the same conceptual and aesthetic space. I will be drawing from feminist theorist Karen Barad in exploring the concept of lichenization, using the theory of *intra-action* to decentralize the human and refocus our understanding of relationship-based living. Concepts of contamination-as-collaboration will be based on ideas developed by philosopher Alexis Shotwell and anthropologist Anna Tsing. These concepts will provide a framework for understanding my approach to developing artwork. I will present these ideas and explain the importance of hybrid artistic methodologies that guide my artistic outcomes.

The three sections: *Rat, Plastic,* and *Wood* which form the exhibition title structure the paper: *Rat* introduces the exhibition and sets a conceptual framework for the artwork, *Plastic*

speaks to the theoretical dimensions of the work, in particular, the Capitalocene and the need for transformative metabolization, and *Wood* concludes by discussing my materials, methodologies and processes. That said, although these divisions exist, be prepared for cross-contamination.

LAND ACKNOWLEDGEMENT

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.
(Anna Tsing, 27)

I write this as a human contaminated and influenced by my own experiences and histories before me. I come from lineages of white settlers who came to Canada in the 18th - 19th century. I will be writing about the transformative power of contamination in a positive light, through the potentials of mutualistic collaborative contamination. I want to take this moment before continuing to acknowledge the detrimental forms of contamination through the displacement, mistreatment, and disrespect of the land and Indigenous communities it was taken from.

The majority of this thesis was written between Hamilton and Waterloo, Ontario. Waterloo is situated on the Haldimand Tract, land that was guaranteed and never honoured to the Haudenosaunee of the Six Nations of the Grand River, and is within the territory of the Neutral, Anishinaabe, and Haudenosaunee peoples.

Hamilton, where I grew up and worked during COVID-19 pandemic, is situated upon the traditional territories of the Erie, Neutral, Huron-Wendat, Haudenosaunee and Mississaugas. This land is covered by the *Dish With One Spoon Wampum Belt Covenant*, which was an agreement between the Haudenosaunee and Anishinaabek to share and care for the resources around the Great Lakes.

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My advisors, Lois Andison and Logan MacDonald, for their steadfast generosity, endless kindness, and unparalleled insights and advice. I feel so lucky to have been able to grow with them both as my stakes.

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Adam Glover for helping me implement my ever-ambitious ideas on the shortest of time frames.

And, of course, my parents, whose love and kindness sustain me.

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RAT[1]

So how do you get rats off an island, hmm? My grandmother showed me. We buried an oil drum and hinged the lid. Then we wired coconut to the lid as bait, and the rats would come for the coconut, and thum-thum-thum-thum-thum, they would fall into the drum. And after a month, you've trapped all the rats. But what do you do then? Throw the drum into the ocean? Burn it? No. You just leave it. And they begin to get hungry, and one by one... (smacks lips repeatedly) ...they start eating each other until there are only two left. Two survivors. And then what? Do you kill them? No. You take them and release them into the trees. But now they don't eat coconut anymore. Now they only eat rat. You have changed their nature. The two survivors.

(*Skyfall*, 2012)

RAT[2]

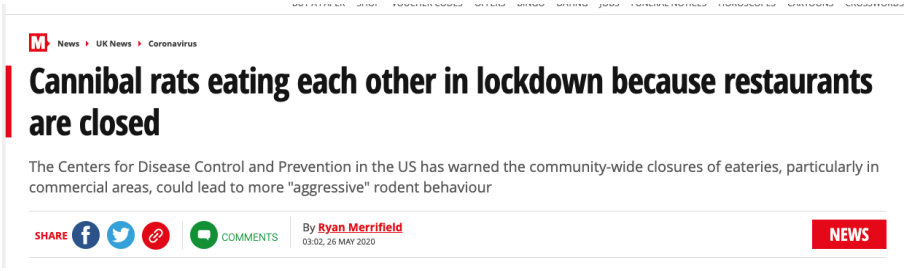

Fig 1. Screenshot of article heading from mirror.co.uk by Ryan Merrifield, 2020.

RAT[3]

[1] What is the Rat? The rat is the heterotroph.
[2] What is the Rat? The rat is now the rat king who is the consumer and the consumed.
[3] What is the Rat? The rat is our estranged nature under capatism.

Introduction

Person1: ***look***

[Person2 touches the ground]

a fruit fly hovers above the desiccated brick and lime

there must be fruit here

Rats, flies, humans, consumers, contaminators

Plants, wood, creators, growers

Yeast, plastic, preservers, contaminants

Groupings. Regroupings.

When collections of matter are grouped together, everyone is affected. Everyone is contaminated. Everyone involved becomes new through the experience of becoming-with. This process is not illusionary, it is happening on multiple levels, on multiple timeframes.

This process can be small.

This process can be slow.

This process can be so fast you missed it when you blinked. But sometimes, if you close your eyes and focus on the inside of your skin you can see the imprint.

Rat, Plastic, Wood is taking that imprint and reverse-engineering it into hybridized artworks that are perpetually in the act of affecting and being affected. A banana spawns a fruit fly spawns a microbial flourishing causing wine to turn into vinegar, which you (the viewer) consume and are affected and transformed by each step in the process.

A process that can be endlessly repeated with mutualistic results.

A process that is generative.

My work is a tumbleweed[4].

It is a lichen that combines organisms into symbionts.

The exhibition title *Rat, Plastic, Wood* references American political theorist and philosopher Jane Bennett. In her book *Vibrant Matter*, she lists items she found in a storm drain:

> one large men's black plastic work glove
> one dense mat of oak pollen
> one unblemished dead rat
> one white plastic bottle cap
> one smooth stick of wood (4)

These items struck her with the "excruciating complexity and intractability of non-human bodies" (4). In this list, three words resonated with my own experience of non-human bodies: rat, plastic, and wood. When combined, these words form an ingredient list for hybrid forms of matter. I relate each of these non-human bodies to the roles within a lichen. These three bodies expand within the exhibition and represent three forms of being: heterotrophic life, autotrophic life, and toxin-forming actants. When walking into the exhibition, the sterile gallery becomes a shell for a large permeable membrane of plastic and wood -- an undulating greenhouse that houses an experimental, relational habitat of microorganisms, plants, and trash. This is the culmination of my research and acts as a site of mutual investigation between the human and non-human.

Through my work, I seek to explore the potentials of repairing the rift between humans and non-humans through speculative, collaborative, and contaminated multidisciplinary artworks

[4] A seed-carrying growth that moves and accumulates knowledge as it moves.

by cultivating potential for collaborative creative partnerships. As art writer Clare Bishop notes, participatory art interfaces with reality and can help in repairing social rifts (11). Although my work is not participatory in the traditional sense, it is participatory in that it allows space for active collaboration via contamination and growth. Nothing is inert, everything is potentialized. The collaborations are happening on a more-than-human level, while actively engaging with human-made detritus.

In order to repair a rift, it is important to understand how it was formed in order to un-form, which can occur through cross-species processes of decomposition and metabolization[5]. The dichotomy between human and non-human actants has been artificially imposed and amplified by capitalism and the effects of the Enlightenment and Industrial Revolution. These movements enshrined individualist ways of thinking that are toxic and difficult to undo, resulting in our current compromised times of racism, sexism, and ecological destruction (Shotwell 8). Through processes of *othering*, we act against the fact that we are not only a part of nature, but are constituted by millions of microorganisms. Dr. Lynn Margulis coined the term *holobiont* when referring to the symbiosis between microorganisms and hosts in her 1991 book *Symbiosis as a Source of Evolutionary Innovation.* As holobionts, we are not one thing, but many.[6] As humans, we have become not only separated from nature, but also from ourselves. Capitalism has defined our epoch, putting us on a trajectory towards mass multi-species extinction.[7]

Extracting ourselves from capitalism is a task that often feels impossible. It is the force that shifted Western society into operating as individualist rat kings[8] instead of rats[9]. We know

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[5] A termite colony grows mycelium that decomposes a log rev8ealing eating as a form of remediation. By un-forming existing structures, they combine their energies to continue change.
[6] The "human" is 10% human and 90% microbial cells.
[7] Fisher, *Capitalist Realism: Is There No Alternative?*. Parenti, et al., *Anthropocene or Capitalocene?: Nature, History, and the Crisis of Capitalism*. Moore, *Capitalism and the Web of Life*.
[8] *thum-thum-thum-thum-thum*

from Julius Robert Mayer's *First Law of Thermodynamics* that energy never disappears and always transforms into something else – it cannot be created and it cannot be destroyed. Perhaps capitalism cannot be destroyed, but it can be metabolized.[10]

Collections of Boundaryless Cells

Karen Barad decouples from capitalism by proposing the theory of *intra-action*[11], which counters the idea that the universe is founded on individual matter as opposed to matter in relationship with another. Intra-action posits that agency (the ability to act) comes from human and non-human actants in relationship with each other. Barad's theory is based on the research of Nobel physicist Niels Bohr, who believed that "things do not have inherently determinate boundaries or properties, and words do not have inherently determinate meanings" (813). If things have no determinate boundaries, we cannot uphold a culture of strict dichotomies in which humans and nature are pitted against one another. Accepting Bohr's findings, it becomes possible to envision a world where there is no dichotomy or hierarchy between humans and non-humans. The human experience begins to become decentralized. This understanding recognizes that relational phenomena, not objects or things, comprise the foundation of our universe, allowing us to reform ideas of the *individual* and change our relationship to the world. Barad speaks to how reforming ideas through embracing intra-activity can alter the role of the human while still acknowledging the ways in which humans are entangled and intrinsically a part of nature:

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[9] Underwood, *Watch these Ticklish Rats Laugh and Jump for Joy*

[10] I once read that heartbreak isn't something that you can get over but only something you can move through, and I think this applies to capitalism as well. It is no good to think we can simply do away with it and live in a utopia: it must be metabolized, not discarded. Discarding is capitalism. Discarding is a sterile pile.

[11] Mutual constitution of entangled agencies; the ability to act comes from *within* the relationship between organisms and things not outside of it.

> On an agential realist account, it is once again possible to acknowledge nature, the body, and materiality in the fullness of their becoming without resorting to the optics of transparency or opacity, the geometries of absolute exteriority or interiority, and the theoretization of the human as either pure cause or pure effect while at the same time remaining resolutely accountable for the role "we" play in the intertwined practices of knowing and becoming. (812)

When there is no absolute exteriority or interiority and beginnings and endings become malleable and cyclical, there is increased room for wonder and discovery. When we allow ourselves to recognize that we are not individuals, but also non-human collections of boundaryless cells, how much more empathy and understanding are we able to extend to those who we have othered? If we decentralize the bounded, individualized human, other things will be repositioned and take on more importance and agency. It is within this place of questioning and repositioning that I make my work. By acknowledging that matter is not passive, I ask in what ways can matter around me be altered and changed through decentralizing human existence? How might my role as human and artist become more equal to the role of the materials involved in this partnership?

Lichenized Versions of Humanity

I engage with material intra-activity by introducing organisms and matter which have the potential to physically affect and transform each other: plants and fungi, organic matter such as soil and compost, along with chemicals and plastics. When I conceive these environments, awareness of the vibrancy of the non-human is heightened. I think about how humans are also implicated, through the remnants of capitalist trash I take from my own life, souvenirs taken from the sidewalk, or through the microorganisms I introduce from my own body when making the work. All these aspects begin to intermingle and act together, forming new relationships within the gallery. I call this *lichenization*: a philosophical concept in which a new entity is

formed, composed of matter acting together, including matter that produces energy and matter that consumes energy.

Lichens are symbionts of a fungi, paired with algae or cyanobacteria, and occasionally yeast[12]. It wasn't until 2016 that a study revealed that yeast is a third microorganism within some varieties of lichen that creates protective acids (Spribille et al. 488). Instead of having a parasitic relationship, these three microorganisms are mutualistic, meaning all organisms benefit, or, at least, are not harmed in their coexistence. How would our perspectives change if we viewed ourselves not only as mutualistic composite organisms in terms of our bodies as holobionts, but also as lichens consisting of holobionts and nature?

Fig 2. Maria Simmons, documentation of *Alectoria sarmentosa*[13] lichen, 2018.

The heterotrophic fungus provides much of the organism's physical structure as well as the protection against extreme conditions, while the cyanobacteria or algae is autotrophic and can provide nutrients through photosynthesis. Within this symbiosis between two organisms, there is a plethora of variation. Some lichens are made from as many as three different fungi, in addition

[12] It should be noted that yeast is a type of fungi, however it serves its own function within the lichen
[13] This photograph was taken from outside the church at my grandmother's funeral in 2018, after which I collected the lichen that has been used throughout my body of work.

to fungal yeast (Jenkins and Richards 88). The biological functions of the yeast are still being researched, but a working theory is that the yeast helps protect the lichen through the production of toxic acids. *How can these qualities be incorporated and affect the way we approach living?* According to biologist Michael Gross, it is through this collaborative mutualistic effort that lichens are able to inhabit and bring life to areas that have been considered inhospitable (183). Through the acceleration of consumption through capitalism, we are very quickly making our living environment inhospitable.

The Finnish artist duo, nabbteeri works with ideas of unnatural barriers and organic systems, weaving inhospitality with the holobiont with an unsettling ease. They make installation work that incorporates sculpture, video, and living organisms. The following quote is taken from their artist statement:

> Multispecies constellations teach us indispensable things in relation to ourselves and the world, helping to unravel the individualistic, destructive ways of human living. In our recent work we have observed multispecies cultures, hoping to relearn how to form communities and share spaces, whether bodies, other cavities or clearings, with other critters.

Fig 3. nabbteeri, *Spinelessness2,* 2019.

Their installations, void of human presence, are composed of discrete elements (e.g. video, physical sculpture), which morph fluidly into the other. Even the electrical cords are incorporated thoughtfully to become a visual part of the piece— a visual analogy of multispecies connectivity and permeable boundaries. There are elements to the work that feel violent at times and these moments occur when strict boundaries are enforced, such as the pigeon-deterrent spikes in *Spinelessness2 (2019)*. Applied on surfaces of objects, such as the gravel filled sacks and display monitors, they read as a defense mechanism when thinking of the installation in terms of biology. Weapons against biology have now been adapted to benefit it, reinforcing its physical boundaries against external forces. The spikes form a protective barrier and function similarly to the vulipina acid toxin that yeast in some lichen creates, acting as a deterrent.

Fig 4 + 5. Maria Simmons, *Skin as it Peels Back,* 2020.

Thinking about lichenization as a possible philosophical framework provides insight into how my practice evolves and organically manifests: where artworks, although sometimes

individually conceived, at times begin to fuse together to form new narratives and intra-actions[14]. For example, what began as a focus to create silicone castings that captured traces of moss and lichen for the sculpture *Skin as it Peels Back (2020)* [fig. 4 and 5] led to new discoveries which shifted my intentions, transforming the scope of the work, placing more value on the ephemeral outcomes—becoming a breeding ground for interspecies collaboration and intra-action. Inevitably the installations have a temporary lifespan, but can be reimagined and reconfigured so that nothing involved goes to waste. These methodologies speak directly to forms of lichenized life, in which matter is both metabolized and energy is produced. In my view, energy is the creative byproduct of contamination-as-collaboration. Finding meaning in assemblages of matter is an act of autotrophic energy production.

Fig 6. Maria Simmons, *Preservation Instinct* (exterior view), soil, ceramic vessels, fermentations, greenhouse plastic, wine, water, plastic bags, tuck tape, brick, efflorescence, hardtack, video, directional speakers, audio, 2021. Photo by Scott Lee.

[14] Karen Barad's theory of intra-action as it indicates the act of becoming within the relationship.

Fig 7. Maria Simmons, *Preservation Instinct* (interior view), soil, ceramic vessels, fermentations, greenhouse plastic, wine, water, plastic bags, tuck tape, brick, efflorescence, hardtack, video, directional speakers, audio, 2021. Photo by Scott Lee.

Preservation vs Ephemerality

Tension between preservation and ephemerality in my work can be explored through the process of fermentation which allows for living organisms to metabolize matter while preventing spoilage. This process acts as a living metaphor of metabolizing both the physical and conceptual waste of the Capitalocene, allowing for new ideas and energy to emerge. This approach is active within *Preservation Instinct* (2021), the central component of *Rat, Plastic, Wood,* where multiple

generative processes are focused as artistic practice: wild environmental yeast fermentation, bacterial acidification, and dehydration. A large, irregularly shaped wooden frame covered in rusted and dirt-caked plastic becomes a permeable membrane for the habitat of dirt, custom clay vessels, fruit flies, and fermentations inside. Inside the makeshift "greenhouse" clay vessels are filled with fermented liquid from collections of garbage, leaks from ceilings and dehumidifiers, and homemade wines produced from personally collected botanicals, food waste, and garbage. The fruit flies have self-inoculated some of the wines and introduced acetobacter bacteria. Over time, the bacteria forms into *SCOBYs*[15] and transforms the wines into bacterial vinegar cultures. The SCOBYs can be sectioned and dried in order to create new food sources for the fruit flies. Depending on when the work is viewed, different stages of this process will be seen.

[15] Also referred to as *mothers*, a term I find affectionate and lovely.

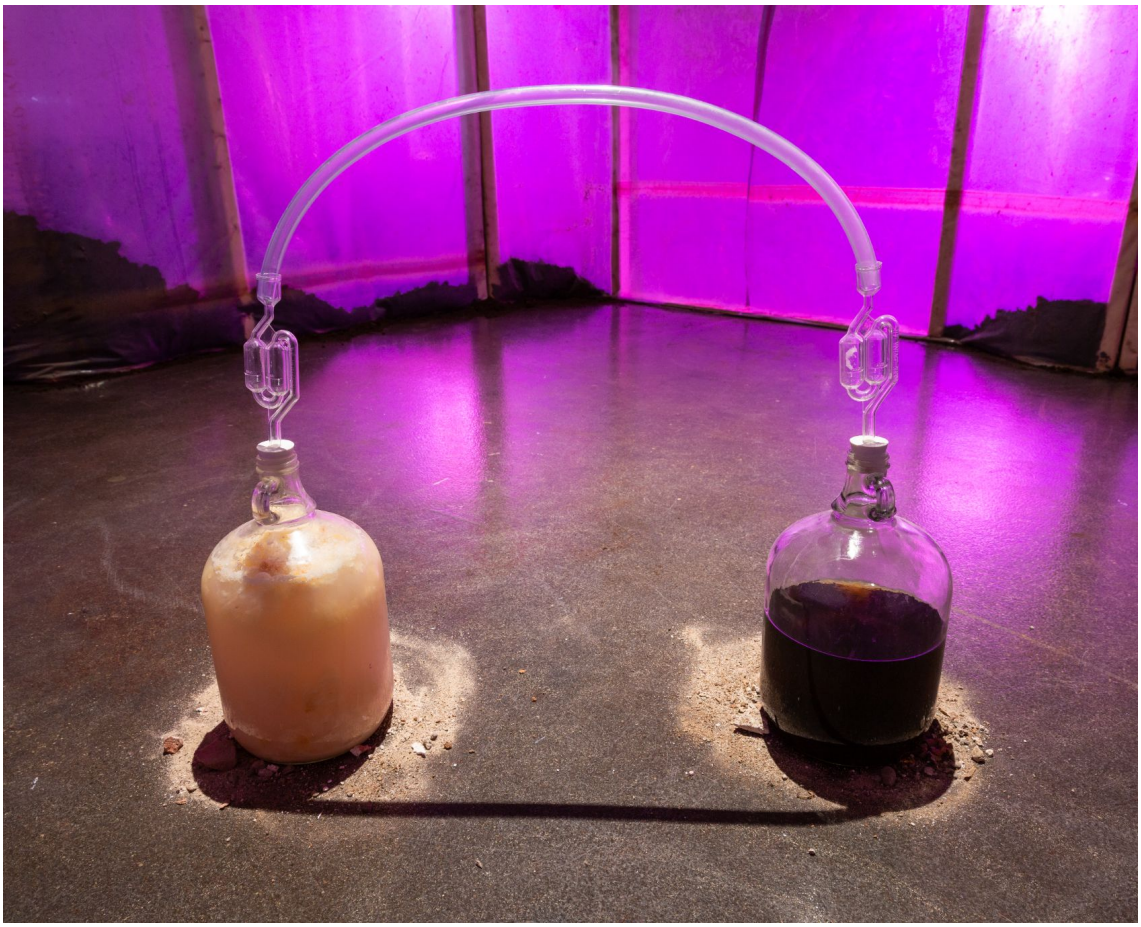

Fig 8. Maria Simmons, *They Eat Each Other's Bodies,* fermenting noodles, snow fungus, soy sauce, apples, garbage, glass carboys, airlocks, rubber tubing, 2021. Photo by Scott Lee.

RECIPE 1

Section 1:

1. *moss, horsetail, juniper berry, pine needle, cedar leaf, sugar, water*
2. *leave to ferment 3-6 months*
3. *wine*

Use in section2

Section 2:

1. *Food source*
2. *fruit flies*

3. wine

*4. vinegar**

5. food source

Repeat.

**This part of the process is unpredictable and may not result in vinegar. Be prepared to accept what comes.*

It's possible that preservation is in my genetic history. My great grandmother on my mother's side, Mary (my namesake), was a Mennonite known for her fermentation. Her mother before her, Katarina (my middle namesake), was a herbalist and midwife. There is a long personal family history of looking to plants for knowledge and traditions of preservation. Fermentation is both a powerful transformational force, but also a preservation agent. What is fermented and changed now has the potential to remain. The mutualistic bacteria cultivates and the spoilage bacteria subsides. Fermentation is rich as both metaphor and practice. It is the yeast, sometimes environmental yeast from the air, other times cultivated yeasts, that are introduced to assemblages and catalyze the transformation of sugars into alcohol. When I use fermentation in my work, it gives me the opportunity to place materials and organisms directly together into breeding areas where they can grow and change each other. According to Sandor Felix Katz, renowned fermenter and writer, one of the earliest uses of fermentation as a metaphor was in a political analysis from 1681: "Several Factions from this first Ferment, Work up to Foam, and Threat the Government" (10). The fermentation act provides a pungent visualization for how transformative ideas can grow within us. Fermentation is powerful. Yeast is powerful. Microorganisms are powerful. Their power is transformative and transmutative.

Recipe 2

1. *Accidentally make a horrible meal*
2. *Combine ingredients of horrible meal [ex. noodles, snow fungus, soy sauce] with a 2:1 ratio of sugar to hot water*
3. *Leave to ferment for 6 months*
4. *Discover possible uses for ferment: fly catcher, vinegar, fertilizer*

The way I see it, we humans have a better chance of changing our behaviours and systems if we acknowledge that our lives, our environments, and our very bodies, exist within an interwoven web of dependency in which we are constantly being contaminated and contaminating, forming and reforming through a process of merging ourselves with others. We have the transformative power of yeast within us. Through realizing and embracing our inter-dependency, we can become lichenized versions of humanity, in which we metabolize, create, transform, preserve what matters, and ultimately reform our society. I'm not claiming this artwork will reform society, but through my work, I try to embody ideas of interconnectivity and reliance within collaborative environments and systems. These environments provide a hospitable setting in which different organisms can grow, reproduce, eat, affect, and preserve. The intimate scale allows for familiarity and understanding to grow between the viewer and the acting collaborators in the work over time, and helps me understand and process my own relationship with the world and its interconnected organisms.

PLASTIC


ARTICLES

Characteristics of bacterial and fungal growth in plastic bottled beverages under a consuming condition model

Maiko Watanabe, Takahiro Ohnishi, Emiko Araki, Takashi Kanda, Atsuko Tomita, Kazuhiro Ozawa, ...show all

Pages 819-826 | Received 18 Sep 2013, Published online: 28 Mar 2014

Download citation https://doi.org/10.1080/10934529.2014.882644 Check for updates

Fig 9. ResearchGate headline screenshot, 2014.

CONSUMING[16]

CONDITION [17]

[16] Rest a plastic bottle on your stomach and watch the yeast from the air and your body consume it.

[17] Centuries come and go and the rest of us will all be gone but you will still be there with your half-eaten bottle and your generations of yeast.

MODEL[18]

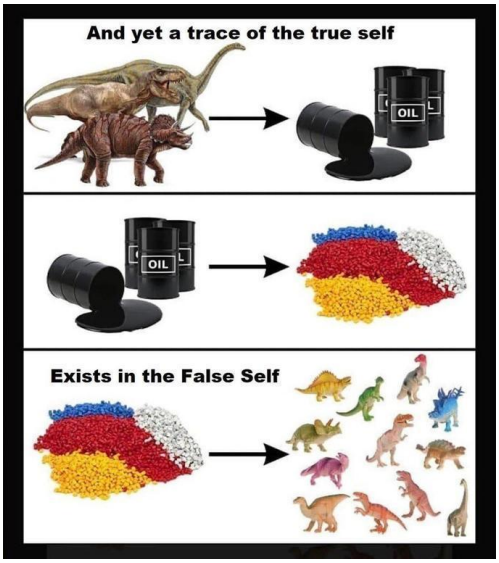

Fig 10. Meme sourced from:knowyourmeme.com

[18] Without contamination and collaboration we would be consumed by the waste of industrial capitalism. Looking to others to make ideas digestible is crucial. Together we will break down the plastic.

Heterotrophs Need Autotrophs

As fungi needs to pair with the algae or cyanobacteria in order to thrive in the model of the lichen, so must humans conceptually pair ourselves – the heterotrophs – with the vegetal world – the autotrophs – in order to imagine new cycles of continuance. The system of capitalism most of us participate in causes us to consume unstable amounts and produce waste that cannot be sufficiently metabolized. We should pause and take a step back from our human ideas of creation, which is mainly repackaged consumption, and learn from the autotrophs. Not so that we become fully autotrophic, but so that we can become hybrid organisms; through this hybridization we can learn to consume in ways that produce generative materials that can be reused or actively metabolized.

As holobiont "humans," we are chimeric -- it is estimated that 90% of the cells that make up the human body are bacterial, and there are over 150 different species of bacteria within the human gut microbiome (Gilbert, Sapp, Tauber 327). If we consider Niels Bohr's claim that the basic epistemological unit of the universe was not the atom, but instead phenomena, it becomes increasingly clear that the world is formed and functions relationally. Karen Barad states that phenomena are produced through "agential intra-actions of multiple apparatuses of bodily production" (17). A phenomenon, the base unit of the universe, comes into being through the relationship and potentiality of open-ended practices. So, instead of focusing on something's perceived boundaries in determining its singularity, what should be focused on is how things are truly formed through relationships. It is through this lens that we can expand our understanding of "ourselves" and include the autotroph. When our understanding of boundaries is expanded, it allows room for contamination to become collaboration.

Contamination as a Collaborator

To pursue non-human collaborations and living, we have to examine what it means to be contaminators within a precarious system. We occupy a space of being both contaminators and the contaminated. To be a contaminator isn't necessarily positive or negative, it is a fact. According to anthropologist Anna Tsing, "everyone carries a history of contamination; purity is not an option" (27). Whenever there is interaction there is contamination, therefore whenever there is collaboration there is contamination. Where there is contamination there can be decomposition, which is the driver of sustainable life. Collaboration is essential for life; therefore contamination is essential for life. This idea of embracing contamination extends to all forms of encounters: "we are contaminated by our encounters; they change who we are as we make way for others" (Tsing 27). As contamination changes world-making projects, mutualistic worlds – and new directions – may emerge.

Although I have been viewing contamination positively, contamination means that something is being significantly altered. Its state is being forever changed as an effect of interaction. Some things are more easily affected by contamination than others, we are also being changed through these encounters. Tsing refers to this as being the condition of being vulnerable. We must remind ourselves that our world is constantly in flux:

> Unpredictable encounters transform us; we are not in control, even of ourselves. Unable to rely on a stable structure of community, we are thrown into shifting assemblages, which remake us as well as our others. We can't rely on the status quo; everything is in flux, including our ability to survive. Thinking through precarity changes social analysis. A precarious world is a world without teleology. Indeterminacy, the unplanned nature of time, is frightening, but thinking through precarity makes it evident that indeterminacy also makes life possible. (Tsing 20)

Although Tsing does not reference Karen Barad's theory of intra-action, the two ideas are intertwined as the foundation of our universe is based on phenomena and intra-action (827). Intra-action involves fusion and contamination; a becoming-with that means nothing is separate.

If intra-action is foundational, so is collaboration and contamination. It switches the base state from purity, which is a myth, to contamination. If contamination is our base, then our definitions and ideas of contamination must change. We are collaborative beings. Our world is collaborative.

When I refer to contamination as collaboration, I am speaking about it as a way of processing our inherent multiplicity. Within the Capitalocene, contamination references toxins, oil spills, garbage, factories, urban sprawl, whereas within daily household contexts, contamination is mold, dirt, a fruit fly in a glass of wine. Contamination as collaboration takes on different meanings within the different contexts of contamination, however each involves a change, a becoming-with. In the same way that a fruit fly can change a wine into a flourishing microbial vinegar, can we find ways to undo the Capitalocene and its effects through collaboration?

Fig 11. Anicka Yi, *Force Majeure,* 2017.

Artist Anicka Yi explores very literal acts of contamination in her work. In a 2017 show at the Guggenheim, she created a climate-controlled room lined with agar[19] titled *Force Majeure.* The agar tiles have been inoculated with swabs taken from Manhattan's Chinatown and Koreatown and have been allowed to bloom, spreading over the all surfaces of the room. Yi's work invites viewers to see contamination as an active collaborator within the art and, by extension, within our lives. Contamination has been something on the forefront of most people's minds due to the COVID-19 pandemic. During this pandemic, communities worldwide have increased sterilization protocols in an attempt to offset the ways in which microorganisms naturally shift and inhabit bodies. However, this has imparted an increased awareness of how we as humans are vulnerable components of an integrated system.

In a recent interview with Artnet, Yi describes how the pandemic has shaped our collective understanding of this vulnerability:

> We still adopt a very modern definition of nature today: a space that we can willfully jump in and out of. What COVID is teaching us is that actually, nature is everywhere. It's in us, we carry it everywhere, and environmentally it's everywhere. We can't eradicate it. And so we need to create a new kind of political philosophy based on this lesson.

Just as COVID-19 reminds that we are not immune to microorganisms as a part of nature and sparked a surge in sterilization, it has also sparked a renewed interest in processes using microorganisms, most notably the massive rise of sourdough bread in the early months of the pandemic (Holmes, "The Science of Sourdough: How Microbes Enabled a Pandemic Pastime"). It should not be overlooked that the process of sourdough involves drawing bacteria from the air which is in direct opposition to the intense sterilization incurred by safe pandemic protocols. However, sourdough bread draws atmospheric yeast and is a mirror of your immediate

[19] A jelly-like substance made from seaweed

environment. Sourdough expert Vanessa Kimbell says in her book *The Sourdough School* that if two people each make a sourdough loaf, their ecosystems, flavours, and textures will always be unique (23). This is even within the context of being in the same room as the other person making bread. The question, though unanswered, remains whether it is the yeast growing on the maker that is the true influence in the development of the yeast within the bread? Although Kimbell once had her gut microbiome tested and did not find overlap, the skin microbiome and the gut microbiome are not composed identically. They are interconnected but varied ecosystems within the holobiont.

Hardtack Preservation

Bread is a fundamental substance within the Western diet, especially in times of hardship. Here I am thinking of my grandfather, a smooth talking Newfoundlander, who would often eat hard biscuits referred to as *hardtack*, which would need to be soaked overnight before eating. This fusion between bread and crackers was eaten on long ship rides. It was a staple of soldiers, sailors, and migrants. My dad once bought my grandfather some as a gift. In response, my grandfather politely thanked him but said he hated the stuff and only ate it out of habit.

Fig 12. Screenshot of 150 year old hardtack from Minnesota Historical Society's Youtube.

Presently, hardtack is eaten across the world in communities ranging from factory workers in Japan to Russian military rations to Canadian East Coast communities like my grandfather. In St. John's Newfoundland, *Purity Factories* specializes in the commercial production of hardtack. When hearing this name, I can't help but think of Alexis Shotwell's book *Against Purity.* The purity in *Purity Factories* comes from the refining process of the flour - it is consistent and fine textured. However, this process does not make something pure. Flour is prone to spoilage and can last, at best, eight months. This spoilage occurs through the microorganisms that feed on it over time. Alternatively, hardtack can keep for upwards of a century, as long as it is kept dry and sealed. Still, there is nothing pure about hardtack. We are contaminated physically within our microbiomes but also through generational histories (Shotwell 23). The histories of colonialism and upheaval live within hardtack through its use as survival food for colonial settlers and displaced communities alike.

WOOD

Remember when we were children and you got pine sap in your hair and we laughed and you cried and we cut it out and threw it to the ground before we knew that this was going to be a way of life: us and the sap and the ground

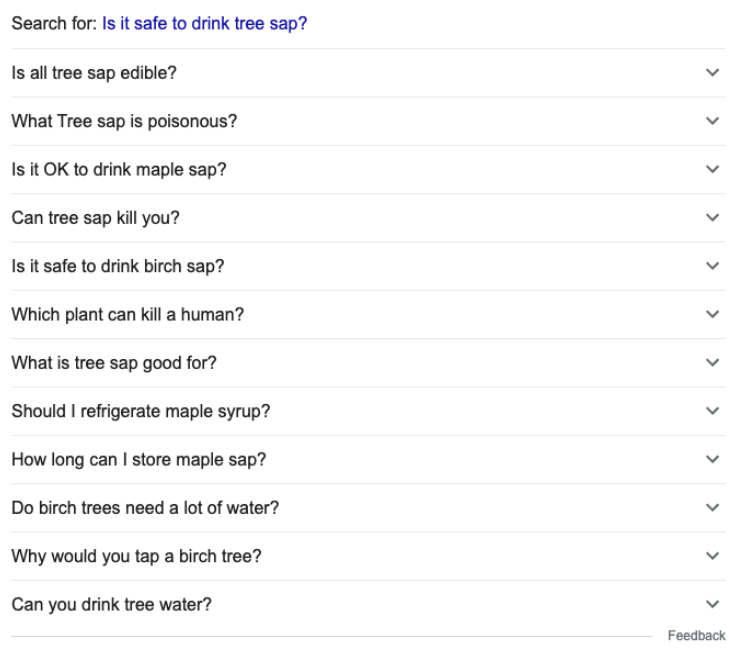

Fig 13. Google search screenshot, 2021.

Us and

the sap

and the ground.

Humans as Holobionts & Capitalocene

In order to understand my artworks, it's important to understand the social and microbial conditions of their production. In my pre-COVID studio, I was able to incorporate fungi and cultivate reishi, oyster, shiitake, and lion's mane mycelium into my work with ease. Their cultivation indoors requires consistent and strict sterile protocols. I adapted my very unsterile studio space to accommodate them, creating areas where I would have to remember not to breathe. The trajectory of my work changed after the first few months of the pandemic, which was six months into my research. Access to studio spaces were at times limited if not outright restricted, and I found that I didn't have the emotional capacity to care for something that required the level of sterility now required for all aspects of life. Wearing masks and gloves was no longer a novelty, it was a way of existing. Through my work I began to embrace the idea of the *contaminant* as a component or factor of the work. I brought the mushrooms out of their sterile environments and photographed them, becoming the images featured in *Wavelength of a Spore/Attachment (2020)*.

The images of the mushrooms are backlit with the same grow lights used in their cultivation. The light is cast onto tubes filled with soil, garbage, microbe cultures, and Mother of Thousands plants. The roots of the plants make their way through the layers of soil and detritus, gathering and metabolizing any possible nutrients from ingredients such as Skittles®, honeycomb, fermenting apples, ketchup packets, and wood shavings. The light nourishes the microbes and plants while remaining at a distance, mediated by plastics that act both as a protective barrier and an artifact of the toxic unnatural.

Fig 14. Maria Simmons, *Wavelength of a Spore/Attachment,* Polypropeline prints, grow lights, birch plywood, Mother of Thousands, silicone, plastic bags, grogged clay, potting soil, dirt, microbial culture, brick, latex gloves, cement, golf ball, hardened plastic tubing, plumbob, 5 euro note, pheasant feathers, photographic slides, moss, usnea lichen, ear plugs, shrink wrap, nylon rope, steel wool, honeycomb, beaver wood shavings, fermented garbage* (velvet ribbon, iPhone charger, Skittles®, fidget spinner, newspaper bag, succulent leaves, apple juice, wristband), Heinz® ketchup packets, Encapso™ k, GooGone®, Maynard's Sour Patch Kids™ mango wrapper, Trident gum insert, Reese's Pieces®, Energizer Max® box, sticky note with "oyster" written on it, salt, water *Fermented 3 years, 2020.

Digging Up the Dirt

When I didn't have access to conventional studio spaces from April 2020 to September 2020. I began working in the basement of a building belonging to the church I grew up attending. The church building was built in 1883 and the basement floor is compacted dirt and detritus from

former uses[20]. In the room there are two basketball nets, a dehumidifier, two pylons, and a staircase leading to a boarded window[21]. There is a stone tunnel leading from this building to the basement of the official church sanctuary building. Using the space as a site of investigation I began taking samples of the efflorescence leaching out of the walls, and pouring silicone into holes in the dirt, over crystal structures forming over the crumbled limestone.

Dust &Dirt&Soil

Mineral, chemical... leaching

pylonx2 brickx14 plasticx24 ropex2

Fig 15. + 16. Maria Simmons, documentation of efflorescence samples, 2020.

My experiments culminated in two works: *Excavation Growth Units 1+2 (2020)* and *Residuum (2021)*. In *Excavation Growth Units 1+2* I take samples of the dirt and begin a remediative process, pairing it with soil, fungal spores, and moss. The source dirt is compacted

[20] Community Centre, shelter, gymnasium

[21] When I was fifteen I climbed up this staircase during the church service and attempted to crawl out the window but set off all the fire alarms in the building.

with rat hairs, candy wrappers, and fragments of the former wooden gymnasium floor. It becomes a lichen, lying in the dark, filled with history but starved of food and light. Bringing light and attention to these dark forgotten histories creates the potential for them to be re-contaminated and metabolized, allowing histories to be heard and dirt to be fertilized.

Fig 17. Maria Simmons, *Excavation Growth Units,* Excavated dirt, brick, stone, efflorescence, silicone, oyster mushrooms, sphagnum moss, PVC vinyl, plywood, casters, 2020.

Fig 18. Maria Simmons, still from *Residuum* (0:41), single channel video, 2021.

Residuum is a video piece in which the camera slowly investigates the physical space, roving over the walls and floor of the basement. Text reminiscent of subtitles scroll with and in opposition to the movement. The text is the highlighted lines from pages 10-11 of this paper. *Residuum* is projected onto the plastic membrane of *Preservation Instinct* where viewers can watch from either side. The text loops and alternates directions, so that viewers can never experience it all at one time, but must sit with the discomfort of getting a portion and then viewing the video again on the other side to receive a different portion. Accompanying *Residuum* is a soundscape composed of the sound of the dehumidifier sampled from the church basement paired with audio samples of ultrasonic communications of lab rats[22]. This audio merges with the live sounds of dripping and bubbling from *Preservation Instinct.*

[22] These recordings were used with permission from neuroscientist Dr. Blake Porter.

Fig 19. Maria Simmons, *Purity Factory,* ceramic, saltwater, homemade hardtack, plastic bag, *purity*® facial cleanser, efflorescence, 2021.

There are oral histories surrounding this Church and adjacent land that involve disease, mistreatment, and death, similarly to the pandemic circumstances that drove me to use the space. The dirt, detritus, and chemical leaching in the video and growth units are remnants of these difficult past histories that have been forgotten and left to their own devices within a vacant basement. It becomes a sort of peat moss bog where stories can be forgotten for decades, then unearthed as they were. While working in the basement of the church, documents were uncovered revealing that the land within two kilometers of the church was the site of another quarantine in the 1830s. Irish immigrants came to escape the potato famine, but contracted cholera. They came to dock at Burlington Heights, but were denied treatment and forced to

quarantine on the shore until death. I think of this when I bake the hardtack used in *Purity Factory* (2021) salting it with the saline crystals leaching from the basement walls[23] which I then combine with lotions, syrups, and sanitizers and vacuum seal.

The hardtack is made in either the shape of yeast clusters or lime efflorescence, another chemical coming from the walls, referencing the way the Irish migrants' bodies were dosed in lime before being covered with gravel in mass graves. Just like we need to metabolize the ways we have mistreated the earth, we need to be able to process the ways we have mistreated groups of humans, their microbiomes, their cultures and histories.

They Eat Each Other's Bodies

In my practice, I walk a lot, in both urban and forested environments. In these walks, I maintain an intense level of engaged observation[24]. Through the use of unusual materials in my work, the studio becomes boundaryless. Forests, parking lots, basements, and the kitchen all become sites of making. My life is an ever-evolving system of experiments. If I see a rusted piece of metal on the ground I will take it to see how the rust could grow or how it will interact if I immerse it in copper sulphate and maple syrup. I have microbes growing in tubes on my windowsill, in petri dishes in cupboards, in jars in the kitchen. I sample everything to see how it will look under a microscope. Some of these experiments result in finished artworks, while others remain ongoing. I rarely abandon an experiment. I am an anxious hoarder of materials

[23] My mother's mother once had a dream that church walls were crying. Maybe this was it.

[24] When I was a child, my father would take my family on trips and point out the rock formations while we drove. With my father, there was always a test, so I too learned the rock formations streaming by at 100km/hr in case I would be called upon but also because seeing the differences in the rocks made the rocks different from each other. It was no longer a solid wall on the side of the highway, but a diverse field of sediment. This was the beginning of my constant state of observation.

because once you reach a point where you recognize that something has potential to be an actant, it becomes sacred and irreplaceable.

In the process of art-making, I act impulsively and intuitively. It is through art that I better understand my relationship and responsibility to the world and physical matter around me. I live most of my life in my head. Growing up as an only child, with primarily plants and animals as friends, I looked for connections within the non-human world. It is through the relational process of becoming intimate and intentional through feeling, interacting, and affecting non-human organisms and matter that I connect and can perceive the interconnectivity between and with the world. It's when I see how the materials I put into relation with each other react and affect that I begin to understand my place in the world, viewing myself not necessarily as *human*, but as an active material that affects others. I don't look to make representations of the things I see, but to invite the processes of the vibrant matter around me into collaboration.

I allow each idea to feed the next. It is rare to have a new idea that isn't fed with the body of the old, although the new idea might take on entirely different forms. I reuse both physical and conceptual materials from past projects, limiting single-use artworks and creating cycles of breakdown and reimagining past work and ideas. I walk, I read, I allow my ideas to eat each other's bodies.

In Reduction

Combinations of matter, whether it involves a junkyard of metal and plastic or a mycelial network of trees and fungi, have the potential of inciting action. Jane Bennett describes this phenomenon in response to seeing a vial of gunpowder residue involved in a homicide case:

> *This composite of glass, skin cells, glue, words, laws, metals, and human emotions had become an actant. Actant, recall, is Bruno Latour's term for a source of*

> *action; an actant can be human or not, or, most likely, a combination of both. Latour defines it as "something that acts or to which activity is granted by others. It implies no special motivation of human individual actors, nor of humans in general." An actant is neither an object nor a subject but an "intervener," akin to the Deleuzian "quasi-causal operator."* (10)

Bennett makes the case that we should be viewing non-human bodies as actants instead of as objects and that often these actants are humans and non-humans, similarly to the lichen's autotrophic and heterotrophic relationship. This relates back to Karen Barad's theory of intra-action. Together, through relationships, things can become vibrant symbionts of intervention and agency. Sometimes, as Bennet states, the relationship is between glass, skin cells, glue, words, laws, etc. or, in my case, the relationships between pine needles, fruit flies, theory, fungi, soil, and garbage. My work positions itself within this realm of interveners.

interveners

preservers

metabolizers

composters

contaminators

collaborators

rat

fruit fly

you-me-us

The fruit fly becomes the vinegar becomes the gut of the human.

You are the human.

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GLOSSARY

Agency: the ability to act; comes through intra-activity and collaboration

Autotroph: an organism that produces its own energy; a maker, not consumer

Capitalocene: an alternative title to the Anthropocene that centers capitalism

Collaboration: the effect of connection; a positive result of contamination

Contamination: connection; something coming in contact and reforming

Efflorescence: a chemical or mineral leaching through walls; small crystals

Heterotroph: an organism that cannot produce its own energy; something that must eat something else; something that must break down other matter

Holobiont: the expanded "human," including microorganisms living within and on

Intra-action: a theory developed by Karen Barad

Toxin: something that contains attributes that are poisonous

Metabolism: a way of processing and breaking down matter in a way where energy is harnessed and the matter can become transformed

Lichen: a symbiont comprised of fungi, cyanobacteria or algae

Lichenization: a process in which autotrophic and heterotrophic organisms form mutualistic relationships and operate together

Parasite: an organism that takes from its host without giving in return

Mutualism: organisms who both benefit each other; support; community

SCOBY: acronym for "symbiotic culture of bacteria and yeasts"; mother