

**In between empathy and wonder lies the contamination that makes us human**

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## **Abstract**

This thesis reinspects the biological subjectivity of empathy, to reconstruct the act of empathic projection through its “auto-hetero-subjects,” encountering the microbial universe via empathy as an aesthetic experience. Empathy is a term that is often taken for granted, referring to a capacity to share and understand another person’s feelings or experiences. This thesis will defamiliarize that understanding, question its limits, and introduce it in the context of art and aesthetics.

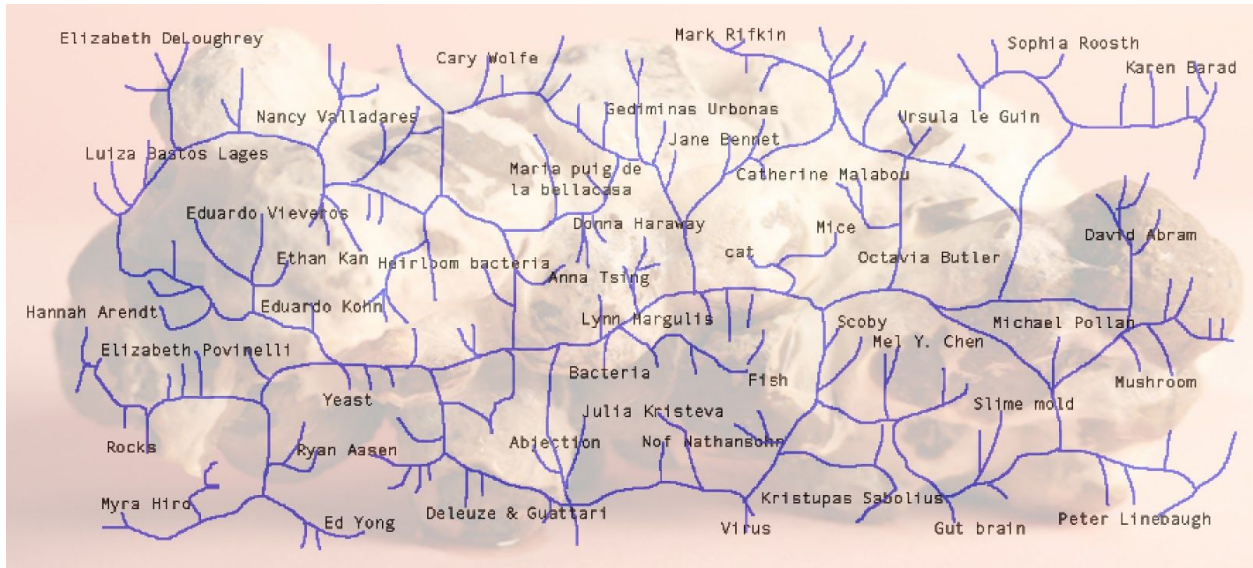
Contamination is invoked as a signifier that is both material—endosymbiosis; microbiome; the human virome—and affect, the moment that intrudes consciousness—empathy, wonder, or something in between. The role that the body and the gut plays in the performance of empathy with its constituent microbes is re-conceptualized by drawing from the history of aesthetics, neuroscience, psychoanalysis, and microbiology. The process of fermentation acts as a muse for the body, in its abjectness and with its symbiotic affordances, to construct an empathy that is embodied within a multiplicity of bodies. This thesis speculates on the reenactment of a different kind of empathetic subject, one that is many and reflects the desire of many.

Through deconstructing the concepts of empathy, wonder, and contamination in parallel with my own art practice, I will examine the role of art in producing affective relationships, and thereby generating alternative sensibilities for empathic ways of becoming with more-than-human worlds.

**Thesis Supervisor:** Gediminas Urbonas

Associate Professor of Art, Culture and Technology

## Fecal commune



We do not think alone, we do not know alone. We are always becoming-with others. I write this thesis with my gut, digesting thoughts from other thinkers and their viral intelligence, fermenting their collective scholarship with my gut bacteria. I push to recognize the microbeness of a microbe and the microbeness of a human as well as the humanness of a microbe in hopes of revising the humanness of the human. I think and write in a multitude of voices.

\*Disclaimer: When I wrote the above passage I was striving for a somewhat equivalent collaboration across all quasi-agents. However, after the first draft I'm realizing a bias that should be addressed. I am a puppet of the microbial, my thoughts encoded by viral genes, my desires conditioned by bacterial wants. Like the insect whose gender is bended by the Wolbachia bacteria, like the ant aimlessly lurching under the persuasion of the Cordycep fungi; like the zombie snail that climbs up to the top of a tree, pulsating, signaling the will of its parasitic Leucochloridium, awaiting the hungry bird to fly by.

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## Acknowledgements

As noted above, we do not think alone, we do not know alone. We are not in ourselves, we are through others, always through others. I am deeply in debt to a myriad of beautiful and thoughtful others that I co-constitute with under dire conditions. We are the only reason I remain hopeful, and I have no doubt that we can and will turn the flow, together. Fecal commune.

I want to first thank the non-human and non-life forms that materially and affectively shape the way I think, with whom I think-with. I'm particularly thankful to the SCOBIES that taught me the affection of touch, to embody Octavia Butler's words "All that you touch. You change. All that you change. Changes you." My parents, for unconditional support and faith in the unknown. My life partner, Ethan/Eleanor, for an abyssal spell of tenderness and inspirational pastry creations. The umami mamis, Nancy and Luiza, for the affordance to unravel and become undone while holding hands and booty pooping. Allison, for effortless humor and the dark side of the moon. Ryan, for razor sharp wit and a heart of tofu. Casey, for always pushing us to think systemically and adopt cosmic ontologies. Matt, for teaching me the meaning of unrelenting. Bike gang, Chuco, Aarti, Maggie, Selby, for the weekly wildings and a sublime summer. Pohao, for encouraging me to aim high. Mona, for taking care of Emma. Faruk, for the art of storytelling. Nof, for love, support, and exquisite beauty. Ayesha, for pure joy and seismic screams. Semine, for existential grace and garden poetry. Jesal, for firing marxist manifestos and introducing us to 16 beavers. Mario, for being the first reader and encouraging me to deconstruct empathy.

Finally, this thesis could not be without the generosity and viral intelligence of my thesis advisor and readers. Gediminas, for teaching me to navigate uncertain times with calm, cool, and wisdom. Kristupas, for deeply engaging with my work and introducing me to new thought forms. Elizabeth, for the whack on the head realization that history and politics come before ontology, and cheering on as I drive into the wreck.

What is it that happens precisely when we encounter someone we love?  
Do we encounter somebody, or is it animals that come to inhabit you,  
ideas that invade you, movements that move you, sounds that traverse  
you? And can these things be parted?

-Gilles Deleuze & Claire Parnet

Zero    Something like empathy

It began as an exercise of probing the limits of empathy: mammal—yes, insect—yes, plant—yes, rock—? Exceedingly easy. As I press my cheek against it, I feel things. It is heavy; it is cold and a little damp: it smells of crisp clay; it has history and is embedded in my immediate web of relations. I feel myself stretching into its vast temporal existence.

I needed a more obscure subject, my eyes wandered past the stack of petri dishes that held cultures of microbes sampled from my body. Is that not the perfect subject? To the unaided human senses it is barely there, and yet it is on and in me, constituting me. I had failed to see it because it was an assignment for a synthetic biology class, and “engineering” being the operative metaphor for synthetic biology condemns the beings to be conceived of ontologically as tools, as sites of extraction exclusively for the human.<sup>1</sup> This entanglement of the microbial and the human runs deeper than just microbiome, it has roots in the social and cultural sphere as a deep dependency on the microbial particularly in food and pharmaceutical industries where they are put to work in an industrial and global scale. I am reminded of the child in the broom closet<sup>2</sup>, my good life is only possible because the configuration of entanglement is locked in this particular dynamic. Bacteria have been laborers in the research and industrial system for over a century and yet how much do we know about them? What is language to them? What is desire? Life and death? I carefully examine each plate, shining light on them at different angles, drawing in deep breaths of their funk, gently touching them, and yet I emerged empty-handed (aside from

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<sup>1</sup> Roosth, Sophia. *Synthetic: How life got made*. Chicago: University of Chicago Press, 2017, pp.12.

<sup>2</sup> Thanks to Elizabeth Povinelli’s analysis of Ursula Le Guin’s *The Ones Who Walk Away from Omelas*, a fictional “utopian” society that maintains the happiness and prosperity of its citizens via the misery of a child locked in a broom closet.



the millions of microbes I picked up on my finger tips). As hard as I tried they remained inconceivably other, quietly feeding on nutrients and occupying more space each day. How could I be so alienated from such an intimate presence, one that covers me, dwells in me, has vestiges in my every cell? They afforded me the ability to sense and hence to know, and yet I cannot know them in its own terms. I don't know how to engage with the subjectivity that is already there. When I empathize, I project onto it my own epistemologies; when I try to listen to it speak it is spoken for.

And so I keep nagging myself with the question “Can I ever feel what a bacteria feels?” I hear the question in my head in “my” voice, but the more I obsess about the bacteria the more I learn about how deeply I am intertwined with bacteria. I wonder what a bacteria feels like, but I am bacteria too. If wonder is the most basic of all affects, is this auto-affection or hetero-affection?<sup>3</sup> Auto-hetero-affection? Auto-affection in its origins is an experience of the self, the self wondering about the voice that is “my” voice thinking in my head. It probably entered the philosophical discourse with Plato defining thinking as an internal monologue in *Theaetetus*.<sup>4</sup>

The traditional, cartesian formulation of auto-affection as pure, intuitive and immediate has been deconstructed by Derrida against the grains of temporality. “Now” is not a thing but a state that bears both a repetition of the past and an anticipation of the future, therefore any auto-affection “I think..” is always already contaminated by the two states, always already hetero-affection.<sup>5</sup>

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<sup>3</sup> Johnston, Adrian, and Catherine Malabou. *Self and Emotional Life: Philosophy, Psychoanalysis, and Neuroscience*. New York: Columbia University Press, 2013, pp. 9.

<sup>4</sup> Lawlor, Leonard. “Auto-Affection,” for *Derrida: Key Concepts*, ed., Claire Colebrook. London: Routledge, 2014, pp. 130.

<sup>5</sup> *Ibid*, 138.

Hetero-affectation means affect originating from a source that is different from “me”, in two senses:

“(I) The one who is affected in me is always the other in me, the unknown "me" in me, a dimension of my subjectivity that I don't know and don't perceive, and that (2) what affects me is always somebody other than myself, something else than the feeling of my ownness. Even when I have the feeling of self-existence, for example, the I that feels and the existence that is felt are not exactly the same; they differ.”<sup>6</sup>

The second definition is obvious enough, hetero as other, outside of “me”. The first definition however, is suggesting some sort of primordial self that completes my subjectivity and yet is undetected by me. Can it be..? I wonder, again.

This thesis uses aesthetic empathy as a starting ground to contemplate how one could perceive artistic practice and research as working to cultivate empathy for the more-than-human world, in times of ecological rupture and ruins, to create different ways of worlding. The western concept of empathy was born out of aesthetic theory as a mode of aesthetic experience of projecting the self into a non-human object, form, or natural landscape, as a way of bringing closer and harmonizing with the other. This aesthetic empathy gave way to the later, more dominant theories of cognitive and affective empathy that also claims to achieve sameness, although predominantly occupied with bringing humans closer to other humans.

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<sup>6</sup> Johnston, Adrian, and Catherine Malabou. *Self and Emotional Life: Philosophy, Psychoanalysis, and Neuroscience*. New York: Columbia University Press, 2013, pp. 20.

I thought I understood what empathy was when I set out to write this thesis. There is a “familiar” mode of empathy which most people think of as existing in consensus, but upon some introspection and research, one finds that it only exists within the slippage of definitions. As I set out to define empathy in relation to this thesis, to “familiarize” it for the readers, I realize it becomes more of a “defamiliarizing”. The deeper I engage with the concept of empathy, the clearer it appears as missed swings around the thesis piñata, and yet I refuse to leave it behind for the same reason I picked it up—it is a mobilizing term that sets readers on an (illusionary) common ground. Instead, empathy is repositioned critically as a vehicle to stage the narrative that I’m bringing forth. Simultaneously, I try to draw out the dialectical tensions between the term it is conceived to be, set against the terms I am formulating it into. I began at empathy because I started at individual subjectivity, simply put, to answer the question “Can I ever feel what a bacteria feels?” However, after some efforts to deconstruct empathy and subjectivity this question becomes painfully unnecessary. I am not myself, I am through others. I already am a microbe—evolutionarily, biologically, and socially.

Hence, throughout this thesis, “empathy” is complicated through an entanglement of agencies within a “self” performed through its microbes, ultimately evolving the concept of empathy into something other. Perhaps the hope is to introduce a mode of relationality that does not totalize or reach conclusions, an invitation that plays on opening space for unique appearing instead of erasing the vibrancy of the other. This is based on the understanding that the self is shot through and through with many others, primordial-ancient-contemporary others. In this sense, contamination is presented as a mode of generating both difference and sameness, auto-hetero.

## One Aesthetic empathy

Empathy differs from sympathy in the placement of the self with the other. While sympathy connotes a *feeling-for* others' misfortunes, empathy enables an understanding of, and hence, a *feeling-with* another's misfortunes. In the western genealogy, in eighteenth century, sympathy was the moral and aesthetic concept that philosophers engaged with, and was subsumed by the psychological field as an interpersonal value.<sup>7</sup> Empathy, a concept that emerged in the nineteenth century, took a curiously analogical path. It first appeared in the context of aesthetics, as a mode of aesthetic experience that emerged from the body. Translated from the German word *Einfühlung* in 1904, or "in-feeling", it referred to a feeling into the artistic object. The aesthetic experience was one that became animated with the movement of a bodily projection into the lines, form, and shape of an artwork or natural landscape. This might be more easily understood as the feeling of rising towards the sky when you stood in front of a Gothic Cathedral, or a feeling of sublime release in the face of a waterfall. As this phenomenon was inspected within scientific frameworks, it was explained in terms of kinesthetics, a kind of tactile learning that takes place with bodily functions such as breathing, pulse, muscular positions, and movements. Extensive effort was put into qualifying and quantifying this somatic response of not just feeling into but also the projection of one's own bodily contours into the contours of a non-human entity.

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<sup>7</sup> Lanzoni, Susan. *Empathy: A History*. New Haven, CT and London: Yale University Press, 2018, pp.36.

When the term *Einfühlung* was introduced by the philosopher Robert Vischer in **1873**<sup>8</sup> he described it as an aesthetic experience via tapping into the natural human capacity to encounter an object and “mediate its size with my own, stretch and expand, bend and confine myself to it.”<sup>9</sup> Following Vischer, Theodor Lipps, a German philosopher and one of the most influential psychologists of his day, is now remembered as constructing the first scientific theory of *Einfühlung*. He conducted a vast number of studies into optical illusions to document the movement of lines, and deemed perception to be an act, the optimal aesthetic experience being one where subject and object merged. As the concept of *Einfühlung* gained popularity in the field of psychology, this transference of the self into a non-human entity gradually gave way to exclusively humanoid forms. Freud’s notions of the unconscious and transference were heavily influenced by Lipps’s theories of *Einfühlung*.<sup>10</sup>

One of the aims of this thesis is to bring empathy back to its roots in aesthetics, to read empathy’s capacity of opening up imagination and non-human sensing alongside artworks. It might be useful to take into consideration Ranciere’s notion of aesthetics, not as beauty or art, but as a sensible experience that allows for a redistribution, making the previously invisible visible, the unheard heard.<sup>11</sup> This is possible because we share a common world, but more often

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<sup>8</sup> I’m grateful to Povinelli for pointing out that at this time, we were well into capitalism. The western genealogy of empathy poses it as a concept of explaining existence when in fact it is doing work for an increasingly capitalist organization of social imaginary. It works off a liberal understanding of individualism, the notion that we privately own ourselves, our labor, and our things. How do we establish a relationship between our selves and our things? We can put ourselves in their place. So when we talk about empathy, we have to really ask: why empathy? What is empathy doing here? What is at stake politically or ethically when we ask each other to have empathy? Why is empathy necessary if we co-constitute our distributed differences under conditions of power?

<sup>9</sup> Vischer, Robert “On the Optical Sense of Form: A Contribution to Aesthetics,” in Mallgrave and Ikonomou, eds., *Empathy, Form and Space*, 89–123, 104.”

<sup>10</sup> Kanzer, Mark “Freud, Lipps and Scientific Psychology,” *Psychoanalytic Quarterly* 50 (1981): 393–410, 397.”

<sup>11</sup> Rancière, Jacques. *Aesthetics and its Discontents*. Cambridge, UK: Polity Press, 2009, p. 24.

than not the social order obscures this fact by parceling society into parts and wholes. The non-human exists in a category distinct from the human, when we couldn't be more tightly woven. The possibilities of feeling into non-human subjects are reexamined as an innate human capacity, and one that is conducive to living together. Aesthetic empathy is achieved through imagination and embodiment: the viewer uses their body to animate the object of contemplation, a process through which subject and object merge. The act of empathy affords a personhood to the other on the receiving end. (However, the other is also subordinated in this exchange.) In the process of projection the body's boundary is affected, convinced to take a different form. The object is humanized while the human becomes objectified. In other words, anthropomorphization occurs, and while this may constitute a slippage that contains potential for error, denying it might constitute a greater mistake of anthropocentrism. If anthropocentrism is the assumption that human beings possess a soul above all other animals, anthropomorphization might be a valid *initial* attempt at recognizing soulfulness in other beings, however derived off a reflection of the human being.

In Taiwan, one of the canonical texts studied under the national education system is Zhuangzi and the Happy Fish, a short debate that sounds like childish banter from one of the greatest minds of his time.

Zhuangzi and Huizi were walking across a bridge when Zhuangzi, watching minnows darting in and out of rocks, exclaimed "Watch how happy they are!".

Huizi: "You're not a fish, how would you know it is happy?".

Zhuangzi: “You’re not me, how would you know I don’t?”

Huizi: “If I, not being you, cannot know what you know, does it not follow from that very fact that you, not being a fish, cannot know what makes fish happy?”

Zhuangzi: “Let us retrace your original question. You asked me how I knew what makes fish happy. The very fact you asked shows that you knew I knew—as I did know, from my own feelings on this bridge.”<sup>12</sup>

This short dialogue suggests the roles that intuition and imagination play in the way we encounter the world. Reflecting upon the viscous and ongoing history of colonialism and extractive capitalism, we see that humans have long assigned difference on a hierarchical scale to place humans above the rest of the natural world, or to dehumanize other humans. Can anthropomorphization be seen as a way of relating that takes the opposite approach, as a way to attribute humanness or personhood to beings or objects non-human?

In a book Eduardo Viveiros de Castro wrote with Déborah Danowski, they articulated this reasoning: “[W]e are of the opinion that anthropomorphism should be granted full philosophical citizenship owing to the as yet unexplored conceptual possibilities it opens.”<sup>13</sup> In a paradoxical way, regarding all others as human destabilizes the self-assigned privilege of the *anthropos*. In these cosmogonies, every relatable entity has intentionality regardless of its form or perceptible degree of liveliness, and only through occupying and adopting their perspective, to see what they

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<sup>12</sup> Ames, Roger T., and Takahiro Nakajima, eds. *Zhuangzi and the Happy Fish*. University of Hawai'i Press, 2015.

<sup>13</sup> Danowski, Déborah. Castro, Eduardo Batalha Viveiros de. *The Ends of the World*. Malden, MA : Polity Press, 2017, pp.71.

see, feel what they feel, could one arrive at a place of knowing them in their being. In the animistic way of relations, all life and non-life forms are granted the same ontological status as “persons” because they possess a vital, animating, and affecting force. Each person contains an inner experience that does not yield to scientific reductions, but nonetheless celebrates a specific form of vibrancy and plays a specific role in the performance of agency through intra-actions with other constituents that occupy this web of relations.

In *Cannibal Metaphysics*, Eduardo Viveiros de Castro offers anthropomorphization as a model for relating that finds its role in Amerindian cosmopolitical diplomacies such as multinaturalism and perspectivism.<sup>14</sup> The notion of multinaturalism is opposed to multiculturalism— it isn’t that there’s one nature seen through multicultural ways, and it isn’t biology that we have in common, but culture. For example, a human, a cat, and a fish look at the world the same way but they see different worlds. The notion of Perspectivism defines the real world of different species as dependent on their point of view. For example, I see my cat as an animal rather than a person, and my cat may see me as an animal but himself as a person.

Multinaturalism offers some dialectical tension to the traditional conception of empathy following Vischer and Lipps, where the self comes first and foremost, and from there projects outwards to “feel-into” the object/subject that awaits empathy. In multinaturalism the “self” is only defined after the ingestion of “the enemy’s point of view”, which effectively makes the other ontologically prior.<sup>15</sup> One might see an extension of this argument in Catherine Malabou’s writing on Damasio’s philosophy:

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<sup>14</sup>Castro, Eduardo Batalha Viveiros de. *Cannibal Metaphysics : for a Post-Structural Anthropology*. Minneapolis, MN :Univocal, 2014, pp. 49.

<sup>15</sup> Ibid, 29.



“He asserts the existence of a constitutive, necessary link between emotion and consciousness: Consciousness itself is an emotional reaction to the intrusion of the outside. Consciousness, at its most elementary, is the awareness of a disturbance of the organism's homeostasis caused by a repeated encounter with an external object. This is why consciousness is inherently emotional. It is an interested reaction to a disturbance.”<sup>16</sup>

Perhaps it is always the other that signals to me what I am. This makes a 180 turn for aesthetic empathy, where an original, uncontaminated *I* is projecting *my* boundaries onto the lines and form of an artwork. Following the trajectory of sympathy, empathy continued to evolve within the frameworks of psychology and, influenced by a therapeutic and scientific ethos, empathy was no longer concerned with the non-human. Self-projection, which was so emphasized within empathy's aesthetic roots, was now in opposition with an empirical appraisal of the other human person's state of mind. Kinesthetic empathy was traded for cognitive empathy.

In the massive backdrop of empathy as the meeting of the minds, research on the neural correlates of empathy that began with the discovery of mirror neurons locates the origin of empathy once again in the body, albeit solely in the brain.<sup>17</sup> The sciences still insist on looking for the location of an affect so that it can be pinpointed, even though in contemporary neuroscience the compartmentalized and centralized model of the brain has been traded for a plastic and distributed model.

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<sup>16</sup> Johnston, Adrian, and Catherine Malabou. *Self and Emotional Life: Philosophy, Psychoanalysis, and Neuroscience*. New York: Columbia University Press, 2013, pp. 30.

<sup>17</sup> Kilner, J M, and R N Lemon. “What we know currently about mirror neurons.” *Current biology : CB* vol. 23,23 (2013): R1057-62. doi:10.1016/j.cub.2013.10.051

What can neurobiology teach us about empathy operating within the framework of plasticity?

Catherine Malabou analyzes the concept of plasticity with regards to the self. The plasticity of the brain—its susceptibility to change and restructuring—suggests that it is open to external influences and affects. Do affects originate from within or without? Auto or hetero? It is both, as plasticity designates not just the ability to give and receive form, but also to destroy form.<sup>18</sup> It is within this dynamic liminal space of inside and outside that the affected self is produced, moment by moment. Therefore, to truly empathize, we cannot rely on the rigid categories of an inner self projecting “empathy” outwards to a subject or object in the world, we have to be willing to become plastic too. Our relationship with the other has to be horizontalized, we have to be always already changed—ready for otherness, ready for radical shifts of ontological frameworks.

However, in light of the blooming microbiome research and with respect to the second brain in the gut,<sup>19</sup> even this cranial-neural perspective is inadequate. What happens if what we perceive as free will, even this very thought—I am ready to be changed—was already other in origin? In the next section I will tap into the vast potential of the multitudinous body for a more holistic and generative enactment of empathy, as a performance of the self with its “tiny messmates.”<sup>20</sup>

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<sup>18</sup> Johnston, Adrian, and Catherine Malabou. *Self and Emotional Life: Philosophy, Psychoanalysis, and Neuroscience*. New York: Columbia University Press, 2013, pp. 30.

<sup>19</sup> Research has revealed that a primal connection exists between the brain and the gut. The two are connected by an extensive network of neurons and a highway of chemicals and hormones that influence each other at every moment. Scientists are now calling this the “second brain in the gut”.

Mayer, Emeran. *The mind-gut connection : how the hidden conversation within our bodies impacts our mood, our choices, and our overall health*. New York : Harper Wave, 2016,

<sup>20</sup> Haraway, Donna Jeanne. *When species meet*. Minneapolis: University of Minnesota Press, 2008, pp.4.

In matters pertaining to microscopy we [microbes] necessarily have an advantage here over the scientist of the earth, because we see with our naked eye minutenesses which no man made microscope can detect, and are therefore able to register as facts many things which exist for him [humans] as theories only.<sup>21</sup>

(An anthropomorphization of a *Vibrio cholerae* bacterium that was previously human, by Mark Twain.)

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<sup>21</sup> Mark Twain. 3000 Years Among the Microbes, unfinished. 1905.

For an excerpt please see:

Lindborg, Henry J. "A Cosmic Tramp: Samuel Clemens's Three Thousand Years Among the Microbes." *American Literature*, vol. 44, no. 4, 1973, pp. 652–657. *JSTOR*, [www.jstor.org/stable/2924312](http://www.jstor.org/stable/2924312).

## Two A commoning commotion

Studies on empathy present it as a dilemma that hinges on sameness as well as difference. It is a technique of mediating the self in relation to another, a kind of magical transference of the self into another, and a journey of metamorphosis of the self through another. For over a century the discourse on empathy has changed many hands and gone through multiple definitions, the non-consensus implying that empathy can take many forms. For the sake of this thesis I'm taking this ambiguity as a generative asset, an invitation for productive confusion. First, we begin with an outline of the process of empathy according to various classical approaches. In order to empathize, one has to 1) delineate what is self and what is other, 2) dissolve the self into a radically different other, and 3) come out with an emergent form of understanding that you have become a different kind of self. However, all the steps are provisional and contingent. The first step seems self-evident, following the most general understanding of empathy being a projection of the self into something other than the self. Hence, in order to perform the act of empathy one has to recognize that the self is different from the other. But complications arise in the murky territories when selfhood is a priori merged with another, such as a baby in its mother's womb. Even after birth, fetal cells can engraft into the mother's bone marrow for decades, a phenomenon named fetal cell microchimerism.<sup>22</sup> What about an infant pre-mirror stage? A pilot in freefall that confuses the aircraft and self? The ancient viral genes that bestowed one the ability to think of one as *self*? Considering the bodily entanglement with one's microbial community, can we ever truly empathize with the microbes that constitute us? The second step

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<sup>22</sup> Fugazzola, Laura, Valentina Cirello, and Paolo Beck-Peccoz. 2011. "Fetal Microchimerism as an Explanation of Disease." *Nature Reviews Endocrinology* 7: 89–97.

of dissolving into another is the crucial act of empathy, and can be accomplished by way of kinesthetic persuasion, emotional contagion, imaginative flight, or cognitive appraisal, resulting in a vast spectrum of undoneness of the self. This spectrum encompasses very different schools of thought regarding empathy, and the difficult, but perhaps unnecessary, taxonomy of this vibrant performance called empathy. This thesis is an attempt to defamiliarize empathy and present it as an involuntary/somatic event alongside a technology of the self, resurfacing with an emergent form of understanding that the self is always in the process of coming into being with the other. One cannot empathize without being transformed— it is necessarily an ontological reshuffle, every time.

Language and civilization have taught us the former skill of delineation well, perhaps too well, but this form of hierarchy cannot persist in the face of the present ecological catastrophe brought about by the lens of humanism that justifies exploitative and extractive relationships with life and non-life forms alike.<sup>23</sup> The latter skill of dissolution is one that requires imagination and strategy. How do we create a space that counters the kind of worldview that we, the Western scripted, highly developed and industrialized humans- homo industrialis/homo economicus<sup>24</sup>—were propelled into from the moment of birth? So far I've argued that empathy is equivalent to that which holds open space in which a tightly wound sense of self can come undone, and the first approach I'm looking at brings me back to the moment of birth. What potential does the abject hold in creating that space and hence in conducting empathy?

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<sup>23</sup> This thesis may appear *zoe-centric*, emphasizing just the bare life, but the author stands in solidarity with the many human lives that have been excluded from performing the category of the human as defined in the West. However, due to the limits of a master's thesis I will be focusing upon the implications of a biological empathy for the microbial universe. Hopefully, this effort can be of some contribution to the body of posthuman scholarship whose effects will cascade to a point where these representational paradigms no longer exist.

<sup>24</sup> DeLoughrey, Elizabeth M. *Allegories of the Anthropocene*. Duke University Press, Durham, NC, 2019, p.12.

## The microbial self

We emerge into this world on a stage of abject theatre, in the spotlight, with an audience, in one dramatic excretion that leaves us covered in an abundance of blood and goo. The point in time at which bacteria first colonizes the human infant has yet to be determined. As of now the womb is thought to be a sterile space, so in a sense birth is the first inoculation.<sup>25</sup> When the human baby passes through the vagina, it picks up the first colonies of tiny mess mates on its way out, many of which will become permanent mates that make up this human spaceship. Scientists are speculating on an even earlier entrance of these microbes, perhaps in utero.<sup>26</sup> Can we think of these tiny mates as an heirloom, as a valuable gift we inherit from our mothers? After all, nearly three quarters of a newborn's microbial strains can be traced back to the mother.<sup>27</sup> Can we think of it in terms analogous to how bacteria passes on memory to daughter cells?<sup>28</sup> Can we flip the narrative and consider that perhaps we are given to the microbes—the human infant is gifted to bacteria as a new home? What can this kind of thinking do for destabilizing one's perspective? For agitating the integrity of one's perception of bodily boundaries?

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<sup>25</sup> Biss, Eula. *On Immunity : an Inoculation*. Minneapolis, Minnesota :Graywolf Press, 2014, pp.160.

<sup>26</sup> Perez-Muñoz, M. E., Arrieta, M. C., Ramer-Tait, A. E. & Walter, J. A critical assessment of the “sterile womb” and “in utero colonization” hypotheses: implications for research on the pioneer infant microbiome. *Microbiome* 5, 48 (2017).

<sup>27</sup> Yong, Ed. *I contain multitudes: the microbes within us and a grander view of life*. 2016, pp. 45.

<sup>28</sup> Roland Mathis et al. Response of single bacterial cells to stress gives rise to complex history dependence at the population level, *Proceedings of the National Academy of Sciences* (2016). DOI: 10.1073/pnas.1511509113

She was there when I was there, carrying the memory of her ancestors. The daughter of her mother, just like me. While she emerged from her mother, I am mother. Parent cell. Daughter. I too carry the memory of many parents before me.

(An anthropomorphization of a bacterium on a newborn baby)

To trace the lineage back even further, according to the theory of endosymbiosis<sup>29</sup> proposed by Lynn Margulis, we are the product of critters ingesting other critters and having indigestion.<sup>30</sup> Like chloroplasts that evolved from cyanobacteria that harvest sunlight in the form of usable energy for plants, within my cells are little mitochondrial factories that produce energy, structures that evolved from proteobacteria. In the event of an injury where mitochondrial cells are spilled into the bloodstream, the human body still recognizes it as foreign bacteria and this can lead to a systemic inflammatory response. We shouldn't forget that symbiosis just means "together"+ "living" , and there are many modes of living together. Inspired by Lynn Margulis, I'm thinking about how my own sensory organs are lined with cilia, vestiges of little wriggling bacteria. In this way, bacteria afforded me the ability to live and sense, and hence, to know, but can I ever know them in their own terms? This is an onto-epistemological question that lingers after my every

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<sup>29</sup> Gray, Michael W. "Lynn Margulis and the endosymbiont hypothesis: 50 years later." *Molecular biology of the cell* vol. 28,10 (2017): 1285-1287. doi:10.1091/mbc.E16-07-0509

<sup>30</sup> Haraway, Donna J. *Staying with the Trouble: Making Kin in the Chthulucene*. Durham, NC: Duke University Press, 2016, pp.58.

thought: who is/are the instigating agent/s of this inquiry, or is it a quest performed by the multitudinous me?

The role that bacteria play in shaping who we are as human beings may be as profound as how *V. fischeri* shapes the body architecture of the Hawaiian bobtail squid, brought to light by the research of Margaret McFall Ngai.<sup>31</sup> These fluorescent bacteria live in special organs on the underbelly of the Hawaiian bobtail squid, camouflaging the squid against the moonlight when viewed from below, erasing its shadow and increasing its chances of survival. While this sounds like something out of science fiction, it is perhaps unsurprising in light of what we know about our own gut microbiome. So we both have good bacteria living in us, so what? The truly fascinating story is how specific these partnerships are, and how these microbial partnerships induce changes in development. Out of the extreme abundance of marine microbes in seawater, only the *V. fischeri* comes to colonize the bobtail, and it happens within hours of the squid hatching. McFall Ngai's research reveals that the presence of 5 *V. fischeri* cells triggers the squid's genes to emit chemicals that kill other microbes and attract more *V. fischeri*. As the adequate amount of *V. fischeri* arrives and enters the squid, the architecture of its light organ changes and encloses the bacteria, reaching maturity. We are just beginning to understand the extent of this co-development, a term coined by developmental biologist Scott Gilbert.<sup>32</sup> How are our bodies shaped by the microbes that come to inhabit us, and how do we select for specific communities and in turn influence their evolution? How do they select us?

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<sup>31</sup> McFall-Ngai M (2014) "Divining the Essence of Symbiosis: Insights from the Squid-Vibrio Model." *PLoS Biol* 12(2): e1001783.

<sup>32</sup> Gilbert SF, Sapp J, Tauber AI(2012) A symbiotic view of life: We have never been individuals. *Q Rev Biol* 87(4):335–341.



Scientists think that these communities, most of which live in the gut, shape our health in myriad ways, affecting our vulnerability to allergic diseases like hay fever, how much weight we put on, our susceptibility to infection and maybe even who we find desirable. Much of what we have come to think of as a constituent of an identity—physical attributes, health, emotions, desires—are all heavily shaped by our microbial communities.

Fermentation: A commoning commotion

We have gut feelings, gut instincts, butterflies in our stomachs, we are gutsy. There is no point in our development that was not heavily influenced by signals from our microbiota. Long before the advent of “brain in the gut” we have been told of its presence, viscerally. Cognition isn’t an artifact of the mind, but a result of the enactment of a full body experience. My body is the primal tool I navigate this world with. It is the medium I live indispensably in, and the medium that mediates all my experiences. My body is the original locus of meaning making. Post screening of “Becoming Animal,” David Abram had said that empathy is deeply somatic. It’s inevitable that we feel into other bodies with our bodies. And in response to the problem of violence inherent in empathy, he said “there is always violence, but an animistic form of embodiment is the only way I know how, it’s all we’ve got. Face to face, face to place encounter of our living body and the body of the World. Whole body creaturely encounter.” His account also hints at some sort of primal, perhaps primordial, empathy from the cell to the body to the world body.

Ferment is possibly my favorite word in the English language, Collins dictionary lists synonyms such as a state of unrest, agitation, turbulent change, commotion, tumult, turmoil, excitement. This brings to mind words like foment, political ferment, the act of fermenting your own food is a

political gesture of reclaiming some agency in the capitalist logic of consumption and a practice of building together with communities of human and more-than-human others. In the journey of learning and integrating practices of fermentation into my life I've experienced the liveliness and vibrancy in microorganisms in ways I never imagined, and it has developed into fruitful relationships with both humans and non-humans alike. Kombucha brewers are familiar with the many online communities that enable exchange of thoughts, practices, and scoby (symbiotic cultures of bacteria and yeast). The kombucha journey begins with a starter, usually a small piece of pellicle, a gelatinous biofilm that forms between the interface of air and water, also called scoby, mother, bacteria cellulose. This pellicle grows thicker and exhibits a flesh-like texture. Talking with other brewers, I've noticed that the language we employ to talk about it is ridden with empathy. For example, when I was giving a workshop in Madrid and my starter wasn't adapting to the conditions there, a friend contacted another friend and she brought me some pieces of her mother to kickstart my culture. When she described her fear of hurting the mother when tearing out pieces to bring me I assured her that they didn't feel pain in our terms, in fact they are extremely resilient and can survive in a latent state for many years, but I completely understood that sentiment. It was an effect of skin to skin tactility. To quote Maria Puig de la Bellacasa, touch has a "unique quality of reversibility, that is, the fact of being touched by what we touch, puts the question of reciprocity at the heart of thinking and living with care."<sup>33</sup> It is through touch that I am able to ground the ideas of various critical theories I read and grapple with cerebrally, in an embodied form, in a whole body way.

In my own work I've begun using fermentation as a practice of commoning. The word "common" emerged in the 14th century to signify a group of people, such as community. But very early on it

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<sup>33</sup> DE LA BELLACASA, MARÍA PUIG. *Matters of Care: Speculative Ethics in More than Human Worlds*, Minneapolis; London: University of Minnesota Press, 2017, pp.20.

started developing within a tension, Raymond Williams noted “the very early use of common as an adjective and noun of social division: common, the common and commons, as contrasted with lords and nobility.”<sup>34</sup> Initially used to describe land ownership, it gradually also developed in a cultural sense, such as describing something as common vs refined. The commons came to be understood as land or natural resources that were accessible to all members of a community, such as common pool resources.<sup>35</sup>

Commoning is a concept developed by historian Peter Linebaugh, as a verb form of the commons because he wanted folks to see it as an activity and not just as material resources. He describes commoning as being “conducted *through* labor with other resources; it does not make a division between “labor” and “natural resources”.”<sup>36</sup> However, analyzing this definition with Williams’s keywords, I’ve been struggling to understand it outside terms of capitalist productive relations such as *laboring* with or *working* with; wherein *laboring* refers to an “element of production which in combination with capital and materials produced commodities.” and *working* refers to “paid employment”. I have provisionally settled for *acting* with as a reference to intra-action, agency and Hannah Arendt’s Action theory.<sup>37</sup>

In *Commoning Begins in the Gut* (2019), I’ve created an installation of biological inflatables, some made with dried mother (bacteria cellulose) from fermenting kombucha and inflated by carbon dioxide, a byproduct of a separate process of anaerobic, lacto-fermentation. Other

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<sup>34</sup> Williams, Raymond. *Keywords : a Vocabulary of Culture and Society*. New York :Oxford University Press, 1985, pp.71.

<sup>35</sup> Laerhoven Frank van, Ostrom Elinor. "Traditions and Trends in the Study of the Commons". *International Journal of the Commons*, Vol. 1, no. 1, October 2007, pp. 3–28

<sup>36</sup> Linebaugh, Peter. *Stop Thief: The Commons, Enclosures and Resistance*, Oakland, CA: PM Press, 2014, pp.13.

<sup>37</sup> “Since action acts upon beings who are capable of their own actions, reaction, apart from being a response, is always a new action that strikes out on its own and affects others”  
Arendt, Hannah. *The Human Condition*. Chicago & London: University of Chicago Press, 1958, pp.190.

inflatables consist of large latex balloons inflated by carbon dioxide of apples fermenting inside them, and blown up animal digestive organs. Borosilicate glass tubes, the raw material that is used to make scientific glass instruments, are used to ferment milk and grow mold, inserted with snippets of text I wrote regarding symbiosis as a radical form of contamination and living together. With respect to Linebaugh's proposal that commoning begins in the kitchen "where production and reproduction meet,"<sup>38</sup> I in turn propose that it begins in one's gut, as a performance with a vibrant community of microbial agents.



Fig.1 Commoning Begins in the Gut, installation view.

In another piece, *Living Archive* (2019) I explore the role of fermentation as a site-specific archive, a temporal snapshot of the constellation of symbiotic exchange that occurs constantly between place, microbes, and humans. Using the format of slides to emphasize the materiality and archivalness of membranes that grow from processes of fermentation, I created a slideshow with scoby from different places and batches, dried agar films of bacteria growth from different parts of my own body, and text slides that act as fragmented narrative in discourse with the microbial linguistics performing their liveliness across other slides.

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<sup>38</sup> Linebaugh, 13.

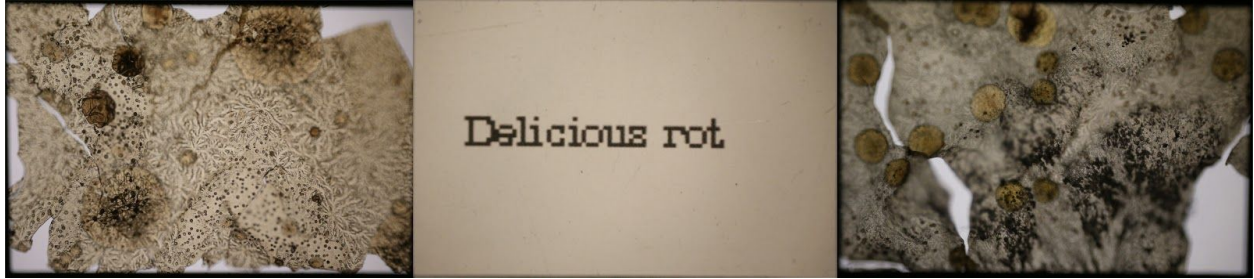


Fig.2 Living Archive, screenshot.

And finally, an audiovisual work, *Microbial Ictus* (2020), plays on the similarities of conducting patterns and bacterial swimming strategies. A conducting baton made from dried kombucha scoby is featured in recreating the various movement strategies of bacteria, simultaneously incorporating techniques and signatures from musical conducting. The footage interchanges between the conducting baton and actual footage of microbes swimming, presented as screen in screen, in the tradition of sign language translating. The sound track consists of a scientific recording of a single bacterium swimming, played back at its actual speed (in contrast with the sped-up published format). This work speculates on the limits of sounding and listening, attempting to find musicality in the coldness of what scientific instruments present to us as data, to decolonize the disenchantment from science. What kind of ethics can emerge from the wonder that is ignited by absolute otherness?

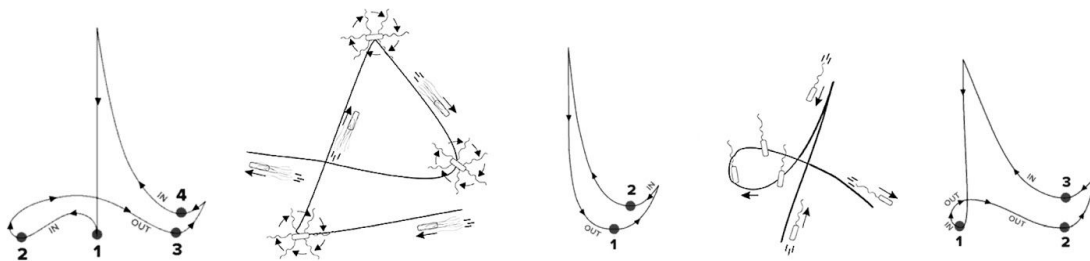


Fig.3 Microbial Ictus “conducting” patterns

Does the empathetic subject have to be singular? Can empathy be biochemical? Can it exist beyond the subject? Can it be me, my microbes and their relations? My microbes? Maybe empathy needs a new definition. Maybe empathy is the moment you lose your capacity as an individual, the moment you feel infinite, coeval with multiple historicities and temporalities.

The discipline of immunology has traditionally been called “the science of self/non-self discrimination.”<sup>39</sup> The immune system is portrayed as a militaristic defense aiming to attack and kill everything that is “non-self,” and this outdated but deep-rooted understanding works in tandem with the public’s fear of disease to reinforce the notion of an insular self. The microbe is figured as an enemy in Robert Koch’s etiology of anthrax in 1876, using the metaphor of host/parasite relations to explain how the bacterium caused anthrax, in this (enduring) narrative linking parasite and invader in disease causality.<sup>40</sup>

In *Illness as Metaphor*, Susan Sontag’s claim that militaristic metaphors over-mobilize the public’s imagination rings especially true when we consider all the seemingly sensible terms we use in immunology, such as foreign bodies, invasion, surround, attack, kill. The repercussions of utilizing these metaphors don’t just end at a false illusion of individuality, but extend to the cultural plane as “foreign equals danger, disease is brought by others.” For example, when syphilis swept across Europe in the 15th century it was known as “French pox” to the English, “Morbus Germanicus” to the Parisians, “Naples sickness” to Florentines, “Chinese disease” to the Japanese; “there is a link between imagining disease and imagining foreignness.”<sup>41</sup> Six centuries

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<sup>39</sup> Klein, J. in *Immunology: the Science of Self-Non-Self Discrimination* 267 (Wiley, New York, 1982).

<sup>40</sup> Cohen, Ed. “The Paradoxical Politics of Viral Containment; or, How Scale Undoes Us One and All.” *Social Text* 1 March 2011; 29 (1 (106)): 15–35.

<sup>41</sup> Sontag, Susan, and Susan Sontag. *Illness as metaphor ; and, AIDS and its metaphors*. New York: Doubleday. 1990, pp.136.

later, Six centuries later, the same rhetoric brands immigrants as “invasion” and COVID-19 as “Kung flu.”<sup>42</sup>

In my current project, *Containmination* (2020), I’m asking questions about the abject, the viral, boundaries and containment in the age of COVID-19. Where does the impulse to contain come from, and what are the anxieties and conceptual underpinnings that lead to this impulse? The focus on the questions of “origins” reveals the anxieties to contain, or find a container for. The bat, the pangolin, the Chinese. Because an uncontainable virus threatens to reveal the message that the virus contains, the message that contains us as human beings. In this project, I’ve incorporated myself into the flesh of the bacterial cellulose: embedding documents that legitimize my national incorporation as a foreign body; a F-1 visa holder in the USA; an accountable agent to the state; an invested player in the economy of debt; etc.

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<sup>42</sup>NBC News. “Trump tweets about coronavirus using term ‘Chinese Virus’”  
Accessed Mar.18,2020.

<https://www.nbcnews.com/news/asian-america/trump-tweets-about-coronavirus-using-term-chinese-virus-n1161161>



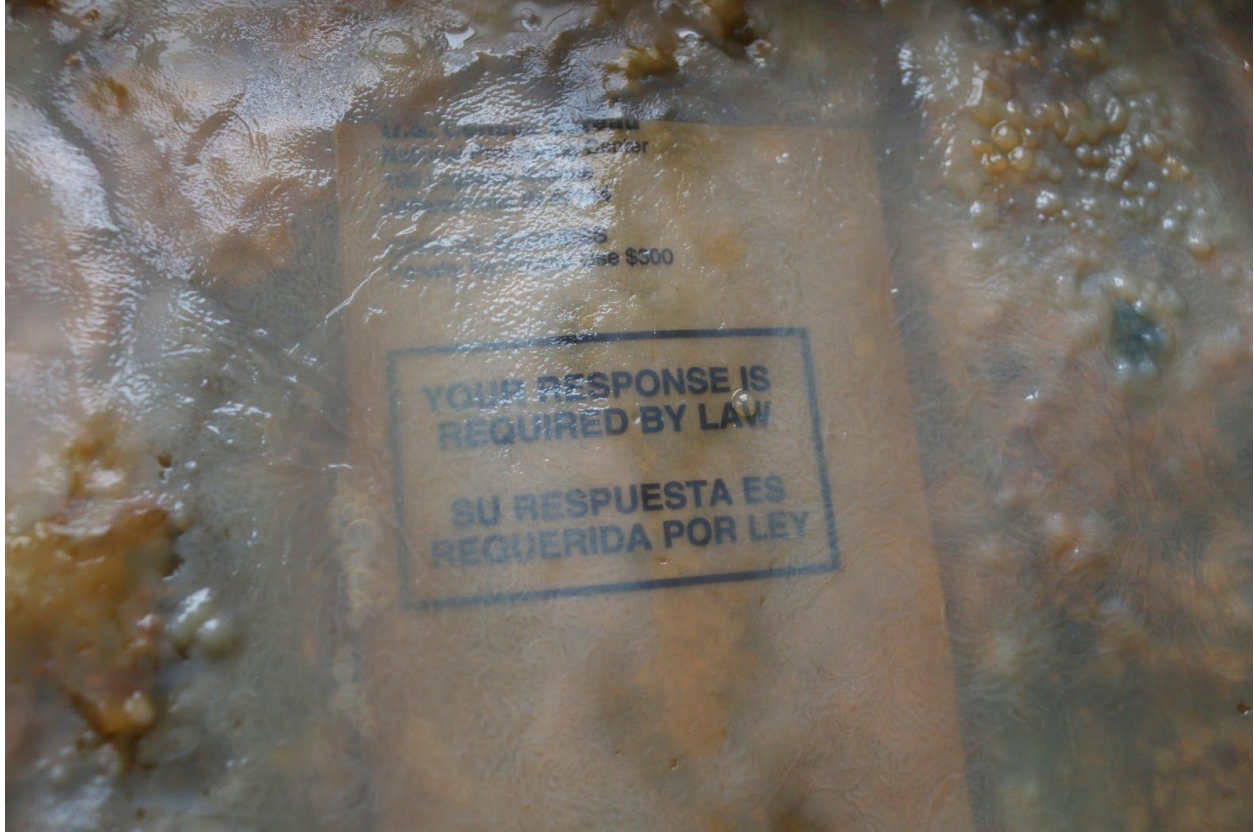


Fig.4 In progress shot of Containmination.

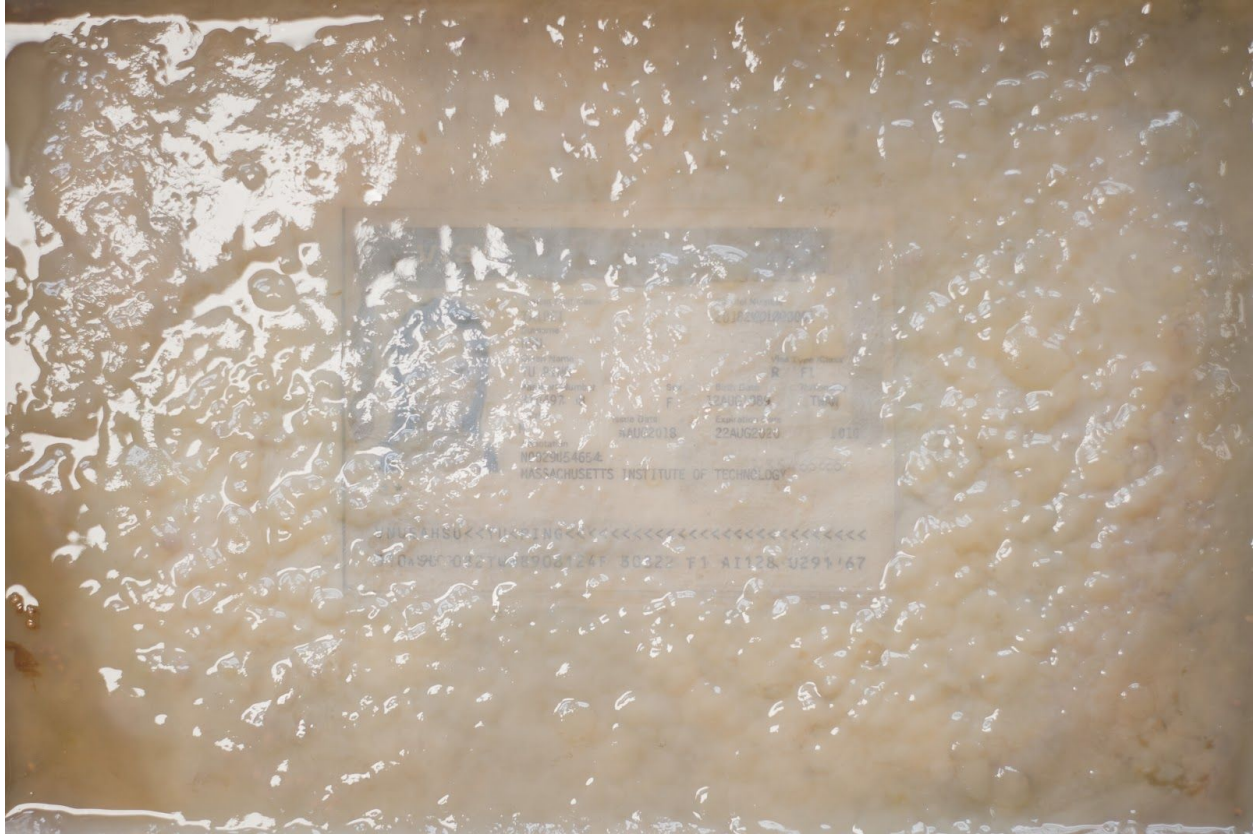


Fig.5 In progress shot of Containmination.

This is one of the many ways that microbes build community—community defined through pathogenic encounters. While we’re engaged in a constant exchange of bacteria with other people, objects, and the environment, demonstrating the age-old saying of “we are all connected” in a material sense, this notion of microbial connection doesn’t quite affect us until a disease vector comes around and people are waiting in line for flu shots. Vaccination demonstrates this connection as an obligation to immunize for the other, the collective body of the community.

The *Oxford English Dictionary* tells us that “common” comes from the Latin *communis*, which seems to be a combination of *com* (together) and *munis* (bound, under obligation). The latter word is the opposite of *immunis* (not under obligation,

exempt). These origins help us to understand what sort of thing the common sense of a democratic community must be. It does not mean an accidental convergence of interests among people who are otherwise morally “immune” to one another. The language of democratic common sense must be the language of moral discourse.<sup>43</sup>

We can never be immune to one another, human or more-than-human, so what do we owe, morally, to this larger kin we participate in? <sup>44</sup>

Rewinding back to the first moments of life, as the child is squeezed out of the mother’s birth canal, the child picks up its first (as far as we presently know) resident microbes. These microbial mates act as teachers that guide and condition the development of the child’s immune system. From experiments done on gnotobiotic mice we see that without a lived-in microbial community, the mice’s immune systems become compromised; they become prone to both infections and autoimmune diseases.<sup>45</sup> Due to the sheer amount of microbes we have in comparison to “our own” cells, metaphors in which we are just vessels of transportation for microbes are blooming, but the truth is that they’re not just here to hitch a ride, they are crucial players in the development and function of our bodies. With respect to James Lovelock’s Gaia theory<sup>46</sup>, we can say that the human and its microbial community evolves together as a single living system.

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<sup>43</sup> Douglas Lummis, *Radical Democracy*. Ithaca: Cornell University Press, 1996, pp. 21.

<sup>44</sup> “Kin-making is making persons, not necessarily as individuals or as humans. I was moved in college by Shakespeare’s punning between kin and kind—the kindest were not necessarily kin as family; making kin and making kind (as category, care, relatives without ties by birth, lateral relatives, lots of other echoes) stretch the imagination and can change the story.”

Haraway, Donna. Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin. *Environmental Humanities* 1 May 2015; 6 (1): 159–165.

<sup>45</sup> Gnotobiotic: Germ-free.

<sup>46</sup> Gaia theory: organisms coevolve with their environment, they “influence their abiotic environment, and that environment in turn influences the biota by Darwinian processes.”

Lovelock, J. (1979). *Gaia, a new look at life on earth*. Oxford: Oxford University Press, p.15.

“I think that the stretch and recomposition of kin are allowed by the fact that all earthlings are kin in the deepest sense, and it is past time to practice better care of kinds-assemblages (not species one at a time). Kin is an assembling sort of word. All critters share a common “flesh,” laterally, semiotically, and genealogically.”<sup>47</sup> A call for human “beings” to discard the notion of “being” for “assemblage,” in order to see that there is no a priori self but a dynamic and contingent assemblage, requires new spaces of imagination to be opened up. What does imagination have to do with empathy? Before diving into the vibrant realm of artistic research and imagination, it is worth noting that even the simple speech act of “imagine this” goes a long way for empathy, and makes me hopeful that this is a faculty all humans have inherently, one that just needs new equipment to exercise upon.

Observers witnessing the subject feel pain demonstrated greater arousal—measured as palmar sweating, rise in basal skin conductance, and vasoconstriction—but only when they were given explicit instructions to “imagine him” or to “imagine the self” experiencing the stimulus. When instructed merely to “watch him,” arousal did not occur.<sup>48</sup>

I would position artistic research as functioning in the realm of cultivating response-ability<sup>49</sup>, an ability to respond that hinges precisely upon our capacity to imagine alternative ways of worlding, to become sensible to what was previously parceled off in the social order.

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<sup>47</sup>Haraway, Donna. Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin. *Environmental Humanities* 1 May 2015; 6 (1): 159–165.

<sup>48</sup> Susan Lanzoni, *Empathy: A History*. New Haven, CT and London: Yale University Press, 2018, p. 243.

<sup>49</sup> Haraway, Donna J. *Staying with the Trouble: Making Kin in the Chthulucene*. Durham, NC: Duke University Press, 2016, p.11.

Most of us have heard the myth that all of the cells in our body replace themselves after seven years, so physiologically you're "essentially" a different person every seven years. While this number seven is an unfounded abstraction, it is true that most of the cells in our body have a finite lifespan. Each type of cell operates on a different schedule, for example, red blood cells renew about every four months, skin cells every two to three weeks, and cells in the colon every four days. The fascination of this popular imagination can be configured as a confounding problem of identity, comparable to the "ship of Theseus"<sup>50</sup> paradox. How do you define the "self" if its constituents have all been replaced over time? Has there ever been a self that is fundamental and fixed?

To start off this section on compounding agency, following the trajectory of previous sections, it is apparent that this discussion of the "self" is predicated on a lack: we cannot talk about the self in the absence of the microbial community. Much like the cells in our bodies, the microbial communities are constantly in flux. Ecologically speaking, each body is like an archipelago in terms of microbial community, the biota of each ecology—skin, mouth, armpit, vagina, gut, foot—are as vast as the microbial make up of coral reefs, volcanoes, swamps, and oceans. Even when considering the same organ, its biota make-up is different at different locations: the right palm of

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<sup>50</sup> Ship of Theseus: The story is that in ancient Greece, the people of Athens worked to preserve a ship in the harbor that belonged to the founder-king of Athens, Theseus. As time went by, wood planks began to rot and were switched out with new parts; after a century, no original parts remained. This led to the thought experiment on identity, questioning if an object remains fundamentally itself even when all parts have changed.

your hand shares just a sixth of its microbial species compared to your left palm.<sup>51</sup> The members of each ecology also operate on different timeframes and are radically sculpted by place, food, drugs, people and the public sphere that we come in contact with. Ecological succession is observed with a child's developing body. In a performance of co-development, microbial species come and go according to the changing diet and needs of the child.

Changes in the human adult's biota are less radical but nonetheless dynamic, an ongoing conversation with the larger environment. Much study has been done on microbiota similarity across humans living in close quarters, coops, family members, and particularly romantic partners, and more recently across humans and companion species.<sup>525354</sup> As expected, the results suggest that direct and frequent contact with our cohabitants significantly shapes the composition of our microbial communities. Juxtaposing this with the much more established findings on the effect of microbiota on a person's emotions and personality, one cannot help but wonder, does this constant performance of microbial homeostatic balance facilitate a somatic-neural affiliation across intimate partners? Is that why couples become more like each other and owners look more like their pets over time? This is perhaps a followup question to Haraway's opening question to *When Species Meet*: "Whom and what do I touch when I touch my dog?"

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<sup>51</sup> Yong, Ed. *I contain multitudes: the microbes within us and a grander view of life*. London : Vintage, 2017, p.23.

<sup>52</sup> Lax, Simon et al. "Longitudinal analysis of microbial interaction between humans and the indoor environment." *Science (New York, N. Y.)* vol. 345,6200 (2014): 1048-52. doi:10.1126/science.1254529

<sup>53</sup> <https://doi.org/10.7554/eLife.00458.001>

<sup>54</sup> "Companion species" is how Donna Haraway refers to pets, or non-human beings that keep humans company.

Haraway, Donna Jeanne. *The Companion Species Manifesto : Dogs, People, and Significant Otherness*. Chicago: Prickly Paradigm Press, 2003.

Scientists at the University of Arizona created the Human-Animal Interaction Research Initiative (HAIRI) to study the health links between humans and animals, and one of their research topics is “Dogs as Probiotics.” But setting aside this trend of research out of an anthropocentric impulse, does sharing similar microbiota help us think and feel more like each other, human or otherwise?

There hasn't been any research on how companion species' microbes influence the human owner's behavior, except how the cat-borne parasite *Toxoplasma gondii* makes humans more risk-prone and impulsive.<sup>55</sup> A recent paper argues that cats take up the personality of their owners, analyzed over five dimensions of personality: Agreeableness, Conscientiousness, Extroversion, Neuroticism and Openness.<sup>56</sup> Although they attribute the results to care provision and management styles of the owners, I wonder how much the incessant exchange and homeostasis of microbiome impacts personalities both ways. While only a little research has been done on and confirmed the exchange of microbiome between pets and owners, they are mostly centered around the pathogenic and health effects that exchange has on humans.<sup>57</sup> However, a myriad of studies have already been done on correlations between the microbiome and personality that uses the same framework of the five dimensions of personality<sup>58</sup> and it has repeatedly been demonstrated that a change in microbiome results in changes of personality.<sup>59</sup> In

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<sup>55</sup>Aguirre, A Alonso et al. “The One Health Approach to Toxoplasmosis: Epidemiology, Control, and Prevention Strategies.” *EcoHealth* vol. 16,2 (2019): 378-390.

<sup>56</sup>Finka LR, Ward J, Farnworth MJ, Mills DS (2019) Owner personality and the wellbeing of their cats share parallels with the parent-child relationship. *PLoS ONE* 14(2): e0211862.

<sup>57</sup>Trinh, Pauline et al. “One Health Relationships Between Human, Animal, and Environmental Microbiomes: A Mini-Review.” *Frontiers in public health* vol. 6 235. 30 Aug. 2018.

<sup>58</sup>Han-Na Kim, Yeojun Yun, Seungho Ryu, Yoosoo Chang, Min-Jung Kwon, Juhee Cho, Hocheol Shin, Hyung-Lae Kim. Correlation between gut microbiota and personality in adults: A cross-sectional study, *Brain, Behavior, and Immunity*. Volume 69, 2018, Pages 374-385.

<sup>59</sup> Smith, L. K., & Wissel, E. F. (2019). Microbes and the Mind: How Bacteria Shape Affect, Neurological Processes, Cognition, Social Relationships, Development, and Pathology. *Perspectives on Psychological Science*, 14(3), 397–418.

mice it is as drastic as swapping personality when swapping microbiomes.<sup>60</sup> Following this train of thought perhaps the postulation that I am becoming more like my cat and vice versa isn't so far-fetched.

I've been up since before the sun has risen, I crouch at the foot of the bed, waiting for some action. Finally, her toes twitch, I pounce and bite. She mutters an annoyed meow and tucks her foot under the blanket. I'm bored of waiting, I walk over, purring. I groom her forehead to wake her up.

(An anthropomorphization of the cat that lives in my house)

Perhaps microbiota is community forming the way that fermented food creates culture and identity. “Culture” and “culture” mean two different things to a biologist and an anthropologist, but in fermentation, they overlap completely.”<sup>61</sup> Culture, originally a noun of process<sup>62</sup>, is lived out again in the tending of a certain culture of microbes for a certain type of fermentation that forms a certain kind of culture around it, like wine and cheese. There are also specialty foods tied to certain geographies. Maybe what we humans call an acquired taste is just our brains being trained by local microbes. After all, 95% of our body's serotonin is secreted by the gut. When Michael Pollan was kneeling in his garden, tending to his potatoes, he wondered who was the true “domesticate” in that scenario. “Our grammar might teach us to divide the world into active

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<sup>60</sup> Bercik, Premysl et al. The Intestinal Microbiota Affect Central Levels of Brain-Derived Neurotropic Factor and Behavior in Mice. *Gastroenterology*, Volume 141, Issue 2, 599 - 609.

<sup>61</sup> David Zilber, director of the Noma fermentation lab

<sup>62</sup> Williams, Raymond. *Keywords : a Vocabulary of Culture and Society*. New York :Oxford University Press, 1985.



subjects and passive objects, but in a coevolutionary relationship every subject is also an object, every object a subject. That's why it makes just as much sense to think of agriculture as something the grasses did to people as a way to conquer the trees."<sup>63</sup> Perhaps in the same way, microbes are differentially selected for humans who create and sustain particular fermentation practices. The natural and the cultural are tightly interwoven, and while humans may think that they are the weavers of the fabric, whose agency is really being played out?

While empathy is typically regarded as an aspirational virtue that promotes altruism and harmony, there is a persistent underlying voice that regards it a solipsistic endeavor, perhaps even a narcissistic one. If empathy can only ever be a one-sided projection, is it not a reflective lake surface, a narcissistic notion of realizing one's self? This section is an attempt to counter the narcissism conjecture with a reconception of agency within the view of self as a dynamic entanglement of diverse quasi-agents. I would argue that although the pursuit of empathy might be a self-gratifying project, who's to say this wasn't the microbe's idea? As I pore over countless studies on the gut microbiome, I begin to consciously listen to the brain in my gut, letting my gut feelings take the lead, and with any choice I make, I wonder which agents are driving the desire.

The good other and the bad other

Our bodies are hole-y and leaky sacs through and through, with our porous membranes and multiple orifices. Every opening is an invitation for new guests and novel familial constellations.

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<sup>63</sup> Pollan, Michael. *The botany of desire: a plant's eye view of the world*. New York: Random House. 2001, p.19.

Of course, these happenings are ridden with conflict and danger, but the literature that has come out of germ theory has that area well covered. Hence, I won't recount the numerous pathogenic pathways that are well known for triggering public fear.

Before this section I'd just like to interject an anecdote that confounds the pathogenic and the benevolent. The virus, master of strategically employing both life and non-life, as Elizabeth Povinelli characterizes it in her book *Geontologies: A Requiem for Late Liberalism*, does not recognize the divide between each category and itself dwells in a state in between. The popular story we're told about an encounter between human and virus is always in the format of a tug of war, and humans are terrified of the prowess of the virus in tugging them into non-life. However, the truth isn't so binary, viruses are genetic hackers, and there are many times when snippets of code from a viral infection are benign or useful enough to the host that the viral genes not only don't kill the host but stick around through evolution. A study reveals that 40-80% of the human genome arrived from some archaic viral infection, and one viral code in particular, the Arc gene, is at the root of our every thought.<sup>64</sup> Thoughts are formed through synapses between neurons, and the Arc gene enables the nerve cell to form little "capsids" over the RNA for it to travel safely between synapses, without which the synapses would quickly wither away. Just like the way bacterial symbiogenesis constructed my sensory cells and enabled me to know in the way that I do, this viral vestige enabled me to think the way I do.

Here I'd like to crossover from the "bad" to the "good", and trace the two main pathways that "good" microbial communities fluctuate throughout our bodies, from mouth to anus. The reason

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<sup>64</sup>Parrish NF, Tomonaga K. " Endogenized viral sequences in mammals". *Curr Opin Microbiol*. 2016 Jun;31:176-183.

Pastuzyn et al. "The Neuronal Gene Arc Encodes a Repurposed Retrotransposon Gag Protein that Mediates Intercellular RNA Transfer" *Cell*. 2018; P275-288.

“good” is in quotation marks is because this moral value that has been assigned to microbial life is completely human-centric. I use it here to question the language used in the commodification of microbes in the biotech and food industry. Since the blossoming of research on the advantages of the microbiome to humans there’s been an explosion of books on gut health. Although that has profoundly shifted how the general public thinks, feels, and relates to these used-to-be germs, towards a much more amenable relationship, it is coupled with a rush to make profit off this new frontier.

Beginning at the mouth, our diets have a huge influence on the ecology that forms inside our guts. Every type of diet provides favorable conditions for some microbes over others, and hence our daily ingestion of food is akin to gardening, a tending. Indigenous microbes in infant guts are conditioned by the complex sugars called oligosaccharides in mother’s milk to take a certain profile, and our lifestyle and diet determine the rest. No one is certain when the practice of fermentation began, but it likely serendipitously came about from humans observing animals getting drunk on over-ripe and accidentally fermented fruits. For thousands of years after that, our ancestors have collaborated with microbes to ferment alcohol, make bread, yogurt, cheese, pickled vegetables, and so forth, building a deep and fruitful relationship with yeast and bacteria that has been passed along generations. As capitalist modes of food production took over, this practice of cultivation based on care and the building of a relationship between the human, non-human, and environment wasn’t cost-effective any longer. Fermentation, when required, was reduced to strictly controlled conditions or pasteurized/sterilized in post production for “food safety,” losing the propagation of microbial communities that need to be in dialogue with the environment.

With the microbiome bloom, fermented and probiotic foods suddenly became fashionable again, and kombucha, pasteurized and filled with too many sugar additives, is sold at 5 dollars a bottle. Probiotics that come in the form of a pill are common, with prebiotic pills on the rise as dietary fiber supplements that act as fertilizer for the good bacteria in your gut. There's also a consortia of live biotherapeutic products that are produced by isolating certain strains of bacteria from a healthy donor's stool, sequenced and screened against the health profile of the donor, to create convenient pills that function as snapshots of a healthy gut microbiome for different treatments, and in the near future, enhancement. The problem is that by the time these tamed and industrialized microbes reach the intestine they are few and far between, and it's extremely difficult to integrate new ecosystems into an existing one, since these intricate ecosystems are gradually formed with certain relations that perpetuate a dominant pattern. Enters fecal transplant, a practice of directly transplanting stool from one individual to another in order to restore the balance of bacteria in their gut. First recorded in fourth-century BC Chinese medical literature, ingesting "golden syrup" or "yellow soup," was a way to treat diarrhea and food poisoning, and first performed in Western medicine mid-twentieth century as the most effective way to treat stubborn *C. difficile* infections.<sup>65</sup> There's a vibrant community of advocates in online sharing platforms and social media, sharing stories and best practices for doing the transplant at home. The process is as simple as "making a milkshake." It involves obtaining a stool sample (as fresh as possible.) The stool is mixed with saline solution with a blender and then the solution is squirted into the rectum with an enema bottle or bag. It wasn't until 2013 that the FDA started to regulate human fecal material as a drug, and OpenBiome became the first biotech startup company to offer capsules of carefully screened, freeze-dried super donor stool, for \$1595 a pop.

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<sup>65</sup> *C. Difficile*: A bacterium that can cause symptoms ranging from diarrhea to life-threatening inflammation of the colon, in cases where antibiotics fail, 90% of patients recover completely after just one fecal transplant.

For an additional \$3500 you could get a comparable screening from their reservoir of “super donors.”<sup>66</sup> (Meaning you could choose the profile as you would a sperm donor.)

I often wonder what Kristeva would say about fecal transplants and the curious polarity it conjures. On one end of the extreme is shit as the bane of our existence; on the other end is shit as a resource or commodity. In Chinese the euphemism for feces is gold; in ancient Aztec excrements are divine. In English slang, “holy shit” is an expression of awe. In capitalist society “doing one’s business” means defecating, and Freud’s anally retentive character is stingy with his gold. And yet we are conditioned to cringe at shit, to civilly put it out of view. It brings to mind the French psychoanalyst Dominique Laporte’s writing on shit as a tool for cultural analysis. “To touch, even lightly, on the relationship of a subject to his shit, is to modify not only the subject’s relationship to the totality of his body, but his very relationship to the world...and society.”

The first time I heard the term “fecal transplant” I thought it must not mean what I thought it meant, but to my delightful disgust it meant exactly that, and 10 out of 10 people reacted with some adjective of disgust. “That’s so *unnatural!*” is a response I’ve heard many times, but in nature we humans are the oddballs with our relationship to the abject. Throughout the animal kingdom there are myriad creative ways mothers employ to ensure their offspring have access to the right fellowship of microbiota as soon as they are birthed. Mammalian milk is best known for that. Some insects eject bacteria-laden mucus over their eggs right before they hatch, or pack the eggs with sacs and capsules of microbial jelly as a nutritious first meal. Other animals such as elephants, hippos, koalas, pandas, cows, gorillas, dogs, termites...engage in a process called

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<sup>66</sup> I spoke to Dr. Vijay Yajnik, who is Takeda’s Medical Director GI Therapeutic Area Unit, and an expert on microbiome therapeutics to clarify the conditions of a “super donor” and he responded that due to the sensitive nature of this procedure and policies on patient privacy he can only reveal that they are all fit and healthy individuals with balanced lifestyles.

coprophagia, consuming their mother's or sibling's feces to obtain essential microbes.<sup>67</sup> All of the routes of transmission depend on social contact—living as a community, touching, grooming, feeding, eating. This performance of self-care and other-care relies on a commensal relationality, an act of commoning.

I'm currently working on a performance/installation, *Fermentatrix*, that seeks to encompass the irony of modern wanting and wasting with regards to feces, and the performance of kinship that can be drawn out of it, complicated by the language of desire and domination of BDSM practices. Mistress Kinship, the persona of *Fermentatrix*, dons strap-ons of fermented vegetable that delivers feces across diverse species as a service of becoming. Working through the queasiness brought about by the other's feces, the homophobia of anal penetration, and the fear of sexually transmitted diseases, this becoming—becoming contaminated, dominated, non-human, more-than-human, host, parasite, is one that is ridden with danger and seduction. Harnesses and other paraphernalia are all made out of kombucha leather.

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<sup>67</sup> Hirakawa, Hirofumi . "Coprophagy in leporids and other mammalian herbivores". *Mammal Review*. 31 (2001): 61–80.

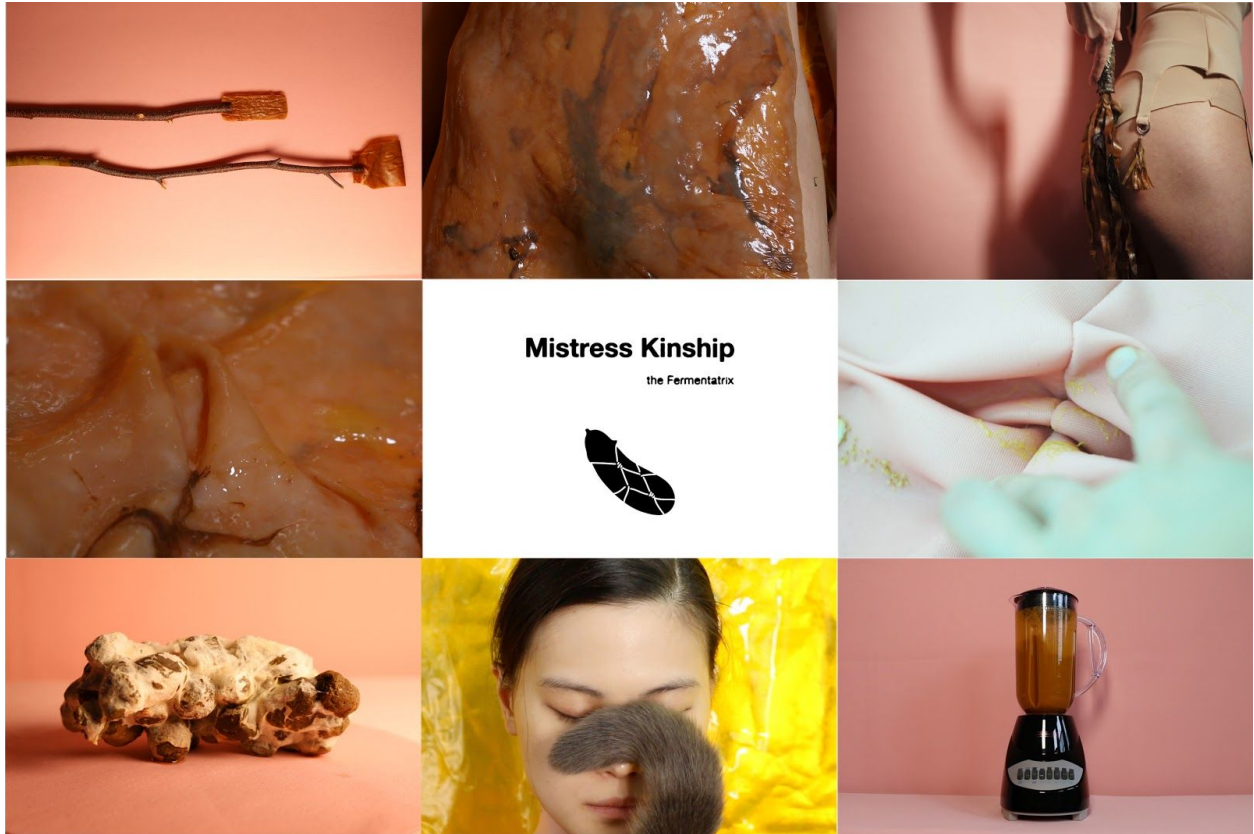


Fig. 6 Fermentatrix screenshots

Freud, in *Civilization and Its Discontents*, notes that civilization depends precisely upon the suppression of excrement and body parts with which it is associated. Man is preprogrammed with a fear of the abject, but the antidote might just be in our shit. Recent research on microbiome seeks to provide a material basis for the counter argument: that we are more enmeshed and entangled than we'd like to acknowledge. We cannot survive without the microbial community that dwells on and in us, woven into the very fabric of our existence. What might a quest for livability look like if we sought to flip anthropocentric definitions of self to include the bodies and agencies of "othered" beings?

Empathy is conventionally associated with a changing of grounds, to take the other's perspective, to dwell in another's place, to walk a mile in their shoes. While space and time imply each other, temporality is not often discussed explicitly in discourses on empathy. This chapter invokes the constructed temporality of empathetic subjects to tease out the co-substantiality of bodies and time: anthropology constructs its subject as existing in a more primitive time<sup>68</sup> and late liberalism assigns its cultures a difference in tense, linguistically and socially.<sup>69</sup>

If empathy is a placement of the self with the other, can it be understood in terms of placing the self in another's time? What does it mean to recognize that different temporalities are coded into different existants? What does it mean to dwell in another's time?

When I was 12, I first learned about mayflies in biology class, and I felt sad for these short-lived creatures. It was perhaps one of my earliest deliberate attempts at empathy, and I remember reading about their adult behavior of congregating on any available surface to perform a mating dance and thinking that "if I had 24 hours to live I'd probably dance too." Scientists have capped the maximum lifespan of human beings at 125, with an average global life expectancy of 79 as of 2019. But compared to a bristlecone pine tree that lives 5000 years I am a mayfly. When I

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<sup>68</sup> Fabian, Johannes. *Time and the other: how anthropology makes its object*. New York: Columbia University Press. 1983, p.18.

<sup>69</sup> Povinelli, Elizabeth A. *Economies of Abandonment: Social Belonging and Endurance in Late Liberalism*. Durham: Duke University Press, 2011, pp.26.



place my cheeks on rocks I feel even more ephemeral, a speck of dust consumed in the journey of becoming rock. Immortality has been the obsession of human beings since the beginning of civilization, and advances in science and technology have afforded us longer lifespans relative to our ancestors, but our mortality is a gift to our philosophy. In the words of Polish poet Wislawa Szymborska, "I prefer the time of insects to the time of stars." Perhaps what we should really aim for is the plasticity to be like bacteria. With a generation time of 20 minutes, one splits into two daughter cells, born with memory of the place they dwell. What is time for them? What is death?

The bacteria that came on rocks

There are two main hypotheses on how life began: abiogenesis and biogenesis. The former postulates life as having arisen from the non-living, spontaneously generated out of a primordial soup. The latter holds that complex living things can only come from other living things. The main actor in the hypothesis of biogenesis is panspermia, the speculation that microscopic life arose outside of earth by unknown mechanisms, and spread to the early earth on space dust and meteoroids. These bacteria, extremophiles, are named relative to human life—they are able to survive in conditions that the human body could not, such as deep sea heat vents, salt beds, and sulfuric ponds.

If panspermia were true, the bacteria would be extremophiles, little critters that sporulate and go into dormancy when conditions are unfavorable, and resume activity when it's nice out. They are life, non-life, pre-life, latent life. I'd like to consider this analogy through Elizabeth Povinelli's figure of the desert. "It stands for all things perceived and conceived as denuded of life—and, by implication, all things that could, with the correct deployment of technological expertise or proper

stewardship, be (re)made hospitable to life.”<sup>70</sup> The desert figure illustrates a strategy in which forms of life are always under threat from the inert and barren, and that being is always dominated by the desire of life over non-life. The imaginary of extremophile bacteria existing on Mars and the extremophile bacteria existing in my gut are dominated by the same desire to resume activity.

As a descendent of the extremophile bacteria I have inherited and developed a delicious multiplicity of “time.” For the duration of time “I”— an inadequate singular pronoun for all these thinking consciousnesses—am on earth, I am bound with the microbial through a contract of time. Beginning with the ancient bacteria that rests in my body as mitochondria and virome, to the first set of inherited microbiome (either pre- or post- utero), to the many new tiny messmates that will teach my immune system a lesson, to the succession of microbiomes tied to each new intra-action, to the decay of this body that will feed millions of microbes into their many other futures. Infiltrating my corporeality is the whole spectrum of life to non-life, from earth to celestial bodies, with temporalities that are both pre- and post-time, shallow and deep time.

Povinelli’s desert figure has been crucial in a two-year project that I’m embarking on with my colleagues Nancy Valladares, Pohao Chi, and multiple collaborators we’ve been igniting interest in. *3000 Years Among Microbes* is a speculative film on microbial ethics within interplanetary travel (told through the story of a first contact that is instrumentally reconstructed against the model of a colonial story) and a roundtable bringing together alternative cosmologies regarding the celestial and its extended voyages.

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<sup>70</sup> Povinelli, Elizabeth A. *Geontologies: a requiem to late liberalism*. Durham: Duke University Press, 2016, p.22.

This new spur of momentum in the “new space” age with the privatization and commercialization of space exploration is driven strongly by the desire to extend imperialist projects into outer space. As Povinelli states, the desert imaginary is the most productive for capitalism, and unsurprisingly the desert or wilderness imaginary of outer space is the strongest justification for projects of colonization and extraction of other planets. Gerhard Sonnert, a professor at Harvard’s astronomy department, said it was mankind’s responsibility to propagate the precious event of life into the universe, and when I asked him about the language of colonization in space exploration he thought it was the most bizarre question, and responded “What is wrong with colonization? There are only rocks out there, maybe bacteria, but as we know of now there is no life out there.”

The skies are deeply storied, but mainstream narratives more often than not, tell only stories of conquest. How can we tell a different story? One that does not portray outer space as another open frontier for the extension of imperialism and colonial projects. In consultation with indigenous scholars and advisors, who first introduced the dialogue of decolonizing space into the narratives of space travel, we aim to construct a narrative that no longer assigns difference on a hierarchical scale, but rather a narrative of kinship and symbiosis that begins with LUCA our (Last Universal Common Ancestor), the bacteria—extremophile bacteria living on the surface of Mars.

This is a story of a first contact that occurs at a scale imperceptible to humans, between a bacterium that has evolved into the human and the highly evolved descendant of its ancestor on Mars. The script takes inspiration from metanarratives of panspermia and endosymbiosis, the former being the postulation that life on earth came from extremophiles on asteroids and the

latter regarding the evolution of eukaryotes from prokaryotic microbes ingesting each other. The script has continued to evolve as we engage more people in the dialogue of space decoloniality.

Working with the Space Exploration Initiative, my colleague Nancy Valladares and I have proposed an artistic project “The ooloi spacesuit” to be realized aboard a microgravity flight scheduled for August 2020. This project is a performance that seeks to project alternative imaginaries about space exploration through the lenses of panspermia, symbiosis, and kinship. Based on a rethinking of the “first contact”, the script shifts perspectives to a microbial scale that is imperceptible to humans. Donna Haraway describes Lynn Margulis’ Endosymbiotic theory as “critters eating critters and getting indigestion.” We’d like to act out this idea in microgravity.

A performer wearing a bioplastic helmet, slime mold-inoculated spacesuit becomes one with a SCOBY inflatable as an ode to multi-species living in space. The inflatable is made with bacterial cellulose produced via fermentation. For us, fermentation is a practice of co-living, it embodies building with communities of humans and more-than-humans. In response to the free market frontierism that has led to ongoing privatization, extraction, and domination on Earth, we find it urgent to import the language of kinship into narratives of the interplanetary ecologies we might one day become part of.

It further explores the implications of constructing a spacesuit out of a living membrane, having it touching the skin, and how it might complicate narratives of space colonization. An actor (myself) wearing a suit inoculated with slime mold, and a 4ft round inflatable made out of bacterial cellulose will frantically collide in the absence of gravity, and amidst the chaos I will open up the inflatable bacterium, climb into it, and bounce around as one for the rest of the flight.

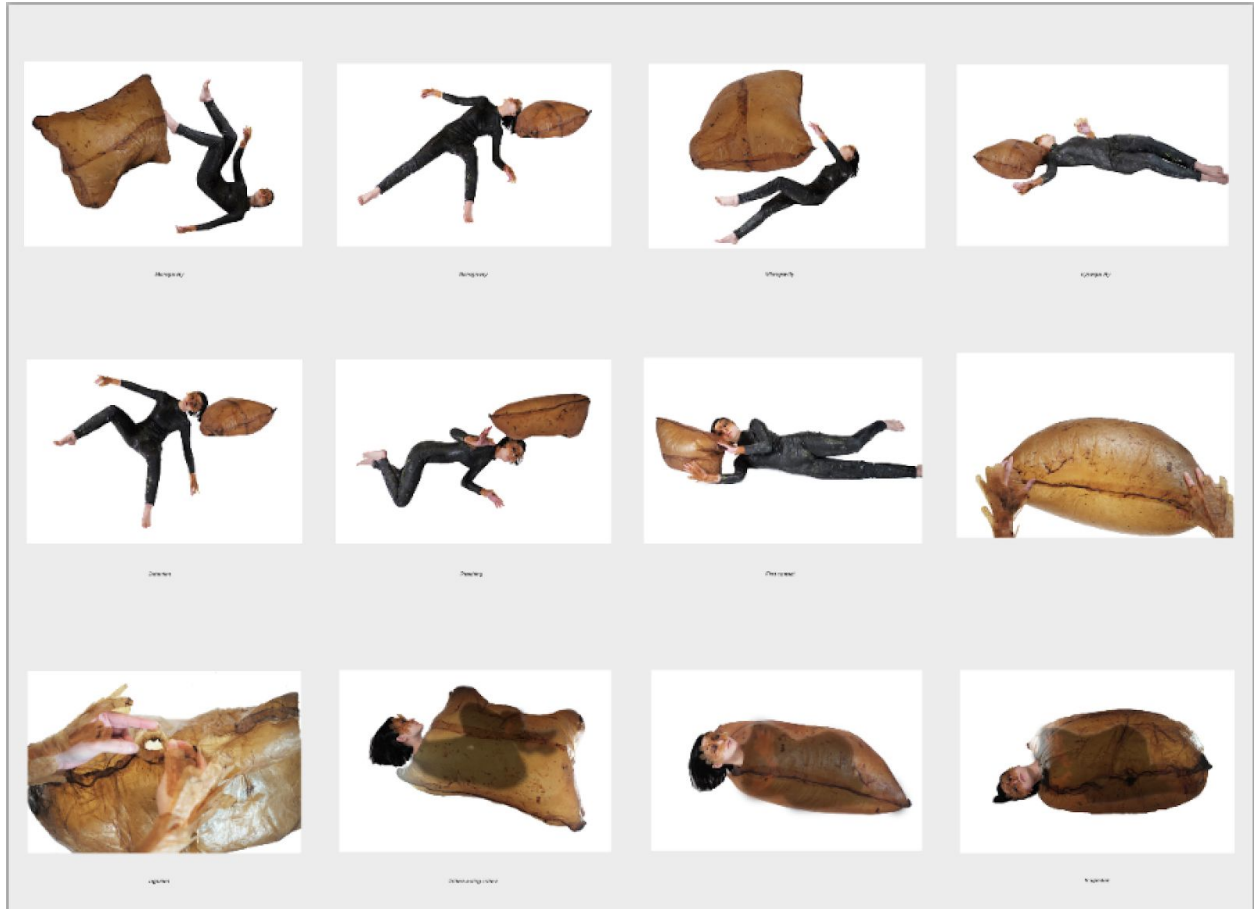


Fig. 7 The Oloi Spacesuit storyboard



Fig. 8 The Slime mold inoculated suit

### Sylvan thinking and ecodelics

By the standard of how profoundly and drastically our microbiome changes our state of mind, and with the biotech industry's push to commodify it as designer pills, we should take a moment to consider the microbiome as a psychoactive agent. In his book *Darwin's Pharmacy*, Richard Doyle proposes the term Ecodelics for those natural psychedelics that gives the person a deep sense of interconnectivity with the evolving ecosystems. Psychonauts, people who explore their

psyche through techniques such as lucid dreaming, brainwave entrainment, sensory deprivation, or the use of hallucinogens, often note a change of perception in time. Time goes by slowly. Maybe psychedelics enable the manipulation of time in order to facilitate some sort of ecological empathy? Why is it that “the fungus produces the hallucinogen almost exclusively in its “fruiting body”—that part of the organism it is happiest to have eaten.”<sup>71</sup> What’s in it for the mushroom or the ayahuasca plant? Does Eduardo Kohn’s sylvan thinking include feeling botanical temporality? Can we reframe microbiome as microbadelics? Can the constant exchange of microbes with other people, with the environment, help us develop a place-and-time-specific microbial thinking?

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<sup>71</sup> Pollan, Michael. *How to Change Your Mind: What the New Science of Psychedelics Teaches Us About Consciousness, Dying, Addiction, Depression, and Transcendence*. New York: Penguin Press, 2018, p.85.

He describes the fruiting body being the part it is happiest to have eaten because the rest of it is virtually invisible to humans, existing underground in mycelium networks.

At the end of the day, the microbes do not care, and my head banging effort and experimentation to achieve any kind of subjectivity flip is turned in as a thesis.

Things-in-themselves? But they're fine, thank you very much. And how are you? You complain about things that have not been honored by your vision? You feel that these things are lacking the illumination of your consciousness? But if you missed the galloping freedom of the zebras in the savannah this morning, then so much the worse for you; the zebras will not be sorry that you were not there, and in any case you would have tamed them, killed, photographed, or studied them. Things in themselves lack nothing, just as Africa did not lack whites before their arrival.<sup>72</sup>

Wherein lie the limits of empathy, its narcissistic tendency, its selfish fulfillment, its attempt at alleviating discomfort and its underlying tone of magnanimity.

The problem with the Cartesian ethics of wonder and generosity is that when a subject consciously gives something (is effectively and consciously generous), it is not really an offer. It is the subject's decision, and thus always a form of calculation. To give out of generosity because one can give is no longer to give. The opening cannot be my decision but an ontological movement, impersonal and anonymous.<sup>73</sup>

The violence of empathy is the violence of representation. The hypocrisy of claiming to listen, understand, and speak to another becomes outright speaking for the other. Such is the case of Sophia Roosth's screaming yeast, "To say that a cell is speaking is to project cultural notions of

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<sup>72</sup> Latour, Bruno. *The pasteurization of France*. Cambridge, Mass: Harvard University Press, 1988, pp.193.

<sup>73</sup> Johnston, Adrian, and Catherine Malabou. *Self and Emotional Life: Philosophy, Psychoanalysis, and Neuroscience*. New York: Columbia University Press, 2013, pp. 25.



what it means to be human, to be subjective and have agency, and even for something to be meaningful, into a cellular milieu.”<sup>74</sup> The voice holds particular interest in the philosophical realm, speech is held as the conductor of logos, but in this context it is limited by its own anthropocentrism. Ranciere regards all beings capable of speech as naturally equal, and although this conception is emancipatory from both arithmetic equality or geometric equality, it is insufficient in that it itself still upholds the social order of delimiting and parceling. In Roosth’s case, to interpret the scientifically recorded sound of yeast wall vibrations as a scream imbues it with human agency, the yeast is asked to perform a human emotion to be empathized with on our terms.

These efforts are modeled on the classical approaches of empathy, as an activity of dulling and summarizing the other. How can one dwell in difference? What traditional modes of empathy do is assume that the other can be known, but otherness is always in a state of becoming and cannot be reified. Is empathy actually an excuse to stop the action of understanding? Hannah Arendt doesn’t use the word empathy, but she describes compassion with a similar condemnation “...it will shun the drawn-out wearisome processes of persuasion, negotiation and compromise.”<sup>75</sup> Instead, she proposes a model of “visiting,” because understanding is an activity and not a form of knowledge to be had. “To visit, in other words, you must travel to new locations, leave behind what is familiar, and resist the temptation to make yourself at home where you are not.”<sup>76</sup>

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<sup>74</sup> Roosth, Sophia. “Screaming Yeast: Sonocytology, Cytoplasmic Milieus, and Cellular Subjectivities,” *Critical Inquiry* 35, no. 2: 332-350, 2009, p. 350.

<sup>75</sup> Arendt, Hannah. *On revolution*. Harmondsworth: Penguin, 1973, p.87.

<sup>76</sup> Disch, L.J. *Hannah Arendt and the Limits of Philosophy*. Cornell University Press, 1994, p.159.

Instead of *feeling into*, maybe one should instead *visit into*? Resist the temptation to make the unfamiliar familiar, instead we should recognize otherness as significant enough in itself.

Recognize that the microbial has speech even if humans don't yet or will never fully understand, or can only ever embody that understanding beyond cognition. This is the beginning of a political activity that "makes visible what had no business being seen, and makes heard a discourse where once there was only place for noise."<sup>77</sup>

In front of the undetermined faceless relation with the microbe, I find myself lost for the kind of empathy that I had set out to find. In its place, I found wonder. Wonder at its absolute otherness, wonder at my absolute otherness. Malabou describes wonder as the affect of the other, the consequence of the "intrusion of alterity into the soul." I wonder therefore I am, and since I cannot wonder without the other, the self cannot be understood outside of the other too. In the context of the microbial however, the intrusion of the alterity is primordial, endosymbiotic. In that sense, otherness not only imposes on but also materially plays a part in producing my affects. It is not just that the bacteria makes me wonder, it is also at the origin of the coding and architecture that makes it possible for me to wonder, possibly even the dopamine that releases the affect of wonder.

The notion of *visiting into* brings us back to the metaphor of the host and parasite, which is in dire need of a revisitation and reconfiguration. The origin of the word host, in Latin, is an antithetical word that means host, guest, stranger.<sup>78</sup> The stranger is in a somewhat equivalent

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<sup>77</sup> Rancière, Jacques. *Disagreement: politics and philosophy*. Minneapolis: University of Minnesota Press, 1999, p.30.

<sup>78</sup> Cohen, Ed. "The Paradoxical Politics of Viral Containment; or, How Scale Undoes Us One and All." *Social Text* 1 March 2011; 29 (1 (106)): 22.

socio economic standing with the host, a future potential guest. The stranger-guest is a paradoxical agent whose visitation has undetermined intentions, either good or bad. Writing this thesis in the time of COVID-19 makes it necessary to configure this virus as a “good” other or a “bad” other against conventional narratives. In these trodden narratives, the good other is one that reaffirms the host’s boundaries of self, while the bad other abuses these boundaries and unsettles the promise of an autonomous, bound individual. However, if we were to reexamine metaphors, the virus isn’t a settler that exploits indigenous production systems, they don’t appropriate land and make it their own. Instead, what they do is at the cellular level they confuse the categories of property and ownership, self and other.

If we were to reformulate how this story is told with the lens of empathy as wonder, as a willingness to be open and be changed, as an affective opening of sorts, we should extend the metaphor of invitation and leave behind the one of invasion. The model of the good other is then exposed for its shortsighted conceptual grounding, the virus weaves through the membrane of different bodies and categories, of life and non-life, and in the weaving erupts new forms of being. Thinking about the arc gene and the part that it plays, both materially and conceptually, in this “thinking”, what kind of story should we propagate for its (our) coexistence?

Invitation/invasion/host/parasite/guest/intruder/natural/alien/disapore/local/foreign/colonizer/colonized/resident/pioneer/refugee. Microbial afterall.

L`et t!he mor%e lov&ing o#ne be m~e.

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