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With an Ear Against the Ground: Explorations of Rhizosphere Biota as a Movement Study in Two Parts: (probiosis and wormhole)

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With an Ear Against the Ground:
Explorations of Rhizosphere Biota as a Movement Study in Two Parts: (probiosis and
wormhole)

Senior Project Submitted to
the Division of Arts at Bard College

by
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Annandale-on-Hudson, New York
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1.0 Introduction:

1.1 Research Question

Does a movement exploration inspired by a breadth of non-human, biological relationships illuminate in some way the interpersonal relationships of humans? Are there commonalities, or a shared set of traits? The soil profile, as the inspiration for a movement based performance art form such as dance, combines two of my major interests, dancing and soil science. What I know about soil science comes from an agricultural lens. My background in farming frames the focus of my scientific research. Through that inquiry into soil health and agriculture, I became aware of the multitude of the life healthy soil supports, and became fascinated with the cycling of energy and biological relationships present in the rhizosphere, a three dimensional space where plants and soil interact.

1.2 Organization and delineation:

My senior project in dance is composed of multiple, connected parts. I used the first semester to define my areas of research interest, and explore these areas in the studio with three peer dancers, culminating in a performance of a completed piece, *Probiosis*, in the fall of 2019. Over the January break I did a lot of reflection and writing about *Probiosis*, and thought of questions I still had that I wanted to explore for part two of the project. I began to work with four other dancers, all seniors majoring in dance, and a musician collaborator, to explore more soil relationships. Once we had to move to shelter in place, Part B of part two became a solo exploration. I turned my focus back to connecting the scientific inspirations for the piece to improvisational

movement studies. The product of this time period is a blueprint, a documentation of my process that can potentially become a finished performed piece in the future. I will discuss each element of the entire project in the following order: part one, part two, and finally part two (B). The conversation around the blueprint file will reference pieces found in the folder accompanying this document.

1.3 What is soil?

Soil is a three dimensional space within which dances happen on a multitude of timescales. To see the movement of earthworms or fungi as dance is an assumption I will continue to run with throughout this inquiry. As we analyze relationships between species, we categorize and organize interactions based on their behavior and nature. I believe that these types of symbiotic relationships between species can also be used to describe human relationships on the emotional and social levels, not just on a biological one. I will be talking about a lot of different things at once, which is necessary in order to understand the interconnectedness of the systems at play. I will be talking about fungi, plants, trees, legumes, grass, vegetables, microbes, bacteria, earthworms, other bugs, soil organic matter, rocks, sand, silt, clay. Mostly, I will be focusing on a few key relationships I found myself drawn to explore.

2.0 The first half (fall 2019: probiosis)

2.1 Symbiotic relationships between plants and fungi

Part one of my work was about plant/fungal symbioses only, with an emphasis on the fungal mycelium and various connections it makes to the soil space and to plants. In nature, a plant can survive without fungi supporting it, but the productivity of both is improved when there is an association. The associations between fungi and plants are called mycorrhizal associations and the most abundant group of fungi that make these associations with plants are called arbuscular mycorrhizal fungi. This relationship is widespread and common. In fact, it's generally known that plant's roots uptake nutrients, however, the "Roots of most plants are more efficient at mycorrhizal formation than direct nutrient uptake" (Brundrett). There are many theories about the evolution of these relationships, for instance Brundrett writes, "Perhaps mycorrhizal plants and fungi have some capacity to associate selectively with the partners that provide the most benefits." The question is, how do they know that they have the most benefits?

This discussion of fungi inspired my choreographic process, by inspiring a value system between dancers in a given space. The connection between dancers is linked to the relationships present in nature, as human relationships are natural themselves, but to an audience who doesn't know the origins of the movement they see, they are unlikely to be aware of my source of inspiration. I am working in abstraction, rather than a narrative form. How the work I've created for this project is interpreted does not guide what I make. However, because these human

interactions on a stage that mimic interactions in soil embody emotion through the performance of dance, the viewers of the work ideally are able to get the tone without the overt acting out of a character. When speaking to the group of dancers I worked with on *Probiosis*, I would say: “We are plants, and we are the fungi, but we are also still us.” We were embodying these things but it was up to the individual dancer as to how that was expressed within the guidelines and choreography that I set.

As far as mycorrhizal associations and relationships, “all mycorrhizal associations are symbiotic, but some are not mutualistic. In this review, the terms ‘balanced’ and ‘exploitative’ are proposed for mutualistic and non-mutualistic mycorrhizal associations respectively” (Brundrett). The difference in experience between a human in a relationship that’s balanced versus exploitative, means different things in the different contexts. By trying to storytell without language or jargon there is space for audiences and people to think about their own experience, and relate to the dance. Whether this inquiry succeeds lies in the question: Can an audience of humans empathize with a living system they fundamentally can’t relate to?

2.2 Performing Probiosis:

The meaning of probiosis is beneficial symbiosis, also known as biological facilitation, a relationship where at least one organism benefits and neither are harmed by the relationship. The piece was created for four movers but was performed on stage by three because of an injury sustained by one of the dancers moments before opening night. Some choreographic choices were shifted at the last minute, as I adapted to the idea of three dancers in space. The dynamic changed to mostly two people moving together while another was on the outside, or all of us

working independently for the last section, or all dancing together but not in unison in the second section. The process for creating the piece was to experiment with human experiences I felt needed multiple bodies to communicate, and how the context of how they were performed fit into the narrative or bigger theme of the rhizosphere, the place where plants and fungi are interconnected. I thought about the dancer as connected to the earth and the sections showing different smaller stories. I worked with the biological relationships of mutualism and facilitation and the reaction of soils to outside stimuli to create a structure. I wanted to use improvisation as a tool because in nature there are tasks and cycles and mechanisms that choreograph movers, meaning movement pathways are predetermined. However, no hard lines of a predetermined beginning, or middle, or end, exist in these cycles. In fact, everything is cyclical. The entire last section of the piece included choreographed solo's embedded into a larger free form structure. This improvised ending section is drawn directly on facilitation for its relationship inspiration. The section shows community, spatial awareness, gaze, and touch, between movers.

For *Probiosis*, I created four different sections, each exploring a different relationship or set of relationships. For instance, the first two sections explore how plant/fungal interactions respond to outside stimuli, specifically, *precipitation* in the first section, and *disturbance* in the second. Many of the movements and responses to music are in concert with the broader concept of activating the space through highly energetic movement, rooted in the individual dancer's desire to perform expressively. Because external factors such as soil disturbance from cultivation and the water cycle affect soil ecosystems, I intended to highlight these phenomena by exploring the concept of both of these kinds of disturbances to a soil ecosystem, as an energetic shift in movement dynamic. The third section, the two simultaneous duets represented a more direct

connection to the plant/fungal interconnection. It explored a borrowing of energy from one being to another, one more energetically excited unknowingly giving energy to another being. The second duet was about biological codependence and the human relationships that can mimic the idea of an obligate symbiosis, which is the classification of AMF's relationship to plants, meaning they rely on that connection for survival.

In reflecting on this work, I can say that the choices I made were very controlled and predetermined and having a sudden shift in the number of dancers forced me to make last minute decisions about how to handle the situation. I responded well to being under pressure, and felt confident that the changes I made still kept the integrity of the piece. Using four bodies in space allowed symmetries to unfold, and when that was disrupted, relationships were more complicated and nuanced to see from the audience's viewpoint. Working in the round allowed me to choreograph specific and non-frontal scenes and create a world the audience was invited into. Working with improvisational scores allowed the piece to be different in every performance, and there was room for play within that structure even during the final performance.

2.3 Countertechnique:

In thinking about the natural body and the quality of movement exploration I used to create this work, it's important to highlight where I see these concepts and dance overlapping. A movement style I am curious about currently is Countertechnique®. The freedom of movement and way of accessing control of the body by being seemingly out of control is something I was recently exposed to and desired to explore more in my senior project. Literally falling through phrases

and thinking deeply about not what the movement is, but how it is done is something I learned in my limited study of the technique. Countertechnique combines intellectual inquiries of the body and anatomical truths with a movement practice situated in a specific space and time. This overlap is why I was so drawn to incorporating its value systems into this project. The system can be used to intellectualize movement and thinking specifically while moving, which meshes well with my intention to embody movement intentions that are borrowed from other creatures, specifically fungi, worms, bacteria, and plants.

Countertechnique utilizes a unique value system in dance, working with weight and direction in a distinctly alternative way to traditional western dance forms. It puts emphasis on joy and feeling of movement rather than a sense of right and wrong or striving for perfection. Because countertechnique stems from an awareness of one's own weight in space and the simultaneous opposite directionality of different volumes in the body, it is deeply connected to a dancing body's anatomy, and the awareness of one's own balance and movement potential. As my interest lies in experimenting with the ways in which movement is translated between bodies with different anatomy, thinking about orientation and direction are necessary. In my work, I am also interested in looking at space. How can a non-pristine dancing space prevent or allow certain movements? Which spaces afford movement of a particular nature? A space can create the parameters for what movement is possible by narrowing the focus causing a mover to create specificity and choices that are logically determined by that space. In my process I intended to use a few countertechnique tools in order to help the quality of movement be more uniform across movers, while still allowing dancers to be in their own bodies. In my experience dancing while applying tools such as popping, reducing unnecessary tension, and seeing the space, allows

me to be a more present performer without overthinking while dancing. I wanted to share this sensational approach with my fellow seniors because it feels good, and introduces an intellectual response to the movement process beyond memorization and repetition. Then I could move toward refining.

3.0 Part two early spring 2020: *Wormhole*

3.1 Revising the Research Question

As the first semester investigation questioned: What can be discovered about the nature of human relationships through an investigation of non-human creatures' reliance on one another? And, How is the ecology of human relationships mirrored in interspecies biological mutualism? Part two ongoingly questioned: What does the movement of energy in the rhizosphere feel like in a singular dancing body? How are spaces charged with energy, and how does that affect the relationships in that space? How does the physical intelligence of fungi, plants, and soil bacteria and animals complicate, or compliment, the human body's physical intelligence? Movement tells stories in unconventional ways, and my ability to go beyond a representation of relationality between the multitude of living parts, is in part an effort to use science to guide and inspire abstractions I can relate to in my own body and share with other people through the performance of dance.

There are two major soil science inquiries this project explores: earthworms and rhizobium-plant interactions. The entirety of part two is titled “Wormhole” and will be referred to as such throughout the rest of this paper. The goals of part two were to expand the relationships explored, for instance earthworms interactions with soil, and dive into soil/plant/bacterial interactions. The first half of my process I was working with five movers, including myself. The plan was to decrease the number of movers on stage at once creating sections with less and less movers as the piece progressed. This intention was married with the image and narrative arc of narrowing the microscope moving from soil macro to micro biota. Here I will discuss all the tools and exercises I used in Part A of part two process. Part A of the process culminated in a showing at Dance Workshop on March 12th which ran about eight minutes in length and was composed of four major sections.

3.2 Earthworms:

An earthworm’s movement strategy is called peristalsis. They move soils by eating soil organic matter, turning it to castings which are a nutrient rich component of soil. They move through the soil profile in all directions. Their presence in high numbers signifies a healthy soil. They can travel fast, “A small earthworm travels at a rate of around 27 feet per hour (0.2 centimeters per second). A medium sized worm can cover 185 feet in one hour or 1.5 centimeters per second. And large earthworms can make their way across 240 feet of earth in one hour,” (allaboutworms.com). Earthworms are able to alternate between being small and stubby to long and thin easily, and have little hair like bristles that allow them to anchor their bodies in place by sticking to soil particles. Earthworms move differently inside soil and outside it. If you’ve ever

picked up a worm and seen how it moves, it's almost comparable to a fish out of water.

Earthworms eat organic matter and a lot of it. For instance, "Worms eat so much that they typically produce excrement equal to their own weight every 24 hours," (allaboutworms.com).

Earthworms are very complex creatures that move in unexpected ways. They are more than we commonly assume them to be. One of their most valuable contributions to soil is a result of their ability to move and displace it. What does the worm's relationship to the soil space and its ability to locomote mean in the context of dance making? When I choreographed the movement I did not perfectly move exactly as a worm does, but rather within their constraints and the flow through space.

I am really interested in wiggling and the planes of movement earthworms move in. I am also interested in how the colloquially known dance move "the worm" is connected to the characteristics of actual worm movement. I was interested to show a worm slinking across the space as the opening image of the proscenium stage piece. This "worm" was composed of all the dancers' bodies, with the idea that our arms would be connected underneath the fabric of a hoodie, giving the illusion that all five dancers constituted one worm body. I did a lot of improvisational work figuring out how to move like a worm, or how I define "worming". For me, worming is wiggling in one or more directions, with the entire body engaged. Worming on the floor is a locomotive but inefficient way of covering space when performed in the human body. Because my body can't widen and shorten and lengthen like a worm, I abstracted this to mean displacing my body in space, kind of along the lines of one step forward, two steps back, or two steps forward, one step back.

3.3 Bacteria in the rhizosphere:

The second soil life relationship I explored in *Wormhole* is that of bacteria that grow with legumes. Bacteria have a multitude of roles in the soil ecosystem. One specific relationship I will discuss is plant/bacterial symbiosis, as I looked at plant/fungal interactions in *Probiosis*. I danced with the energy and feeling of legumes, which are the plant family that form nodules that harbor nitrogen fixing bacteria, and explore the movement pathway that draws bacteria into the roots of plants.

Rhizobia are symbiotic diazotrophs (nitrogen fixing bacteria). Rhizobium forms relationships with the roots of the legume plant group. This association occurs in specific plant species for instance, legumes -- cowpea, peanut, alfalfa, beans, peas, soybeans, etc. Legumes and Rhizobia work together to fix nitrogen and control nutrient flux in soil by forming an inter-root relationship. Nodulation will only be initiated when the plant is in low nitrogen status. The root hair and infection thread allow for the connection, as the attraction of bacteria to root hair happens by way of chemicals. The process of nodulation, meaning the infection of bacteria into the root, is a flow of movement and energy. The nodule is space for bacteria to be protected from oxygen, allowing them to turn nitrogen gas (N_2), into nitrate that is usable by plants. The nodule is where bacteria feed on the carbohydrates created by plants via photosynthesis. Bacteria reproduce inside of the nodule and are released into soil when the nodule dies/sceneses. It is energetically expensive for the plant to work with the bacteria, causing a lot of carbon fixed by plants to go into fixing nitrogen for continued growth. There is an audio file located in the blueprint folder that discusses this relationship more in depth. Here's an image showing nodules that I find useful to visualize what is happening:



There is a part of the main first phrase of the group piece showing some of the movement patterns regarding root hair infection. There is a video of this moment in the archive folder. It is the bacteria (invisible) infecting the root hair of a plant - I as the mover represent the plant, and how my “dance” or interaction with that bacteria and its growth inside my body changes how I relate to space around me and directs my energy to an internal core, rather than expanding outward into space. Further, the energy gleaned from that interaction springs out following this connection, allowing me to move in an expansive manner.

The movement I have already generated thus far is all related to the idea of worms moving through space, in an inefficient way compared to human walking. The first phrase is taking one spurt of energy gained from the ground - soil matrix systematic space - and turning it into movement. That one drop or string of energy moves throughout the mover, and affects each

person doing this dance differently, they have the choice to do what they want with the phrase, depending on choices they make in response to the space and sound and other movers. They are self aware in the sense that they know they are dancing and they know others are doing the same and investigating and interpreting what is surrounding them. As a group, we sense each other, and see each other. Although worms and bugs can't exactly see, they know the space around them well. Traversing and moving through space as a performer is akin to how soil life travels through the soil.

3.4 Music collaboration in Part 2:

The dialogue between music and dance in a work of performance can be described using the analogy of symbiosis as well. In refining my music choices from last semester, I had a strong desire to collaborate with a peer musician to create a dance and sound score that was a single project. I was in part inspired by the value system's used by Cage and Cunningham in their music and dance collaboration, and amazed when I found out just how many works they created together. The relationships between music and dance are complicated, and I have a strong desire to further explore the music/dance connection in my own work. This was partially done in practice by initiating a space for feedback loops to occur within the rehearsal process. Cage and Cunningham explored in their large body of collaborative works that music and dance can work independently of one another rather than dance physicalizing music, or music scoring a dance.

Raphael and I worked together by first meeting and talking about what we were interested in exploring in a project together. In the process we investigated how music and dance can be built in the same space and time. We decided to have rehearsals together to learn from

one another as creators. How Raphael works with his fellow musicians and how I work with my fellow dancers as a choreographer differ in most ways but there is some overlap. I would teach and show phrase material while Raphael and his group would improvise and riff off of one another - they all compose their own parts so to speak while Raphael is playing two instruments (synth and bass) in addition to guiding the process. The overlapping rehearsals were both productive and enjoyable. We realized that for the performance, it would make sense for Raphael to create the sounds for my senior project concert, and for his senior project concert to have the full band with dancers in a portion of the performance. I don't think that the rehearsal structures we both had were incompatible, but I think they could have been made more time efficient. I felt anxious at times when I needed to clarify something to movers while musicians were just sitting around. As the choreographer I worry about wasting folks' time, and not respecting their commitment to coming into the space with us.

Raphael created sounds that he was interested in exploring and experimenting with, and he altered his ideas to "fit" the dance, by responding to it. He would watch the movement and then based on it's dynamics respond.. After that, if he wanted the music to follow or fit those particular moments he would find those markers within the dance's structure. Once Raphael created music based on his own improvisations and watching what movement we did, and we could do it together, I found all of us responding to the energy of the movement, rather than moving independently from the music. We wouldn't necessarily drop in and follow the tempo exactly or sounds exactly, but there were moments where I felt as though we were moving together with the music and dancing to it rather than ignoring it. Our process was interrupted and unfortunately my blueprint folder does not contain sound from Raphael. He is working on

scoring some of my dance videos now, but these files will likely not be done in time to be added. We both intend to work together on another project in the future. Nevertheless, this collaboration was a valuable learning experience for us both and I learned a lot about how musicians work differently from dancers. Collaborating with Raphael made the process more enjoyable, and the ability to feel like I was creating something with someone else in another discipline was a new and inspiring experience.

4.0 Nevermind! Part 2, plan B: the blueprint

4.1 What is going on?

Because of the coronavirus pandemic, my plans for finishing the piece changed radically. Raphael went home to California, and I could no longer rehearse with the dancers I was working with. The piece had to become a blueprint for a potential future performance event, instead of a final choreographed work for the stage. This blueprint is presented in a Google Drive folder, serving as a living archive of writing, speaking, and dancing about soil relationships. This second half solo project (part B) is performed by me as different versions of myself dependent on the space in which it is performed and the mood of that day.

I was very inspired by the chemistry lecture that Leslie gave after the showing of her moderation piece in Dance Workshop, and I wanted to similarly expand on the idea of a presentation about the project that would usually be done to share research findings with the

dance community. I've created and compiled a short lecture series, represented in audio files located in the blueprint folder. *Speaking* about the concepts that inspire me allows for a multidisciplinary performative approach to this complex set of research questions I have been investigating for the past year. The blueprint also contains one of the final rehearsal videos I was able to take in Thorne, showing what I had at that time in March.

4.2 Unconventional rehearsal spaces

Finding new rehearsal spaces was a huge challenge. I took advantage of the environments that I felt inspired to move in, and most of the video footage in my blueprint was taken spontaneously without a plan of action to record. The movement itself is both rehearsed and improvised. The reason that I went outdoors for my video documentation was because my home is not a space I feel free or happy to move in, and embracing the natural landscape and connection to plants that this piece has, seemed logical. Using outdoor spaces also gave me the opportunity to show scale in a different way. Some videos are filmed so that my body appears small, indicating my insignificance in the space, demonstrating that I am simply one small component of a natural ecosystem. When I am out in nature I think of myself as a guest in the space, and do not claim ownership the same way that I would on a stage or in a studio. This affects my confidence and performance quality, by altering the vigor and connection to the audience I usually feel when I perform.

The list of sites I worked at after studios became unavailable is as follows: My backyard, my kitchen, parking lots, the greenhouse at Montgomery Place, my bedroom , island off of trails in Tivoli Bays, and the Bard waterfall. As previously noted, I am not including video footage of rehearsals inside my house.

4.3 Greenhouse at Montgomery Place Orchards:

The first place that I found movement exploration that was in direct connection to this project was inside and around the greenhouse at Montgomery Place Orchards. Dancing inside the greenhouse is very space limited and gets sweaty pretty fast because it's hot in there! In my first session I worked outside it in a grassy space, moving through the first piece of phrase material used in *Wormhole*, just to try things out in that space. This investigation was rough, and didn't feel satisfying as I felt limited by the grass and my body was not warm or ready to perform for the camera. This was a really eye opening experience for me and gave me a much better understanding of how to conduct a "rehearsal" in a solitary/ limited space. I decided that every filming or work session should begin with a warm up, and I should investigate alternative and creative ways to change the angles I film from.

4.4 My backyard and driveway:

The second space I've been using is my backyard and driveway to my apartment. In this space, I've been exploring dance through the practice of hula hooping. In other words, I've been working with using a hula hoop as a dance partner. Hula hooping is a practice I engage in fairly often and find a great deal of overlap between hooping and the improvisational work I normally

engage in as a form of expression. However, in this context I have found that because I am unable to dance with the people I created this project idea for, subbing in another “partner” makes sense. One of my main goals for *Wormhole* was to communicate partnering and the ideas of obligate symbiosis, where one organism cannot survive without a physical connection to the other. This idea was explored through an improvisational score I had the dancers do in my rehearsals. My relationship to the hoop is not literally symbiotic but there is an energetic connection. These explorations dealt primarily with the flows and fluxes of energy and nutrients in the soil ecosystem. The ability for the connection between the hoop and I to foster movement and energy flowing through the hoop, says a lot about that relationship. The hoop is an inanimate object but by connecting with it through touch, I give it energy that then feeds back into my body. The relationship is complex because the hoop can’t move without being connected to my body at first, but if I give it too much energy it is able to move on it’s own and out of my control.

4.5 Greenhouse road and reflection pool:

I frequently visit this area because I’ve been working weekends watering in the greenhouse for the Bard Farm. The space in the drive path is flat and open, a compacted dirt road. I decided to dance in the space investigating it’s expansiveness. I also walked around the reflection pool and open grass space around the trees across the road from the greenhouse entrance. Moving in these spaces was a spontaneous decision based on a conversation I had with myself while in the greenhouse about biological nitrogen fixation. When I explored the reflection pool I was thinking more along the lines of worming and experimented with some of the phrase material I already had from part two - A in the space. The spaces are interesting to work in at the same time

because even though they are in very close proximity to one another, they are so different. The dirt path is more sterile, while the frame of trees, grass, and flowers that surrounds the reflection pool is softer in some way.

4.6 Bard waterfall:

Moving in natural landscapes is a challenge that works really well with the research foundational to this project - even in the midst of chaos. Hearing the constant flow of water from the waterfall and working with such a small space radically altered what movement I was able to do. I dropped in to worming, and tried to think about how the trees around the waterfall get nutrients and light in such a dense canopy, with so much water passing by them. Some of the trees have grown over the water to get more light, so I spiraled and moved in response to that. One of the main things I was able to explore in the context of outdoor spaces was physical constraints to my movement. This is an experience shared by all living beings. For instance, a worm can only move around and within the soil they explore, and are restricted and limited by their physical conditions. I was restricted and limited by the space I had, the quality of the surface I was moving on, and what clothing I was wearing.

4.7 Tivoli Bays tree on an "island":

While moving at this site I was exploring what movement was possible based on my conditions. I was wearing boots and jeans and there was not much space or really any flat solid ground, so I took to the trees. I was focusing on either the water or a task the entire time. With my gaze, I alternated between being present in the moment and breaking that presence when becoming

aware that I was videoing myself. I am dancing in contact with trees. I am climbing and balancing using my physical connection to the tree to utilize its strength so I could balance or displace my weight out into space around the tree. This was one of the first places I explored movement outside of the studio.

4.8 Guided Tour of the Blueprint for *Wormhole*:

I am not going to dictate the order in which elements of the blueprint are viewed or accessed. It is compiled as a succinct tool for me to use in the future making or re-imagining of this piece for live performance. Each video/audio clip could theoretically be seen as a work of video art in the digital world, however, that is not my intention of how the material is designed to be viewed. Nothing you're seeing is a finished product, it is semi-directed rehearsal footage of a solo exploration. The order in which I outlined the contents of this archive in this paper may be how you wish to move through it, like a roadmap.

Audio files:

There are three audio files in the folder. Each has a title. *What is soil?* is a near stream of consciousness style rant about the living and nonliving components of soil. After writing and researching soil health, I figured that giving context to the concept of a living soil was the perfect background for viewers of this project to contextualize how I am connecting science concepts to dance. And by using language that is conversational, it includes the audience and brings them into what I'm thinking and moving about in a verbal way other than with writing text.

What is soil? highlights what types of creatures live inside of a soil ecosystem, how they work together to create a web of interconnectedness, and why what they do is so important for

the functioning of soil. I wanted to highlight the diversity in species that inhabits soil as well as the interactions each individual may have. This framework for analyzing soil relationships is valuable on its own, and hopefully gives insights to how I think about the connections I am working into my dances.

Fungi and Plant Associations speaks to AMF and some facts I find helpful in an effort to overview the concepts I detail earlier in this paper, and from Part One of the project. *N fixing Plants/ Bacteria Symbiosis* goes into depth regarding leguminous plants and the bacteria that allow them to fix nitrogen. By speaking and presenting these ideas, I can finally speak to someone about my interests without wondering if I am being boring or nerdy. So thanks for listening.

Video Files:

Categories refer to content and also date and time of recording.

Worm footage:

A worm: to see how a worm can move outside soil I've included a video file of me holding a small earthworm. A worm in soil: shows a worm inside a block of soil lifted by a shovel.

Backyard hooping:

There are three files in the blueprint folder exploring this relationship in the same space. The first video is of my shadow, which at that particular moment when I explored and pieced together some phrase material I was very interested in how the shadow looked and the indirectness of the

viewership of the space, by not seeing me move physically in front of the camera. The second and third videos, titled hooping in yard 1 and 2 were taken on the same day. In these videos I explore showing the only new phrase material I have created since being outside of the studio. And inquiring into my fascination with hooping as a means of generating a duet.

Waterside Island Trees:

The movement in these two videos is improvised. It was spontaneous and playful. I was looking at the water moving in the wind. I found myself wanting to be closer to the water whilst supported by the trees. My task was to climb a tree and play with my weight while in the tree. I was working with the binary of freedom versus confinement. Because my decision to record was spontaneous, I was wearing clothing not suited for extended movement. This situation also contributed to my parameters for this recording. It is not performative, but rather documentation of place and free movement within that place. This work is related to my research inquiry because I am playing with touch and partnering with a tree to move and create shape. I am responding to the sound of the water, I am thinking about worms and travel.

Reflection pool and dirt road:

The clips included from this space were an exploration of distance and sparsity. I worked from material I had generated at the beginning of this semester and I found that this material was able to work in particular circumstances outside of the studio. My experience with dancing these phrases came closest to the sensation of freedom I felt moving in the studio when I made and refined their content. Most of the movements and phrase material could be adapted to outside

spaces, but the energy and quality of movement from studio rehearsals was harder to replicate. I wanted to share and showcase through these documentations that real time adaptation to the space by seeing and sensing my environment and allowing the energy of the space and its parameters to bring the specific iterations of that material to life.

5.0 Conclusion/ Artist statement:

I work to share dance art with anyone willing to watch. I am excited by spectacle and the ritual of performance. I acknowledge the agency and power of the individual. I am culturally influenced by cooperative movement and collaboration across the dancer/choreographer boundary. The inherent genuineness and generosity inside humans matters to me. The curiosity behind research potential matters to me. What matters to me as a choreographer is that dance has the ability to transcend human experience and be more than the sum of its parts. In creating work, I am sharing my perspectives on a given concept and striving to control enough elements to create a world for an audience member to be invited to visit. I am working from the lineages of improvisational movement, expressive movement, countertechnique, and contemporary dance forms. I am curious about human's capacity for empathy. I am interested in dance performance as a means to generate knowledge.

I am curious about the multitude of relationships that can occur between humans and nature. I believe in the inherent value of ecosystems and the services that they provide. It matters to me that the gifts of earth are recognized as gifts and not entitlements to humanity. The

way that the earth is resilient and composed of miraculous phases and cycles matters to me. I am inspired by worms, roots, fungi, bacteria. I am obsessed with the roles specificity and vagueness play in composition. I want to continue to explore expressivity and control dynamics between performers. It's my intention to share the fruitfulness of a cross disciplinary choreographic process, to show how the connections I can make between life science and dance are not coincidental but are based on genuine research inquiries and curiosities, can teach us about our own humanity and that movements worth replicating are everywhere.