

Compost Poesis:

Death Magic and the Soil Food Web

By Aja Bond

Intro

Coming to Compost (In Theory)

Stir and stir and stir the brew

Power to heal and to renew

Creatures of the living Earth

From decay shall come rebirth¹

Witches honor the cycles of life, death, decomposition and rebirth as the ancient, perpetual flow that enables life to continue; it is a loop, a circle, a spiral and it is held as central and sacred. Death comes to everyone in its own way, over periods of time as short as days to as long as centuries but every being that lives to die will eventually be broken down, becoming part of the complex web of decomposing matter and the innumerable ones that build and maintain the structures on which all life depends. All of the elements honored in Witchcraft; earth, air, fire and water, have ways of contributing to this transformation, but the soil (which is often thought of as dirt, but is actually an ecosystem) is the place where we can most clearly see this cycle in action and be directly nourished and sustained by the relationships contained within it. Composting is a relatively new practice wherein humans help facilitate this natural process of decomposition. As the fields of soil science, microbiology, bioremediation and new

¹ Chant about compost from the Reclaiming Tradition of Witchcraft, original author unknown

scientific paradigms centering relationship and interdependency in ecology ripple out, we are deepening our understanding of how we fit into the bigger picture of life and death on Earth in this time.

It is only in the most recent centuries (a mere moment ago in geological time) that we have subjected the soil to intensive agricultural and industrial practices that have led to the development of new chemical compounds - as well as natural elements like lead and other heavy metals - which have been concentrated in the ground at such levels that the ability of the soil to play its crucial role in this cycle is seriously compromised. This accelerating depletion and toxification has dire impacts. We need ways of communicating the issues facing soil, which includes education about the "soil food web", its importance and ways to support it in this time of ecological crisis. We also need to interrogate the ways that Capitalist production and industrial agriculture are destroying this precious, living being. I also believe that we must create ways through story, myth and culture to secure the sacredness of this aspect of the living world in our hearts, minds and practices both individual and collective. Looking to examples from the distant past, the present and visions of the future can hopefully inspire our unfolding relationships with life, death, decomposition and rebirth and more directly inform our engagement with the soil as a complex being. Composting is a practice that I believe has rich potential for enabling us to embody this knowledge and also materially support systems that sustain life as they come under threat from all sides.

The subject of compost is one I have been intermittently obsessed with for many years. I am fascinated by the science of compost as well as its usefulness as a metaphor and the strange ideas that it gives me. I daydream about elaborate projects related to compost yet it is with slight embarrassment that I admit that until recently I have hardly gotten my hands dirty making it at all. Until this year my experience with compost was of myself and my housemates diligently taking our food scrap bucket out into the yard every day or two and throwing it on the ground - the pile always remained quite pathetic, more of a feeding ground for chickens, rats, skunks and possums than anything else. It would get strewn about by the respective daily and nightly feeding frenzies before it ever had a chance to get cooking and nothing much

would come of it (besides well-fed animals). But even before I began making compost in earnest as a dedicated part of my spiritual practice, I thought about it all the time and it's given me hope like nothing else has.

I have never been a gardener though I come from a long line of them, and very accomplished ones at that. My Mom's garden is like a kind of Findhorn² where many of the plants are at first unrecognizable because they grow many times larger than they are "supposed to". Her Mother, who just turned 100, is still self-sufficient and works in her 1000+ square foot garden until sundown most days of the growing season and she gives away abundant produce beyond what she needs. Organic gardening and the resultant jams, pies, fresh and frozen veggies, soups and a cellar full of root vegetables have kept her alive and well for a century.

I was raised in these gardens, mostly weeding and picking rocks, not so much of the fun stuff, but most of what I would have needed to get a head start in my own gardening adventures. I learned at a young age that "dirt is what gets swept up in the house, but soil is alive". I have maintained a considerable love of plants, learning early to notice and appreciate their beauty and form and making an effort to remember their names as you would with a person you've been introduced to and would like to get to know better. Yet somehow I have managed, until this year at the age of 36, to never grow a single fruit or flower on purpose. If I was so inclined, I could blame the various apartments, warehouses and sunless yards I've lived in most of my adult life, but that's not a very good excuse because since relocating from Canada to California I have had big sunny yards and still no urge to garden. Now I live within a short drive from my mother-in-law who is a master gardener and tries often to support me to finally begin gardening by giving me pots, starts, seeds and books on the subject. Despite this robust foundation and recent encouragement, I think the reason I didn't/don't garden is because I am first and foremost an artist and secondly a book worm - almost every

² A spiritual intentional community in Moray, Scotland, famous for growing gargantuan vegetables in infamously sandy soil by way of mysterious magical powers.

free sunny afternoon you will find me in my studio or curled up with a pile of books. Not that I don't get outside and into nature , but on my robust list of "things to do", gardening has never made it to the top. I have regrets about this and sometimes feel like I have waited too long to claim the inheritance of my Matrilineal line based on countless hours and many generations of skilled labour I respect and admire greatly - and yet this is how its been.

I became obsessed with compost through my morbidly curious, solemnly concerned and sometimes downright respairing personal research into ecological/environmental issues. In 2011, I had thought I was out the other side of my first Saturn return when I quite suddenly hit a kind of rock-bottom that came from reaching a tipping point of awareness about just how far down the path of destruction Capitalism has taken us and what the likely outcomes will be.³ Horrified, I quite suddenly decided that it was useless for me to continue to be an artist, that the world was in such dire straits that I needed to turn my attention and energy towards something wholly more practical and materially helpful. Art seemed like a waste of time, all things considered and since I didn't feel I was having much "success" with it anyways, I figured I should turn around and try something else. Depending on how desperate or despondent I felt at any given moment I tended to vacillate between considering the parallel but complimentary career paths of Greenpeace-circa-1970's-eco-warrior and permaculture farmer/educator. The fact that I had zero experience in either of these areas didn't seem to deter me (it usually doesn't when I consider, even today, "what I want to be when I grow up"). Now, I realize this paints a picture of me as a bit of a flake, but I will try to show how these sometimes seemingly random detours my life takes can end up bringing me to exactly the place I am meant to be, sometimes years later, by ways of that make little sense at the time - such is the wild ride of my

³ A space weather event that happens roughly every 27-30 years when Saturn returns to the same place in a person's Astrological chart as it was when they were born, which tends to cause significant upheaval and reconsideration of "what the fuck I am doing with my life". The second Saturn's return is what's more commonly known as a "mid-life crisis".

precarious though mostly deeply fulfilling long-term relationship with inspiration and “the Muse”.⁴

So having thought I was safely through Saturn’s plans for me only to have my life become meaningless and seemingly destined for complete revision, I enrolled in a weekend intensive workshop of Grassroots Bioremediation as a birthday present to myself. I spent three full days in a room at a DIY Punk Youth Center with a bunch of other people who also knew more or less how fucked the world is and were interested in doing something about it. This is the fateful place where, thanks to the energy, skill and experience of the instructor, Leila Darwish, I came to begin to grasp the wholly incredible nature and almost miraculous potential of compost. It was by no means the only thing we learned about: Bioremediation - meaning the healing or repair of toxified or damaged landscapes - includes phyto- (plant), myco- (fungal) and micro- (bacterial and other microorganisms) remediation techniques and I found all of them astounding. Ideally they all work together in some capacity and support each other. After all, these various kingdoms are as inextricably connected as the elements of earth, air, fire and water. At the end of the class I had learned about the ways various plants and mushrooms hyper-accumulate toxins and heavy metals enabling them to be removed from soil; how straw bales inoculated with mycorrhizal fungi can be laid over stream beds as a water filtration system; how hair, collected en-masse from salons, has been used on shorelines to absorb the toxic waste in an ocean oil spill. All this new information, however, was background to the wondrous discovery of how compost can be created to rebuild the soil and have unbelievable effects on the viability of the land and the health of everything that depends on it.

⁴ I didn’t end up giving up on art in the end. Also, for the record, Artists consider giving up art all the time. It is not a life-path that offers much guarantee and even the most dedicated get quite fed up with it after a while.

Part 1

Soil Science, Modern Poison and the Compost Cure

Through the course of my upbringing and subsequent research I have come to understand soil as a living organism, one that is comprised of the interrelationship of countless other beings - living, dead and non-living. “Elaine Ingham, a soil pathologist at Oregon State University, describes it best: ‘Soil is alive. Sand, silt, clay... are the mineral fraction of the soil, like the building blocks of a house. The bacteria that grow in the sand, silt and clay, along with some organic material as food, form the tiny bricks... Fungi tie these bricks together into walls, floors and ceilings.’ These creatures, which Ingham calls the architects, design housing for all the larger organisms, tiny animals and plants such as microarthropods, earthworms, rotifers, protozoa and nematodes.”⁵

With this metaphor, we can see how each being in the “soil food web”, as it is called, has a crucial function and that all are needed for the health of the soil organism. Focusing on holism rather than parts, we can understand the soil food web as a system with attention given to the relationships within it.⁶ The outdated, mechanistic science that still

⁵ David Suzuki and Holly Dressel, *From Naked Ape to Superspecies: Humanity and the Global Eco-Crisis*, (Toronto: Stoddart, 1999) 23. This book, which I first encountered 20 years ago in my teens as a radio production for the show Ideas on CBC, was foundational to my interest in biology, ecology and soil. I have returned to the book countless times over the years.

⁶ Wheatley quotes Donella Meadows, an ecologist, quoting an ancient Sufi teaching that captures this shift in focus, “You think because you understand *one* you must understand *two*, because one and one makes two. But you must

dominates industrial agriculture in the most recent centuries has resulted in terrible damage and depletion of the ecosystems that bear the responsibility of feeding most of the world, as well as causing widespread disease and suffering in farm workers and their families who live in the areas surrounding monoculture farms. The new-science (or old-relational) way of framing the world has the potential to help facilitate the restoration of the soil for the health of all beings, but a radical widespread shift in understanding and value is crucial in order to push through the barriers that currently stand in the way of the transformation of our food systems and industrial practices.

As is explained above, the soil is made up of the non-living, living and dead. The mineral component (non-living) is some mixture of silt, sand and clay. It is possible to see the composition of any soil by filling a jar part way with soil, then filling it the rest of the way with water. Shaking it up thoroughly and noticing the different layers when it settles; sand will be heaviest, then clay, then silt. Depending on the mixture, one may need to amend the soil in different ways - sand tends not to hold moisture and clay is often compacted and benefits aeration. The structures created in well-balanced soil are what allows air and water to be present and in turn what allows beneficial microorganisms to flourish. There are 2 main kinds of bacteria - aerobic, which live in the presence of oxygen and anaerobic, which live in the absence of oxygen. Soil that is compacted has very little space for either air or water to penetrate and benefits from interventions that aerate the soil, which will help aerobic bacteria thrive. The organic matter that is food for the living creatures in the soil is called detritus and is mostly decayed plants, animals and microorganisms as well as the waste products of living ones. Quite literally, detritus is dead bodies and shit. This organic material, also called humus, is a big part of what feeds the soil food web and the plants that grow in it. There are innumerable types of bacteria and microbes in healthy soil, so many that they cannot be listed and they each occupy a different niche.

also understand *and*." Margaret J. Wheatley, *Leadership and the New Science; Discovering Order in a Chaotic World* (San Francisco: Berret-Koehler, 1999) 10.

Fungi create webs between different beings in the soil, and mycorrhizal fungi in particular help distribute water, nutrients and possibly even information across a landscape. They also act as filters and can prevent certain harmful toxins from being taken up by plants and moving through the food chain. Some fungi, such as actinomycetes and streptomycetes, produce natural antibiotics, preventing disease and infestation in neighboring plants. The minerals, bacteria, detritus and fungi are the foundation for the other tiny creatures that live in and contribute to the soil food web:

- Nematodes are invertebrates that eat bacteria, Protozoa and fungal spores
- Mites feed on yeast that are in fermenting material
- Springtails main food source is fungi
- Wolf spiders don't build webs but move around the soil feeding on Arthropods
- Centipedes are found in most soil communities
- Ground beetles feed on other organisms, seeds and vegetable matter
- Slugs and snails help break down organic material
- Red worms or tiger worms consume organic matter and pass it as castings, which are extremely nutrient rich and also help inoculate the soil with their digestive bacteria

It is no different than in any other biome - diversity creates resilience, in soil and everywhere else. "A single teaspoon (1 gram) of rich garden soil can hold up to 1 billion bacteria, several yards of fungal filaments, several thousand Protozoa, and scores of nematodes."⁷

Plants need the nutrients and minerals in the soil in order to grow and be healthy, and those nutrients and minerals are only made available by the decomposition or breaking down of these materials into tiny bits, small enough for the plants to take them up into their systems.

⁷ Kathy Merrifield, retired nematologist at Oregon State University, The Secret life of Soil <https://extension.oregonstate.edu/node/82551> accessed Aug, 2018

Without the smallest creatures breaking things down and reintroducing new detritus into the soil, it will eventually be depleted and plants will either not grow, not thrive or not be nutritious to the animals that in turn eat them. Soil is replenished in nature by a variety of means; leaves and other plant matter falling to the ground and slowly rotting over time; animal bodies, like salmon, decaying on the forest floor; flooding and the movement of rivers and streams relocating rich deposits to new places. The relentless removal of biomass from the soil without continually replenishing it takes a toll. As is often the case with humans, we take much more than we give back, though it doesn't have to be this way.

The agricultural practices developed in the last century or so have proven to be devastating and the way it affects the health of the soil is perhaps one of the most dire ecological issues we face in the present. The nutrients in the soil have built up over centuries, in some cases even millenia. Where farming is intensive, these nutrients have been removed in a few generations and they are not being replaced in sustainable ways. It is a form of extraction, similar to mining and oil drilling. The process of removing the richness of the soil's countless cycles of seasons not only leaves the land barren but also ends up depositing harmful chemical compounds, from petroleum based synthetic fertilizers to poisonous pesticides. This becomes a "positive feedback loop", meaning that more and more of these chemicals are needed as time goes on. This can mean financial ruin as well as terrible health problems for farmers and farm workers who have been pressured into implementing these practices by huge corporations. The production of synthetic fertilizer is extremely energy intensive and relies on fossil fuels and global distribution networks. Also, these fertilizers can be toxic in and of themselves as excess nitrogen, for example, is considered a pollutant, with the runoff sapping oxygen from waterways, suffocating aquatic life and creating what are called "dead zones" in coastal margins. A large part of our world's soil is being depleted, drying up and blowing

away, or being eroded and carried out to sea. It takes 500 years to create an inch of topsoil in nature and we are losing it quickly.⁸

On top of this, there is the problem of the dumping household and, on a much greater scale, industrial waste which has the effect of toxifying the soil, sometimes making it impossible for life to exist there. From lead paint chipping off the exterior walls of old buildings, to accidental motor oil spills, to the much larger, intentional crimes of corporations attempting to externalize the costs of their practices by dumping byproducts of extraction and production processes. Toxic chemicals are destroying the soil's ability to regenerate and if plants are able to grow in such poisonous ground, those toxins are accumulated in their bodies and are then eaten by birds and animals, including humans. The health of the soil directly affects the lives of all living beings. It can seem a wholly overwhelming problem, especially when considered in combination with other late Capitalist nightmare scenarios. The good news is that there are relatively simple practices, accessible to nearly everyone, that when applied regularly over time can make a significant difference in the health of the soil and by proxy the countless beings entangled with it.

Decomposition is a process that occurs with or without the conscious attention and assistance of human creatures. It is how all the fertility on Earth has developed, naturally over millennia. Compost is a facilitated, accelerated version of decomposition, informed by observation, supported by soil science, and engaged with intention. Purposefully returning nutrients to the soil has been ongoing for thousands of years in some form or another. "The technique was recorded by the Roman scholar Marcus Porcius Cato, who set out recommendations for farmers in his manuscript *De Agricultura*, a first hand account of farming life in Italy more than 2000 years ago"⁹. Doubtless the connection between fertility and refuse was noted and integrated into more ancient agrarian contexts as well, through the observation of the piles of waste dumped outside of homes or villages

⁸<https://www.soils4teachers.org/lessons-and-activities/teachers-guide/soil-for-mation> accessed Jan 12, 2019

⁹ Clare Foster, *Compost: How to Make and Use Organic Compost to Transform your Garden* (London: Mitchell Beazley, 2014)

and the attendant verdant growth that would eventually follow. “The realization grew that piles of nastiness, if left long enough, broke down into something less nasty to handle and somehow helped the crops”, writes Bob Flowerdew, and he also makes the connection in the psyche of these predecessors between animal sacrifice and the blessings bestowed on the fields as a result - dried blood is today sold as one of the fastest acting fertilizers.¹⁰ It is only relatively recently though, that soil science has combined with the holistic practices of returning organic waste to the soil, enabling the development of composting as we know it today, with significant contribution from Sir Albert Howard’s experimental Indore method and the work of Maye E. Bruce and C.F. King¹¹. Ironically paralleling this development, with the advent of synthetic fertilizers which are notoriously energy intensive to create and rely on fossil fuels for both production and distribution, it has only very recently become possible for farmers and gardeners to *forget* the power of decayed natural wastes to replenish the soil. For the most part, farming has been estranged from the generosity of rotting things, and it has become both vulnerable and volatile as a result.

In the Introduction to the New Farmer’s Almanac, editor Severine Von Tscherner Fleming writes, “Up to their eyeballs in high-liability details, engineering, weather foibles, and equipment repair, these grey-haired men making the grain crops are not villains, nor the enemy. Just another feedstock to the ever-merging juggernaut of the agri-pharma-chemi-clouds-syn-innovation leviathan. We ought to be strategizing how to structure a dignified retirement plan with reinvestment to diversify farm practices and restore soil health and ecological function. The current system is literally putting these operators underground in debt, for a food system that destroys the land for money.”¹² Though the industry has tried to convince us otherwise, with omission, lies and outright threats, it is now undeniable that these techno-fixes have not been the shortcut to booming production that agri-business claimed. The farmers and their many struggles depicted

¹⁰Bob Flowerdew, *Composting* (New York: Skyhorse, 2012) 12-14

¹¹Ibid.

¹² Severine Von Tscherner Fleming, “Introduction”, *The New Farmer’s Almanac Vol IV*, (Pembroke: Greenhorns, 2019) 20

above testify to that. We must now remember and revive the best-practices developed by our ancestors over countless generations and utilize the more recent compost breakthroughs being developed and shared in the present that not only return nutrients to the soil but actually support the whole soil ecosystem and make it possible for widespread biodiversity, healing and regeneration to unfold.

Because of our current understanding of how soil thrives, we can get quite specific about the strategies for supporting this process with our own interventions. Part of the beauty of composting is its simplicity and in the reassurance that no matter how uninformed or inattentive you are to the process, decomposition will happen regardless! But if one wants to make the most of it in order to maximize the healing potential for everyone involved, there are a few guidelines to keep in mind as one endeavors to collaborate more intentionally with the soil.

Much of the life in a compost heap is the same as in healthy soil, only much more concentrated. The 4 essentials needed in composting are carbon, nitrogen, oxygen and water. Bacteria get energy from carbon and use nitrogen to grow and reproduce. It can be helpful to think about carbon and nitrogen in terms of “green” and “brown” materials. “Brown” are generally dry and carbon rich materials such as dried leaves, straw, cardboard, wood chips, sawdust and woody stems. “Green” tend to be moist, nitrogen rich materials like fresh grass clippings, coffee grounds, manure, urine and kitchen scraps. Both need to be present and ideally in a ratio of 30:1 carbon:nitrogen - out of balance and the bacteria will die. All organic matter has both carbon and nitrogen in different ratios. If you are mathematically inclined you can find some charts, crunch some numbers and get the most accurate ratio possible based on the materials and quantities you have at hand, but the average person can make great compost just by shooting for half “brown” and half “green” materials and making adjustments along the way.

As in soil, the presence of oxygen throughout the pile ensures that aerobic bacteria are the ones reproducing, not their stinkier and less helpful counterpart, the anaerobic kind. Too little water and the bacteria will die, too much and the tiny gaps for air will be filled with

moisture or collapse under the weight of the soggy pile. All these elements work together in dynamic, complex ways. The carbon is oxidised or “burned up” by the bacteria as they feed and reproduce (for some kinds, in an optimal situation this can happen every 5 minutes!) - this process releases the intense heat that compost piles at their best are known for. As the temperature increases, the changing environment becomes an opportune place for a whole other host of bacteria and microbes to emerge and reproduce; psychrophiles are bacteria that survive in the lowest temperature range (13°C or 55°F) and as they feed and reproduce in vast numbers, the becomes hotter and increasingly hospitable for mesophiles (20-30°C or 68-86°F). If well managed, with just the right amounts of carbon:nitrogen, air and water and built with enough mass and therefore insulation, piles can get to the highest temperature phase, in which thermophilic bacteria thrive (40-70°C or 104-158°F). This is because the high temperature will kill both weed seeds and any pathogens that may be living in the pile.¹³ The bacteria can only sustain these very high temperatures for a few days but with careful turning (moving the compost at the hot center of the pile to the outside, and the cooler compost to the center) one can facilitate the spike in temperature a few times over. As the pile cools, the mesophiles return for another round, then the psychrophiles and mycorrhizal fungi will develop in greater numbers the longer the pile cures.¹⁴

¹³ The risk of spreading disease through compost is very low if you are selective about what you put in it even if it doesn't get to the highest temperatures, but this is a way to make sure your compost is safe to use, especially for growing food. Generally it is not advised to compost cat, dog or human feces or meat though there may come a time when composting these things is actually our best option. This is why I think it is good to learn how to make good hot compost when the stakes are lower. Longer curing time is also a way to decrease the likelihood of spreading pathogens or parasites.

¹⁴ From here, you can go even further by making thermophilic compost tea, which is literally the best thing. A single cup of compost can be concentrated and multiplied exponentially into a brew of soil food web soup with a few tools - a 5 gallon bucket, a motorized air pump, a mesh bag and some food that bacteria love like molasses, fish fertilizer and seaweed. Made right with rich, living compost, this brew is so powerful, a litre of it in a sprayer can innoculate a whole acre of land with incredible bacterial and microbial biodiversity. Imagine how far a whole pile of compost can go if these innovations are

Compost is still compost if it never really gets cooking and one can see things breaking down slowly and surely regardless of the temperature - the end result (whether in 6-8 weeks, 4-6 months or the better part of a year) is nutrient rich compost that can be added to any soil, making it healthier and growing more resilient and nutritious plants. But the really incredible benefits of compost in terms of bioremediation, the healing of toxic, damaged and depleted soil and the replenishing of biodiversity in the soil food web come from the careful application of this new “technology” and active attention and facilitation throughout the process. When making thermophilic compost I am checking on it almost every day. I dig into the center of the pile and feel with my hand how hot it is. When the temperature is really getting up there, I use a compost thermometer in order to gauge the right time to turn it. Mass and insulation are a major contributing factor: a cubic meter or yard is about the minimum size you need for the pile to reach thermophilic temperatures. Surface area of the materials is also a factor, because bacteria and microbes are so small, they need their food to be as well. If you have lots of large weeds or woody things, getting a shredder can make everything go a lot more efficiently. A typical household pile that accumulates with the slow addition of daily kitchen scraps will likely not reach the highest temperatures. To make thermophilic compost, it is ideal to have a large influx of materials all at once, and a variety of materials at that, which requires either having a larger plot of land you’re working with, or some extra organization and planning.

It is considerably more work, but the benefits of this “next level” compost are incredible, miraculous, even. With thermophilic compost, the diversity of the bacterial, microbial and fungal communities in the

applied! It is well worth the extra work required to make thermophilic compost and compost tea. The abundance you can generate with these simple tools and steps are totally amazing and need to be shared and practiced widely. For more on making thermophilic compost see Leila Darwish, *Earth Repair: a Grassroots Guide to Healing Toxic and Damaged Landscapes*, (Gabriola Island: New Society Publishers, 2013) For more on making compost tea, see the above book or this article also by Leila Darwish

<https://www.motherearthnews.com/organic-gardening/gardening-techniques/aerated-compost-tea-zebz1307zsie>

soil will be enriched exponentially. It is difficult to really understand what this means, but the earlier example of a teaspoon of healthy soil containing a billion bacteria helps put it in perspective and brings us back to the worlds contained within soil, invisible and yet important beyond comprehension. There are literally countless kinds of bacteria and they are constantly evolving and responding to the ever-changing world at an incredible rate and each seemingly simple, single-celled organism can fulfill a unique and valuable function in the soil food web. As the list of dangerous chemicals dumped into our soil, rivers and atmosphere every year increases, so must we, in turn, support the proliferation and growing diversity of beings who can respond to these toxic conditions. In her wonderful book, *Earth Repair*, Leila Darwish quotes Elaine Ingham, who she describes as a “world-renowned soil biologist and compost guru” from an interview she conducted with her, “There is no substance on this planet that some organism will not be able to chew up. The problem is finding the right organism to chew up the right nasties and giving them the right food to do their job. If we just make really good aerobic compost, we are going to get a full set of organisms that we need to get into that soil, like bacteria, protozoa, mycorrhizal fungi, nematodes and micro-arthropods.” These are the beings that make a world of difference; bacteria taking up heavy metals like lead and so preventing them from being absorbed by plants; electrically charged humic acid that can attract, stabilize and degrade contaminants, mycorrhizal networks filtering water, and microbes breaking down complex, toxic, petroleum-based compounds into smaller, inert molecules. These tiny beings already know how to tackle many of the serious ecological problems that we humans have barely even begun to comprehend.

Another very important aspect of composting at any scale is keeping food scraps and other organic waste out of landfills. Many people assume that food biodegrades harmlessly wherever it ends up, but unfortunately this is not the case. A landfill is a site of chemical reactions very different from those in a compost pile, wherein food scraps produce methane, a greenhouse gas 23 times more potent than

carbon dioxide for trapping heat within our atmosphere.¹⁵ Instead of decomposing naturally, they can mix with harmful industrial waste and leach into the soil and water, spreading toxins out further into the world. The choice is obvious, the basics quite simple and the practice is accessible to most, if not on an individual level, then definitely on the level of neighborhoods and communities.

“All compost is not created equal,” as Leila Darwish says. As I have already mentioned, I didn’t come to compost as a gardener as most people do. I have a yard that’s also a wildlife corridor, home to all kinds of animals and plants and other beings. I have a deep down in the pit of my stomach concern for the well-being of the soil that supports them, for the future of our food systems, for the air and water and critters of all kinds. I want to make huge piles of the most powerful, healing compost and spread it by the truckload on yards, railroad tracks, river beds and vacant lots all over town, knowing that in all likelihood the soil in these places has been contaminated or depleted or both and at some point people and other animals will be gleaning or growing food from these kind of sites. It can take years, or decades to rebuild soil. In cases of acute toxification it might take centuries to rebuild and remediate soil to the point that it is no longer poisoning those who come into contact with it. Communities don’t have the resources that big corporations do for these kind of large-scale remediation projects, but one thing that’s on our side is the incredible amounts of waste still being produced under late Capitalism. We may know people who work at coffee shops or food processing facilities or have neighbors with big yards who can get us buckets, bags, even truckloads of organic material that we can turn into a substance that will be more valuable than money in time. For what price can anyone put on land that is healthy, that can produce food and shelter that will not cause diseases or spread contaminants? It is poetic that the stuff we value least, that we will literally pay to have taken away, the dead, rotting, used-up, undesirable leftovers of our lifestyles are so rich in potential for healing and sustaining life.

¹⁵ <https://www.scientificamerican.com/article/earth-talk-waste-land/> accessed Jan 9, 2019

In laying out a basic foundation for understanding both soil and compost, I hope to open up ways of seeing these things beyond just the material and scientific lens and to expand this understanding further through metaphor. As I have said, decomposition is a natural process that has been ongoing since the beginning of life on this planet and composting is an accelerated and concentrated version of this process that is facilitated intentionally by humans. There is always the danger of our anthropocentric tendencies to distort our thinking and conclusions about our place in the world. To be clear, we do not create compost: it is co-created by many collaborators, dead, alive and non-living. We merely convene some of the collaborators, organize them into particular ratios, layers and masses. We pay attention to things like time, temperature, moisture and move things around as is needed for the process to unfold optimally. But let us not forget our place! Clever humans observed, experimented, wielded pitchforks and came to understand some part of an inherently intelligent, mysterious and exceedingly complex process and learned how to amplify it in a way that can greatly benefit all beings. This is a picture of right relationship, a form of multi-species kinship as articulated by Donna Haraway, that can serve as a model as we continue to show up in service, with a humble desire to listen for what is needful and begin to repair some of the damage we have wrought with our actions over time. We will benefit in many ways as a result, to be sure, but for once it is not at the expense of others. We heal together and this is why it is such an incredible gift.

This is the ground we walk

This is the land we must learn to live with

There's a closeness waiting for us to return

Let us remember the way

Part 2

The Cauldron, the Labyrinth and the Witches Domain

In her essay *Compost*, Serpil Opperman digs deep into the poetic imaginary through ecological theory to find the dynamics at work in the compost pile and also in our culture and this time of the Anthropocene¹⁶, writing, “although *poesis* originally signifies *making* (as in making tables, shoes, and artifacts as well as story-making, or art-making), *compost poesis* amplifies the word’s original sense by reconciling *making* with *unmaking* to give a sense of the two-fold condition of composting entities who undergo continuous decomposition and recomposition.”¹⁷

This dual nature is actually at work in all things, the making and unmaking, but compost exemplifies it and proves beyond a doubt the primordial union between fertility and death. The interdependent relationship of these seeming opposites are as entwined as day and night, light and shadow. The assigning of positive and negative value to any of these inherently amoral phenomena is personal, cultural, often limiting and in some cases, damaging. But what these dualities can offer is ways of seeing, mirrors of our world, distorted perhaps but still revealing. Through this threshold into metaphorical and symbolic perceiving we can access another world, the realm of magic as understood and practiced by witches. Magic, like compost, is a process

¹⁶ The Anthropocene is a proposed epoch dating from the commencement of significant human impact on the Earth's geology and ecosystems, including, but not limited to, anthropogenic climate change.

<https://en.wikipedia.org/wiki/Anthropocene>

¹⁷ Serpil Opperman, “Compost”, *Veer Ecology: A Companion for Environmental Thinking*, ed. Jeffrey Jerome Cohen and Lowell Duckett, (Minneapolis, University of Minnesota Press: 2017)

of making/unmaking as well as something that is made/unmade. Magic evades easy definition but it is concerned as much with changing consciousness as it is affecting probability and material conditions (the separateness of these things also being up for debate).

There is a beautiful balance and symmetry in compost as in the system of elements honored in the practices of witches; Earth, Air, Fire, Water are present all around and very clearly in compost. Earth is there in the mineral bodies, those non-living beings who nevertheless grow, as well as in the living and dead bodies of plants, fungi, animals, insects, microbes, bacteria and their waste (though nothing is wasted) that decays and becomes the humus that will enrich the soil. Fire is present in the heat generated by the transformation of carbon into food for billions of bacteria, altering their environment in drastic ways that make whole other microbial worlds possible. Air is present in the spaces between all these bodies and allows them to conspire (breathe together). Water is needed for the life in the pile, as all living things need water, too much or too little and the process cannot unfold. All these elements play their part and need each other as in any ecosystem.

In the process of composting, the elements are brought together with intention, with hopefully some skill or at least a curious and open engagement, much as the component parts needed for a spell are carefully combined by a witch as she crafts her magic, forms his talisman, and unfurls their ritual. "This is an irreversible labyrinth of beginnings and endings, a cauldron of biotransformations for the earth's miniscule beings."¹⁸ The labyrinth is a twisting, turning, spiralling pathway to the center of the ritual circle and the cauldron is an object, tool, vessel that contains what happens there. Both are symbols for the 5th element of Witchcraft, that of Spirit. They are at the center, the intersection of the directions, where all the elements coalesce, where there exists a portal to everything and nothing, a doorway through which to access and observe the mysteries of the unknown. The center is both the womb and the tomb. What occurs in a compost pile is perhaps the most perfect analogy there is for what happens in the container of the cauldron, in the center of the labyrinth, in the process

¹⁸ Ibid, 139

of magical ritual; alchemical, both destructive and creative and essentially unfathomable. How is it that life can only emerge from death? How is it that those considered most horrible, disgusting and loathed among us - the rotting corpse, the stinking excrement, the devouring maggot - are the very ones that ensure the existence of those beings of beauty we value above all else? How is it that dead, living and non-living beings all work endlessly in perfect harmony to create the stuff that all life depends upon? It is nothing if not the deepest mystery and all our science cannot unlock the paradox at its core.

This place is the witches domain. This mystery is what we uphold as sacred. That fertility and death are so intrinsically connected is wisdom that will always be resisted and denied, yet it is inescapable. Compost shows us this with all our senses. "It's greatest curse is also its greatest miracle; because mixed-up, broken down, and reassembled through various stages of metamorphosis, biodegradable matter wrests death free from itself and connects loss to renewal."¹⁹ While the metaphors Opperman engages in her essay are diverse and by no means focused solely on the layer I am honing in on, her creative portrayal of compost parallels the magic attributed to witches and witchcraft since antiquity. Through the explicitly spiritual vocabulary of curses and miracles, labyrinths and cauldrons and the vivid imagery of the decomposing underworld, she invokes the witch in her description of compost as a verb. "As this tangly process affords both liveliness and demise, rotting, decaying, putrefying and disintegrating can be simultaneously terrifying and magical."²⁰ To deepen into the many layers of meaning at work, we can look to the western source of the witch.

Pharmakon²¹, as used in philosophy and critical theory and deriving from the Greek source term φάρμακον (*phármakon*), has 3

¹⁹ Ibid

²⁰ Ibid

²¹ "This word is commonly translated as 'remedy' or 'poison', but was in fact a signifier for many other things that do not easily fit in that binary, and that invoke in one way or another the perception-altering powers of *intoxication*, such as 'perfume', 'pigment', magical charm, philter or talisman', and 'recreational drug'." Michael A. Rinella, *Pharmakon: Plato, Drug Culture and Identity in Ancient Athens*, pg xvii, (Lanham: Lexington Books, 2010)

meanings; poison, remedy and scapegoat²². The first two meanings are connected more directly to the practices of pharmacology and toxicology and the third from the ancient Greek practice of *pharmakos*, the ritualistic sacrifice or exile of a human scapegoat or victim²³. Witch, in Greek, is *Pharmakis*, literally herbalist.²⁴ The entanglement of these terms can be seen in even the most common understanding of the motley patchwork figure of the witch - the good, the bad and the ugly: the wise-woman with her healing herbs and affinity for wild places, the decrepit old crone casting curses made of vile things causing impotence, illness or death, the innocent victim of horrific torture at the behest of maniacal church authorities. Remedy, poison and scapegoat, at once.

The figure of the witch is directly derived from the Goddess Hekate (or Hecate), thought to have come from Turkey originally, who underwent many incarnations from a triple goddess made up of 3 separate feminine deities, to a single goddess of three aspects, to the queen of witches, to a witch in her own right before the fall of the Ancient Greek and Roman civilizations. In *The Rotting Goddess, the Origin of the Witch in Classical Antiquity*, Jacob Rabinowitz traces Hekate's labyrinthine path of decomposition from divine earth mother to dark goddess of the crossroads and keeper of the unruly dead through the texts and friezes remaining from millenia ago.

The witch of antiquity is known for her almost wholly consistent place-based relationship to groves, hills, rivers and the spirits of these places and is named after her primary co-conspirators, plants and herbs. She is feared especially for her power to summon the unruly dead (those considered to have died unfortunate deaths and have therefore yet to rest in peace). Even as witches moved into more urban settings, the herbarium of choice was a graveyard, a site where the human comes undone even as it is held together in the tenuousness of monument and memory. The power of the non-human, soil, worm and decomposing creatures is supreme in this place and the death and undoing of human bodies lends itself to the verdant growth of the herbal accomplices so

²² [https://en.wikipedia.org/wiki/Pharmakon_\(philosophy\)](https://en.wikipedia.org/wiki/Pharmakon_(philosophy)) accessed Jan 12, 2019

²³ <https://en.wikipedia.org/wiki/Pharmakos> accessed Jan 12, 2019

²⁴ Jacob Rabinowitz, *The Rotting Goddess; The Origin of the Witch in Classical Antiquity*, pg. 95 (Brooklyn: Autonomedia, 1998)

essential to the witch's magic, which is solidly planted in the twin realms of death and fertility. Despite the assumption that she works her spells in, for and/or against the realm of her human counterparts, the repeated emphasis on the non-human beings in relationship to the witch figure serves to challenge the inference of Anthropocentric magic and extends its location to the more-than-human world.

Rabinowitz points to a witches necromantic rite in Ovid's *Metamorphoses*, "...she sprinkled upon them her baleful drugs and poisonous juices, summoning to her aid Night and the gods of night from Erebus and Chaos, and calling on Hecate in long-drawn, wailing cries. The woods, wonderful to say, leaped from their place, the ground rumbled, the neighboring trees turned white, and the herbage where her poisons fell was stained with clots of blood. The stones also seemed to voice hoarse bellowings; the baying of dogs was heard, the ground was foul with dark crawling things, and the thin shades of the dead seemed to be flitting about." The scene, "simultaneously terrifying and magical", displaces the usual anthropocentric frame and reveals the ever present agency of the forest, stones, non-human animals and even the dead. The witch convenes these beings, and while there is the assumption of domination over these forces, the collaborative, co-creative nature of magic is more akin to a collective endeavor than an authoritative act of power-over²⁵.

The necromantic rite dredged up from the depths of Ovid's fantasies and fears in 8AD still resonates powerfully in our underlying beliefs about what witches do, regardless of the rationalizations and exceptions we might try to make when imagining contemporary

²⁵ Starhawk identifies 3 kinds of power: power-over, power-from-within and power-with. "Power-over is linked to domination and control; power-from-within is linked to the mysteries that awaken our deepest abilities and potential. Power-with is social power, the influence we wield among equals." "Power-over comes from the consciousness I have termed estrangement; the view of the world as made up of atomized, non-living parts, mechanically interacting, valued not for what they inherently are but only in relation to some outside standard. It is the consciousness modelled on the God who stands outside the world, outside nature, who must be appeased, placated, feared and ultimately, obeyed." Starhawk, *Truth or Dare: Encounters with Power, Authority and Mystery*, p. 9 (New York: Harper and Row, 1990)

practices of witchcraft. While the debates about the authenticity and continuity of the practice of witchcraft emerging from Europe are heated and ongoing, it is undeniable that the power of this image of the witch has somehow survived through time relatively unchanged. This is remarkable even considering that in the two thousand years since the penning of *Metamorphoses* the Earth created only 4 inches of topsoil. Some things are slow to change, though it is hard to see from inside the frenetic workings of the capitalist clock. 2000 years is only 1/6 of the Holocene, the current (or most recently passed, depending on your orientation) geological epoch, beginning roughly 11,500BP.²⁶ Deep Time is a multi-million year time frame that comes out of geology and has been applied to deep ecology. It is essentially linear, if potentially omnidirectional. Instrumentalized for radical transformational change in “the Work that Reconnects”, Joanna Macy, an environmental activist, author, scholar of Buddhism, general systems theory, and deep ecology writes about deep time, “Could the discovery, or rediscovery, that ushers in the ecological age be the ability to reinhabit time?”²⁷... “Many of the advances we take for granted today were thought of as impossible before they were invented. Things we consider impossible today might still be developed in the future. Could future generations, for example, discover a way to communicate with us? And if so, what

²⁶ “Before Present (BP) years is a time scale used mainly in geology and other scientific disciplines to specify when events occurred in the past. Because the “present” time changes, standard practice is to use 1 January 1950 as the commencement date of the age scale, reflecting the origin of practical radiocarbon dating in the 1950s. The abbreviation “BP” has alternatively been interpreted as “Before Physics”; that is, before nuclear weapons testing artificially altered the proportion of the carbon isotopes in the atmosphere, making dating after that time likely to be unreliable.”

https://en.wikipedia.org/wiki/Before_Present accessed Feb 6, 2019

²⁷ “Ecological intelligence involves thinking in terms of deep time - a temporal context that includes our whole story. We need to do this now because given our technologies, our actions have consequences extending millions, even billions of years. Take the thousand tons of depleted uranium weaponry used in Iraq and Afghanistan. The cancer-causing aerosol it leaves behind has a half-life of four and a half billion years. That is as long as the age of the Earth.” Joanna Macy and Chris Johnstone, *Active Hope: How to Face the Mess We’re in without Going Crazy*, p. 158-159 (San Francisco: New World Library, 2012)

might they say? Perhaps they could only do this if we played our part too by extending ourselves forward in time to meet them.”²⁸

At the center of the circle, in the middle of the labyrinth, peering over the edge of the cauldron into the swirling brew within, we can experience a place where linear time is upended, revealed for the 2-dimensional construct it is. Emanating from the portal is a multi-dimensional time-being, let us call it “Whole Time”, who moves forwards and backwards, out in all directions, spiralling, rippling, folding and tearing. From this place, the dead can return - even come back to life, processes that take centuries can occur in months and the inevitable flow from fertility to decay can be turned around. “That the dead return at all is a violent reversal of the ordinary laws and course of time.”²⁹

“Complementing this is the universal notion that the dead can see the future, that they know *everything*. For them time does not exist as it does for us who measure it by successive days. They inhabit the earth’s black dream, the womb of every day, the belly of fate from which all that occurs rises briefly to our sight - they have passed decisively beyond the limits of the human condition, that partial knowledge confined to what light reveals.”³⁰ Rabinowitz seems to be referring to the human dead, but there is no reason his statement cannot extend to the non-human dead, or even the extinct. The unruly dead of which Hecate is the steward surely includes those countless myriad lives, species and beings undone by the hubris and violence of *the Anthropos*³¹. The army of the unruly dead grows with every passing moment - in the current cascading collapse of ecosystems, between 150-200 species go extinct every 24 hours.³² It is not known if there is any magic that can bring them back, but in the world-view of spirit, ghosts and witches, they are

²⁸ Ibid

²⁹ Rabinowitz, Rotting Goddess, 105

³⁰ Ibid

³¹ Greek for human

³² 1000 times higher than background rates and 10 times worse than previously thought

<https://www.iflscience.com/plants-and-animals/current-extinction-rate-10-times-worse-previously-thought/>

not fully gone but remain at the side of their Divine champion and those dedicated to her, seeking justice and, barring that, revenge. Upon sensing this growing horde, most avert their gaze with a shudder, but for those of us who seek to strategically ally ourselves with these multi-species kin, so wronged by “our kind”, there is no looking away.

Expanding (+) on the questions posed by Opperman in her essay, “How does *compost* (as verb) capture the alternative meanings of human-nonhuman (+ living-nonliving) enmeshments? Does it help reinterpret life (+ death)?” We approach these questions “through composting stories that entice us to think about the strangeness of our destiny tied to many discomforting non-humans.”³³ To compost, I propose, is to enter an liminal space between the living, dead, the non-living and the non-human - here framed as the domain of the witch - to engage a multi-species, relational process co-creating the multivalenced substance of the *pharmakon*, facilitated by the *pharmakis*. It is to banish linear time and call into being something much more mysterious - an ally of much greater power. “The relevant notion here is that of *abrogating* time: by revealing the future in the present and by returning the dead from the past the witches effectively confound temporal structure.” “Thus there is a logic to the re-emergence of Chaos in necromantic rites”.³⁴ Desperately enforced boundaries decompose around us. The witches choose to step into this dynamic flow, merging with the countless beings of the soil underworld and lending their power to it. By considering compost thus, “we may begin to appreciate the inverted grandeur and ambivalent millennial fascination with the witch, who is, on this level, a one-woman Apocalypse, a terrifying female avatar of Chaos, a violent outbreak of the forces of Primordium in a world that felt itself nearing the end.”³⁵ Rabinowitz is of course speaking of an Empire long since fallen, but on a cyclical level of time, we seem to have returned to this place again. Heeding the call of Hekate, the witch has returned, the dead have

³³ Opperman, *Veer Ecology*, 137

³⁴ Rabinowitz, *The Rotting Goddess*, 105, 111

³⁵ *Ibid* 107

re-emerged, the cycles of life and death are moving in all directions simultaneously, towards oblivion and back from the grave.

The charnel ground and the compost pile are not-so-distant relatives³⁶. The respective risks and levels of abject terror associated with either are scaled proportionately, but they are in essence the same liminal place, especially when considering the interstitial beings that comprise the infrastructure, the “myriad mouths” at work transforming matter from one state to another. The fundamental teachings that can be transmitted from the seemingly innocuous backyard refuse heap can be applied to the dystopian nightmare that we all fervently hope will be averted and yet all our wishing doesn’t have the power to ward it off indefinitely. If you seek to serve life, learn to work with the dead and nonliving with just as much respect and care. As is inscribed above the temple of Hekate, EN EREBOS PHOS - In Darkness, Light.

³⁶ A charnel ground is, in concrete terms, is an above-ground site for the putrefaction of bodies, generally human, where formerly living tissue is left to decompose uncovered. In a religious sense, it is also a very important location for sadhana and ritual activity for Indo-Tibetan traditions of Dharma.
https://en.wikipedia.org/wiki/Charnel_ground

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