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Subtle Worlds: Exploring Relational Ecology with Clay

Emerson Jeffery

Submitted in partial fulfillment of the requirements for the degree of Bachelor of Arts, Environmental Studies

College of Arts and Sciences

Honors College

The University of Vermont

December 13th, 2022

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I see narrow orders, limited tightness, but will not run to that easy victory:

still around the looser, wider forces work:

I will try

to fasten into order enlarging grasps of disorder, widening scope, but enjoying the freedom that
Scope eludes my grasp, that there is no finality of vision, that I have perceived nothing completely, that tomorrow a new walk is a new walk.

A. R. Ammons, Corson's Inlet, 1988

...so often, and mostly unbeknownst, our bodies are the bodies of others.

Ross Gay, The Book of Delights, 2019

ABSTRACT

The frameworks by which the globally-dominant culture expects individuals to understand and act within their environments are founded upon practices of oppression, division, and control, and have played an outsized role in the global crises faced in the modern era. Manifold currents of thought have developed alternatives to these trends from fields as diverse as Environmental Humanities, Feminist Theory, Post-Colonial Theory, Art Studies, Cybernetics and Systems Theory, Poetry, Political Science, and Science-Fiction, to name a few. Shared themes of these alternatives include the rekindling of respect for the agentic power of non-human things inside and outside human contexts, and the dissolution of socially constructed boundaries, both qualities that are unnecessarily diminished by the Scientism underpinning dominant cultural onto-epistemologies. Through art, a practice filled with the potential to transgress the boundaries of the Dominant culture, this thesis explores relationships, community, identity, and presence as they ebb, flow, and shift amongst humans and non-humans alike. This exploration is centered on Ceramics as an integrated collaboration between a multitude of forces, including the artist, audience, kilns, clay bodies, glazes, traditions, tools, and more, and reveals an expansive and emergent mesh of vibrant actors. By sitting with and validating more complex frameworks for understanding and relating to the worlds we exist in, it becomes possible to imagine a world in which vast choirs of influencing forces become more clear, allowing us to nurture an acceptance of the immense diversity of human, non-human, and non-living kin, prioritizing respect, curiosity, and reciprocality.

GRATITUDE

This thesis is itself an affirmation of the vast interconnectedness of everything that surrounds us, those dense webs of relationship, exchange, and intertwined identity. It would be completely wrong to claim anything more than the role of interlocutor for so many of the discoveries that this thesis explores. It is thanks to so many beyond myself that this thesis exists.

Thank you to my advisors, Hoyt Barringer, Amy Seidl, and Cami Davis. You've been full of wisdom and excitement and encouragement, and it has absolutely fueled me in this bizarre process. Looking back at my time at UVM I realize that, long before a thesis was on the horizon, you three have been way-stones in my explorations, always providing warmth, humanity, and constant nuggets of poetic wisdom for my curiosity to worry at. Thank you three endlessly.

Thank you to my incredible mentors at UVM. Your passions inspired me to both deeply explore the topic at hand while also connecting it to my other classes and subjects. The interdisciplinarity that is central to this thesis was nurtured by you all.

Additionally, the scholars that I cite in this thesis have laboriously paved the road upon which I so merrily skip. I'm incredibly grateful for their contributions.

This is where the thanks become difficult, not because I've run out, but because I don't know who and what *not* to thank. Thank you to: my mother, father, and brothers; Phoebe; the Hit Paws; the coast of Maine; Adelita; Eagle Island; Ross Gay; Kathy's Song; Alden, Kai, Ben, and Jacob; my Grandmother, and for that matter all my family; Takuro and Hitomi Shibata; Josh and Anna; Centennial Woods; Snufkin; the kiln gods; Britton; Haystack Mountain School of Crafts...

And thank you to anyone willing to sit down and give this thesis a shot. It means the world to me. I hope you enjoy it. Thank you, thank you, thank you.

FOREWORD

A Note on the Title of this Thesis

Subtleness is something of an anomaly in our Modern world. A subtle thing is small, delicate, quiet, and important, complex, and generally 'good.' In fact, the two sides of subtly are necessarily linked: "small but good," as the Cambridge Dictionary defines subtle, doesn't cut it, though it does point out the deviation that subtlety offers. The power of a subtle thing originates from its smallness, its under- or un-stated presence. At our current level of historical linguistic understanding, the etymology of subtle comes from the Proto-Indo-European roots '*upo-', predecessor to latin sub-, meaning 'under,' and '*teks-', meaning "to weave" or "to fabricate." This 'underweaving' is an important first step in my thesis, and underpins the entirety of the work. Subtle things do not demand or catch our attention – in fact, they often politely decline our attention, leaving us uncertain of what we're 'supposed' to be seeing or feeling. They are off in their own worlds. What if, instead of demanding their presence in ours, we tried to join them in theirs?

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INTRODUCTION

We live in incredibly difficult times. Acknowledging that truth *must* be the first step in orienting this project. This project rests firmly within the current era of constructed Human Exceptionalism. Indeed, we are in the midst of violent lessons in just how exceptionally powerful humans are as a species. We are gradually coming to terms with the truth: that this is a glass house, that those have been rocks we've been throwing, that we have grown to rely on throwing them, and that stopping is going to as difficult a task as any – perhaps the task of the Modern Era. These realizations resonate throughout the very fabric of our modern world, affecting each and every one of us differently. I cannot say how others feel about these changes, in no small part because I cannot say how I feel about them – it's far too immense an experience to express. I can give no summary reflection on my relationship with Climate Change, or mass extinction, or climate injustice, or world-wide deforestation. These vast concepts have a fractal identity in which an atomic center can never be found and any attempt at articulation is necessarily reductive. The dark depths of these concepts are anathema to Western rationalism, in which everything must be divided into submission, but the enigmatic qualities of vast processes like Climate Change undoubtably define our lives within this era.

Thankfully, in the midst of this emergent complexity, there are small but vigorous communities of thinkers that are offering profound and vital wisdom for navigating through these times. Whether recently incorporated, like Feminist Ecology, or truly ancient, like Taoism, they point toward similarly radical statements that run directly counter to the hierarchical rationalist ontologies and epistemologies that Western society peddles.

In a chapter called *The Uses of Not* in Ursula K. LeGuin's rendition of Lao Tzu's Tao Te Ching, there is a line that I have found vital for understanding this current ecological tension: "Hollowed out,/ clay makes a pot./Where the pot's not / is where it's

useful" (1997, p. 14). When we stare into the depths of something like Climate Change, there is an absolute epistemic void that causes immense societal fear. There is also the knee-jerk reaction to fill that void with whatever we can – novel technologies, mountains of climate data, and countless shifting predictions.

Amidst this fervor, there is inadequate time spent considering what the void really means. Our growing (re)acknowledgement of the immense complexity of ecological systems may be the greatest thing at stake in this critical era. We can deny the complexity the consideration it demands, set our minds to the impossible task of filling the un-fillable voids of the world around us, and doom ourselves to a future of brazen human exceptionalism in which every encounter with new epistemic voids is marred by ignorance and fear. That is one option. Another option, which has been considered countless times and which I explore again in this paper, is to more deeply situate ourselves amongst these epistemic voids, to embrace the vast community of living and non-living things that we share this reality with, things that bear in their depths a complexity so obviously akin to the very personhood we deny them. Though antithetical to common environmentalist rhetoric, this requires slowing down – even in the face of global crises – in order to contemplate and connect with these vast and often introverted assemblages. It's my belief that this reorganization of our relationship with our communities of things, this re-worlding, will allow us to most effectively navigate with patience and wisdom through the unprecedented immensities of our modern world.

This written thesis draws primarily from the nascent but vibrant field of Environmental Humanities, a field that encompasses a wide range of thinkers and disciplines. Though not explicitly a form of Critical Theory, Environmental Humanities functions similarly, attempting to lead Environmentalism out from under the control of rational, dualist, Modernist, Scientist, Western, and colonial epistemological

¹ As in 'Scientism.'

frameworks. It is a field full of exploration. That exploration is often done in the from of modified language. When done correctly, these neologisms and unconventional syntaxes embody a phrase that I have come to find central to the mission of Environmental Humanities: *Complication that Clarifies*. When done incorrectly, though, they just complicate. I am not nearly as versed or skilled in this practice of clarifying complication as some scholars (especially Donna Haraway and Timothy Morton, I have found), but this thesis will most likely not read like most academic writing is 'supposed to' read. These language-based explorations present a strong allegiance between Environmental Humanities, poetry, and art. All three accept that many important aspects of reality can only be communicated by dancing around them. Nuance and mystery are all around us, big and small. They fill our lives with interstitiality and gradience. They are the rocks that flicker just beneath the watery surface of easy comprehension. I hope that I can communicate some of those murky truths.

LITERATURE REVIEW

Ecology

There is nothing simple about ecology. Not its history, not its many applications over the years, not even the variety of ways it is defined. Most commonly, the term relates to the sub-discipline of Biology that deals with the connections between living organisms. Grounded in the post-Renaissance Western Scientific Revolution, ecology in this form was only delineated from the rest of Biology about a century ago, and is the form so often linked to the contemporary Environmentalism movement. Even though this form of ecology is often used as fuel to demand fundamental changes to the fabric of our dominant cultural paradigms, it is defined by the culture that birthed it and therefore is locked into unending conversation therewith, *on the dominant culture's terms*. The call is coming from inside the house. By being grounded in the dominant Scientific model,

this form of ecology is reductive and empirical. The analysis of 'natural systems' that dominates this form of ecology re-inscribes boundaries between 'nature' and 'society.' By being a sub-discipline of Biology, it relegates its inquires to the 'living.'

While most of the qualities that define this dominant ecology are not inherently wrong,² we see time and time again that this form of ecology is too small a tool for the times we are currently facing. This paradigmatic form of ecology, which scholar Timothy Morton likens to the 'bright green' movement and will here be referred to as 'bright ecology,' has been hijacked by the system it seeks to critique. Morton points out that so many of the thinkers that emerge from bright ecology think that it can "accommodate itself to postmodern consumer capitalism" (Morton, 2010, p.16) despite overwhelming evidence in the form of countless global and local environmental catastrophes despite decades of environmental activism. It is clear that this paradigm must change. Bright ecology by its very definition in the context of the Dominant culture is relegated to the role of backseat driver, a voice shouting admonitions and cringing at every turn but hardly able to influence the driver moment to moment, let alone change the route being taken. Changing that route is absolutely critical. As Ursula LeGuin remarks, "any imagination of bettering [society's] injustices or eluding its self-destructiveness must involve a reversal" (Leguin, 1982, p.11). The reversal of bright ecology would be dark ecology.

Despite the name, dark ecology is not pessimistic or nihilistic. In fact, dark ecology offers validation and hope by situating the human experience within the environment. Dark ecology goes so far as to say that the environment and the human experience are inseparable – and are only artificially two at all. Dark ecology is similar to meditation, centering the release of judgement and exclusion while welcoming the vastness of reality. Bright ecology bears the manifest destiny of Science, filling an empty

² The burden of objectivity that Scientism brings in its wake is the one quality listed that many scholars, especially those of Critical Theory, may argue is 'wrong.'

void with meaning and value. Dark ecology finds the intrinsic value in what bright ecology sees as the void, the wilderness, the unknown, the dark. Dark ecology is an expansion of bright ecology in its scope, while also a release of the objective basis of bright ecology. As is developed throughout the first half of this thesis, dark ecology extends far beyond our artificial concept of 'Nature,' applying ecological concepts to social, non-living, and even abstract or conceptual realms. Ecology is fundamentally about changes and relationships. Change is all forms and at all levels is determined by the environment in which said change takes place, the environment being defined by the relationships that connect a changing thing to surrounding things. Therefore, ecology has a nearly limitless scope of application. There are numerous ways to situate ourselves and our inquiries within this sudden and vast framework of dark ecology, but the most useful one is what Timothy Morton and Tim Ingold call the "Mesh" (Morton, 2010, p. 28; Ingold, 2011, p.63), what Donna Haraway may call "sympoiesis" (2016, p. 58) and Karen Barad "agential intra-action" (2007, p. 139). As Barad describes it, this model of ecological thinking promotes "a relationality between specific material (re)configurings of the world through which boundaries, properties, and meanings are differentially enacted... and specific material phenomena" (p.139).

The internal reconfiguration of bright ecology into dark ecology no small task. The promise of this work, however, is immense: dark ecology acknowledges the deeply situated dynamism that unfolds around us and within us, showing the connections and powers that defy our hierarchical configurations of the world. Rather than being counter-Rationalist, it provides a complementary lens through which our lived experiences and scientific knowledge can be more richly and fully understood.

Ecology Beyond 'Life'

The first step in reorienting our understanding of the ecological mesh of the world is also the most difficult: the expansion of ecological ideals to things that we don't usually consider 'alive.' As a useful example, consider the triangular relationship between honeybees, their honey, and blueberry flowers. Blueberry plants rely on bees' pollination, being unable to reproduce without their aid. According to bright ecology, the difference between the relationship a honeybee has with a blueberry flower versus the relationship a honeybee has with their honey is significant: the bee and the flower are both alive and tightly bound in mutualistic symbiotic relationship, while the honey is an inanimate product of an evolutionary technology developed by (or perhaps even in) honeybees. Through the lens of dark ecology, this narrow analysis becomes both complicated and clarified. After all, the honeybees and the honey are also in a mutualistic relationship: without their honey, the bees would not survive, and without the bees, the honey could not exist. Similarly, because blueberries rely on bees for pollination, it could be argued that blueberry flowers have a symbiotic relationship with honey as well: without their honey, the bees would be unable to pollinate the blueberry flowers, and the blueberry plants wouldn't be able to reproduce. Honey is a cooperative product of both the honey bee and the blueberry flowers, both embodying and transcending their relationship.3

It quickly becomes obvious that the distinction between that which is alive and that which is not is immediately troubled upon breaching its surface. Honeybees could not survive if their relationship with honey was somehow severed, the substance being both a critical means of energy storage, the basis of beeswax, and often a powerful antibiotic. Should the organism "bee" include their honey, because of their existential reliance on the substance? Similarly, most individual bees are incapable of physical reproduction, and instead spend their energy aiding in the reproductive capabilities of

³ This is necessarily a simplified representation of each of these three actors. After all, not all bees are honeybees, and blueberry plants rely on many different kinds of bees for pollination. This too is a lesson of the mesh: nothing can ever be understood or even represented as it truly is. Still, the example is useful for entering into conversation with dark ecology.

their hive, embodied in the Queen.⁴ Because of the deeply rooted (and, frankly, unimaginative) individualism of Western culture, each bee is considered to be a sort of ecological unit, separate from its surroundings but internally indivisible. However, by *actually* separating one such ecological unit from its surroundings not only does the 'individual' suffer,⁵ so too does its environment. There are flower species that are only pollinated by a specific type of bee; if that entire species of bee were to die, the flowers would go un-pollinated, and the structures created by the bees – hives, honey stores, etc. – dissolve into the environment. Importantly, however, this is true if *any* of these things are removed from the assemblage, whether bee, flower, or even 'inanimate' structures such as honey or beeswax. At a fundamental level, every one of these things relies on all of the others to continue to exist, let alone thrive. In this way, we can see ecology as more a study of *entangled existences* than relationships between distinct, 'living' actors. Ingold and Morton's Mesh can be envisioned as all of these possible entangled existences.

One way to consider the ecology of the inanimate is by considering death. A large number of ecosystem services rely on death, the de-animation of a 'living' thing. The material of that now-dead thing reconfigures itself into new forms. This presents a sort of ecological Ship of Theseus: where along that point does the once-living lose its old identity, its 'individuality?' The only reasonable answer, it seems, is that such individual identity never firmly existed in the first place. 'Life' and 'death' are more nuanced, gradual, and intertwined than our Dominant culture claims. This permeability is one that confounds our conception of process, production, individuals and species. As Morton points out in regards to the phylogenetic tree of life, "recognizing and naming

⁴ While unlikely to happen, I think it's long past time for a revisioning of the terminology we use for such hive-oriented beings. 'Queen' foists anthropocentric and hierarchical terms upon their community; in many ways, queen bees seem to be the *least* powerful and most vulnerable individual in the hive – though undoubtably important.

⁵ In this case I am using 'suffer' to mean diverge from a robust and dynamic stable-state.

species and varieties is like putting a stick in a river and say 'this is river stage x" (2010, p.62). This claim could easily be made about people (when is a child differentiable from their mother?) and artificial creations (when is a story distinct from its narrator?) as well. Instead of rebuking these arguments by arbitrarily delineating roles, as bright ecology would have us do, it is worth sitting in these uncomfortable moments when dark ecology opens the epistemological void for our consideration. Rigid distinctions dissolve, and we are left with a fluid and shifting reality. A child is necessarily and always entangled with their mother, a story with narrator, art with artist, and sound with the falling tree. Sharp divisions in reality "cut into the smooth continuum of slight changes" (Morton, p.62); bright ecology frays around its edges when reality is recognized as a cascade of deeply tangled things.

Another critical way by which the ecology of things can be explored is through modern theories of animism. Originally dismissed as "simple religion and a failed epistemology" (Bird-David, 1999, p. S67), animism has been reclaimed as what Nurit Bird-David calls a "relational epistemology" (p. S77), contrasting to the individualist epistemologies that dominate Western society. Within animism, and relational epistemologies more broadly, participants "become increasingly aware of the webs of relatedness between themselves and what is around them" (Bird-David). Animism often does this by granting 'personhood' to things like animals, plants, rocks, etc. Critically, this personhood is not anthropocentric; humans may be seen as one type of person, while rocks another, and trees another, for example. Humans generally don't get special treatment, existing at some higher level of the existential hierarchy. As Bird-David puts it, "animistic knowledge is understanding relatedness from a related point of view within the shifting horizons of the related viewer." Given this insight into animism, it becomes clear why the environmental movement often fetishizes Indigenous Ecological Knowledge, much of which is rooted in this or similar forms of relational epistemology. After all, animism as represented by Bird-David allows participants access to the Mesh,

configuring their relationships around reciprocity and respect rather than division and domination.

Eduardo Viveiros de Castro takes Bird-David's theories of animism as a relational epistemology one step further. To Viveiros de Castro, animism is clearly a relational *ontology* rather than epistemology, because it is "concerned with being and not with how we come to know it" (in Bird-David, p.S79). This mirrors Tim Ingold's description of an "animic ontology" that is "open to a world in continuous birth" (2011, 63). Such weavings of animism and ontology closely parallel a set of projects in modern Western philosophy collectively called Object Oriented Ontology.

Object Oriented Ontology

Object Oriented Ontology, or OOO, is a classification of several philosophical projects. While somewhat far reaching, OOO can generally be defined as any ontological system (a description of what reality truly is) that considers the reality to be composed of units. These units are the 'objects' referenced in the name of the classification. The definition of object in OOO is quite different from its definition common parlance. In OOO, an object may be a physical stone sitting on the ground, or it may be the idea of a stone, or the idea of a sentient stone, every stone on a beach, or even the nebulous network of every basalt pebble that has ever existed and will ever exist. Because collections of things, or assemblages, are also viewed as objects, there is an immensely large number of objects that exist in this universe. Unsurprisingly, they play central roles in the various OOO frameworks. OOO generally opposes both Scientism, which "argues that science gives us the true representation of reality," and Anti-Realism, which argues that "our conceptions of society, the human, race, gender, and even reality are constructed" (Bryant, 2011, p.17). Whether 'subjective' or 'objective,' knowledge becomes the foundation of Scientist or Anti-Realist ontologies, relegating reality to the realm of epistemology (how reality is known). OOO argues against this classification of

ontology as predicated on epistemology, stating instead that reality *is* actually constituted by objects that exist outside of our experience and that we can access in manifold ways. (Bryant, 2011)

A common thread amongst OOO's rebuttals against Scientism and Anti-Realism is the placement of capability, or *agency*, within dispersed objects rather than a singular subject. This dispersal of capability is called a *flat ontology*, and it implies that no thing is any more or less 'important' or 'real' than any other thing. So, while a Kantian Subject is undeniably part of reality (simply because we experience and conceive of it, and we are real), that Subject is no more important – has no more agency or legitimate claim to "existence" – than, say, a discarded plastic bottle rolling unceremoniously beneath a busy highway overpass. Radically, this often even extends to objects that have no simple physical form, such as a story, an imaginary animal, or any other fabrication, simply because they *must* exist for us to imagine them, and, conversely, by imagining them, they exist.

According to the principles of a flat ontology, each and every one of those objects has exactly the same importance, creating what Timothy Morton observes to be a Tardis-like effect: a fork and knife are an object together, but are two objects apart – somehow larger on the inside than the outside. This directly contradicts the language that modern Systems Theory uses, starting at the fundamental mantra of emergence: 'the whole is greater than the parts.' To Morton and many other Object-Oriented Ontologists, the whole and the parts have different qualities and properties, but no one is greater than the other. They are equally 'there,' and equally agentic. (Bryant, 2011; Morton, 2010; Morton, 2018)

Agency (or simply, Life)

Here, another concept arises in need of clarifying complication: agency. Agency is a quality generally reserved for humans, occasionally extended to some animals, and hardly ever extended to, say, chairs or a cobblestone beach. Karen Barad, a philosopher and theoretical physicist, offers an understanding of agency founded in their theory of *intra-action*, or action that emerges co-creatively from multiple objects. This concept interrupts classic materialism and the billiard-ball conceptions that underpin reductive determinist materialisms. Critically, for Barad, these intra-actions are precisely what constitutes agency. When an object is said to be agentic, we may consider it capable of becoming entangled with other objects, and that those entanglements are what produce actions. Indeed, this theory of agency as intra-active potential may be exactly the reason that we perceive ourselves as having such an extraordinary amount of agency. When we consider just how many objects we are deeply entangled with, we can begin to see the sheer amount of intra-active potential that we possess. (Barad, 2007)

To advance this concept of the agency of objects, Tim Ingold resists the terminology altogether, preferring simply the "life of things" (Ingold, 2011, p.215). He argues that the term 'object' reduces a thing into something pristine, analytic, and lifeless, while 'thing' captures the full view (and dynamic mystery) of the manifold actors that fill the world. 'Object' necessarily bears a lack of animacy and agency. Consider the use of the term 'subject' in discussions of english syntax, in which a subject and object are distinguished by their active role in a described action. The subject of a transitive verb is considered to bear agentic force, while the object is a passive receiver of that force. In reality, though, the object is equally involved in the described action as the subject is; the verb phrase that they constitute is sym-poietically or collaboratively constructed, impossible without the intra-active presence of both. While Barad, Bennett, Morton, Bryant and others seek to give 'agency' to the 'object,' Ingold sees this as a futile act, straining against the self-imposed boundaries of the terms themselves. Repurposing a sentiment of Stewart Brand (1994) that Ingold uses to describe the difference between design and reality, 'object' and 'agency' are crystalline, while 'thing' and 'life' are fluid. He goes so far as to posit that the concept of 'agency' leads to a novel divide between

'living' things and 'agentic' things that simply replaces the old divide between animate things and inanimate things. By "restor[ing] things to life" (p.215), we are able to witness a network of processual intra-actions as it "unfolds in the world" (p.216).

The Hyperobject

One of the most intriguing outcomes of OOO is Timothy Morton's concept of a *hyperobject*: a thing that extends vastly beyond our limited human comprehension, usually because of its nature as an assemblage across time and space. Like Lovecraftian monsters, these hyperobjects protrude into our experienced reality, but are never present in their entirety – sometimes necessarily so. Morton (2010) presents these hyperobjects as harmful and man-made: plutonium, for instance, or plastic pollution. Each of us regularly interacts with these phenomena knowingly or not, but they reach further geographically and temporally than any human can feasibly, let alone comfortably, comprehend. There is no clear line at which point an object becomes a hyperobject. In fact, many of the central features of hyperobjects, such as their incomprehensibility and unexpected vastness, imply that *all* things are hyperobjects, their identities necessarily entangled in a vast mesh of relationships.

It's natural for negative, troubling hyperobjects to get all of the headlines, but it's quite limiting to solely consider hyperobjects as problematic.⁶ The expansion of the term to neutral and even beneficent forces serves to better capture the phenomena that Morton describes. In fact, there are doubtless neutral, beneficial, *and* harmful impacts to most (if not all) hyperobjects – the six-pack ring now choking this turtle was once

⁶ Of course, hyperobjects *are* inherently problematic... to Modernism, not humans. Their very existence denies the possibility for our effect on the world to be comprehended and controlled by humanity, let alone necessitating the existence of incomprehensible, human, non-human, and hybrid hyperobjects. The very concept of the hyperobject threatens the fabric of Rationalism, empiricism, colonialism, and other domination-centric forms of interacting with the world.

quite a nifty way of carrying a few beers, and most likely spent a large amount of time in between simply existing, with fairly little impact on the world around it.

As Morton puts it, hyperobjects are a sort of "upgraded version of animism"? (2010, p. 110), demanding a respect for the legitimately powerful agents within our everyday lives that neither anthropomorphizes them nor reduces them to mechanistic systems. It could be argued that only the entanglement of hyperobjects with other things - especially humans, as we do understandably rely on anthropocentric ethics - leads to outcomes that we deem good or bad, thereby constituting the foundation for all ethical frameworks. Necessarily, however, this means that hyperobjects must be recognized as lacking inherent moral qualities. This refiguration, from cosmic horror to embodied tentacularity, parallels Donna Haraway's transformation of Cthulhu into Chthulu. By rejecting the feverish rationalism and close-mindedness that fueled H.P. Lovecraft's incomprehensible horrors, Haraway offers a radical revisioning of what it means to encounter our "awareness of the mesh" (Morton, 2010, p. 31). To Haraway, Chthonic beings "become with each other in and from the slimy mud and brine, in tangled temporalities that evade binaries" (2015, p. 267). Haraway hastily resists any connections between her Chthonic beings and Lovecraft's horrors, but in reality the connections that do exist only strengthen her argument. These Chthonic beings are at some deep level the same beings that Lovecraft found so utterly terrifying: they are transgressive, incomprehensible, entangling, and utterly tentacular. All that changes is our reception of these Chthonic beings and hyperobjects. By allowing them to "entwine [one] in the poeisis [making]" (Haraway, 2016, p.31), these beings become people in the animistic sense of the term; they are Morton's strange strangers, "liable to change before our eyes" (2010, p. 40). Whether referred to as Chthonic beings, hyperobjects, or

⁷ It's not entirely clear what within animism Morton is 'upgrading.' Frankly, it seems more like *true* animism than an upgraded version. This terminology could be an attempt to distance from Tylorian animism, which derided animism as "failed epistemology" (Bird-David, 1999, p. S67). I believe that Bird-David's framing of animism in its most ancient, embodied form aligns very closely to Morton's theory of the hyperobject.

strange strangers, these things constitute the Mesh, and, in many instances, they constitute *us*.

Symbiogenesis

Symbiogenesis offers a useful means by which we can further understand the cocreation of identity amongst relating things. Symbiogenesis is an evolutionary mechanism by which the development of new organisms emerge from symbiotic relationships. Lynn Margulis, Natalie Gontier and other evolutionary biologists have demanded that symbiogenesis be recognized as essential throughout biological evolution. Symbiogenesis is considered a *reticulate evolutionary process*, meaning that it is concerned with cross-taxonomic relationships, as opposed to conventional 'vertical' Darwinian processes such as variation, adaptation, and extinction. Perhaps the most significant examples are mitochondria and plastids, both of which were incorporated into the functioning systems of other organisms (a process referred to as endosymbiosis) and yielded a dramatic shift from prokaryotes to eukaryotes (Margulis, 1998). The term 'reticulate,' meaning net-like, continues the rich metaphor of an ecological Mesh. As Ingold boldly declares, "things *are* their relations" (2011, p. 70).

Symbiogenesis is a deeply intra-active process and can easily be stretched beyond biology into other selective evolutionary zones, such as the dual-inheritance theory of cultural evolution, in which concepts and cultures evolve through a sociocultural Darwinian selection process. Symbiogenesis in this context points towards the synthesis of many seemingly-distinct ideas into a new cohesive assemblage, a vital mechanism in the production of ideas. A sort of emergence occurs through this synthesis; novel properties of the assemblage are "exherent rather than inherent properties" (Gontier, 2020) of the actors within the assemblage. As Morton (2010) points out, symbiogenesis rejects the label of reductionism, because it acknowledges the unique properties that emerge from assemblages, but it also doesn't fully align with the concept of holism,

because the actors within the assemblage necessarily have agency and significance.

Instead, various levels of matter and mattering can occur, telescoping reworldings of the exherent and inherent properties of various assemblages.

Matter Politics

The world as described so far in this thesis is one filled with human, living, and non-living actors alike in complex intra-active assemblages of matter and often at incomprehensible scales. What effect should these new frameworks of matter-relations have on humanity's decisions as we move into uncertain futures? As with many concepts throughout this thesis, we can gain clarity by considering – and ultimately reversing – the paradigmatic system by which we are in relation with matter today: Scientism.

Although secular, Scientism has inherited the godly objectivity and Mind/Body dualism of Rationalism. It presents a sort of material vitalism, in which the 'soul' of a thing is sought in its material nature, reducing it to an objective atomic identity. Reduction, soul, objectivity; it seems that a contraposition is necessary. Conveniently, Jane Bennett (2009) lays the groundwork for just such a reversal, seeking a vibrant materialism to describe the incredibly lively mesh. Ecology is to this vital materialism what Nature is to material vitalism; from a distance they look nearly identical, but close up their distinctions become clear.

To Bennett, the distinction between material vitalism and vital materialism has immense political implications: a "vital materialist theory of democracy seeks to transform the divide between speaking subjects and mute objects into a set of differential tendencies and variable capacities" (2009, p.108). Bennett's statement is bold. Some have approached the notion of a thing-inclusive democracy cautiously, while as others have embraced it wholeheartedly. Even if we choose to not redefine the fabric of democracy, it is essential that we consider the power and agency of the swarms of things that surround and overlap us. After all, allowing oneself to even consider the

Mesh is inherently political, as it rejects many of the fundamental assumptions that our political and cultural paradigms, including bright ecology, are constructed upon.

Ecological Art

Ecological art has long wandered along the border of bright ecology and dark ecology. Art pieces and movements have occasionally been pastoral, occasionally sublime, but ultimately subscribed to the human experience. Most art is distant, and meant to be viewed as such: framed; on the horizon; alabaster-tower-on-the-hill and greener-grass-on-the-other-side. Using our burgeoning framework of dark ecology, ecological art explores the depth of being, the immense power of things, assemblages, and the Mesh. Art is symbiotic, relying on humans for its continued survival, its identity nestled inside our collective knowledge. Ecological art has an opportunity to reach beyond its cultural anchoring and into the indescribable. In fact, all art tends towards such reaching, not just ecological art.8 Art's "vague qualities ... help us think things that are difficult to put into words" (Morton, 2010, p. 60). Poetry puts this at the forefront of its practice, using metaphors, ambiguity, and generally dancing around a subject to illuminate something otherwise inarticulable. Art is a strange stranger, full of uncertain potentiality. As Morton puts it, "you have no idea what this artwork will 'say' to you next ... [and] deeper still ... the experience of relating to art, for example, makes it difficult – sometimes impossible – to sustain the valley across which we see other entities as 'other" (2018, 94). Pieces of art, like humans, are embodied networks of intra-activity, allowing deeper insight into realms that are often veiled to us. One such source of potent intra-activity is the hyperobjectivity of artistic tradition. (Morton, 2021)

In order to clarify a distinction he makes between the artist that works within an artistic tradition and the artist that rejects an artistic tradition, the great Japanese

⁸ Hence Timothy Morton's book title, *All Art is Ecological* (2021).

cultural and art critic Soetsu Yanagi offered in his essay "Buddhist Idea of Beauty" an anecdote on Buddhist enlightenment. In the form of Buddhism that Yanagi was familiar with, there were two paths to enlightenment: the 'Hard Path,' in which the individual overcomes the immense suffering of life through sheer strength and genius; and the 'Easy Path,' in which the individual allows what Yanagi refers to as 'grace' to propel them in their journey, like wind in sails (Yanagi, 1972, p. 132-133). Consider the timeless saying, variably worded by countless over the last millennium: 'if we see farther, it is because we stand on the shoulders of giants'.9 Those "giants" have largely been considered great men (men being an operative word), which differs significantly from Yanagi's "Easy Path," in which the grace that fills the sails is more lively, ambiguous, and accessible to anyone authentically seeking it, but the parallel is clear. Morton's hyperobjects offer a chance to complicate with clarity even further: hyperobjects' embodied forms become the giants, while their agency and intra-actions become "grace."

An artistic tradition that offers unique insight into the artistic hyperobject is ceramics. In many ceramic traditions, a piece is deemed more effective or beautiful if there are imperfections apparent in the piece. The tea masters in early Edo Period Japan sought out Raku tea bowls that were often pitted, fire-blackened, lopsided and even outright cracked (Yanagi, 1972). This lent *literal* personality and depth to the tea bowls; after all, imperfection implies mysterious and inaccessible depth, which is foundational for recognizing something as a strange stranger, itself entwined with ideas of personhood (Morton, 2010 & 2018).

Soetsu Yanagi contends, however, that this Japanese tea ware is less vital than that of the Korean tea ware it was inspired by, claiming that the difference is between

⁹ This phrase is from an unknown source, but some of the earliest written attributions available point to the twelfth-century philosopher Bernard of Chartres and the sixth-century grammarian Priscian (Eco, xiv).

"things born and things made," largely because "the Raku bowls were made with deliberate effort, [while] the Korean bowls were effortless products of daily living, not even intended for tea" (1972, p.125). It is the full submission to the "Easy Path," to the agency and flow of ceramic traditions available to the Korean potters, that lent their work such strength. For Yanagi and other scholars of ceramic and folk art, a piece's vitality is largely determined by its ability to continuously hold one's attention. By striving for irregularity, the creators of the Raku tea bowls merely fell into a different form of regularity. Indeed, Yanagi concludes his essay *Irregularity* by stating that "the beauty of irregularity — which in its true form is actually liberated from both regularity and irregularity — the asymmetric principle contains the seed of the highest form of beauty known to man" (p.126). This true irregularity may be better interpreted as 'unregulated' than 'different.' It is the minimally-mediated expression of the agency of ceramics through the embodied knowledge of the potter. Like the vast evolution of life, each ceramic piece contains within it a vast array of pieces previously created, and will likely be contained within a vast array of pieces to come. Tradition becomes less a tool and more an actor in and of itself, a processual force that allows a piece to exist comfortably in its own world, born so comfortably in the arms of tradition that its presence may settle into a powerful quietude. The Japanese term shibui describes exactly this: "the beauty it describes is introversive, the beauty of innerradiance" (Yanagi, p.148). This beauty stems from an assuredness, from "infinite affirmation" (Yanagi, p.148) – from subtlety.

The Nature of Relation within Pottery-making

Having established that ceramics can be viewed as a hyperobject, and that pieces emerge from the complex relationships between the ceramicist and ceramic traditions and practices, the nature of this relationship may be examined more closely. Karen Barad's explanation of intra-action provides useful clarification. Intra-action is differentiated from *inter*action by the non-hierarchical production of agency and

meaning from entangled things. Interaction requires agentic separation of the actors in a relational happening, while intra-action contends that at a fundamental level the agency of things in action together are inseparable. Through this lens, the subliminally hierarchical relationship present in our matter politics can be reframed into a more accurate politic, in which cooperation between material and human can produce change. (Barad, 2007)

Interestingly, such a conversation already exists that is central to ceramics, especially within wheel-throwing. One of the first things that people notice when they begin wheel throwing is a distinct lack of control. The initial assumption is that control will be found when greater skill is developed. This is somewhat true, but the control developed would be better described as conversational. There is no "mastering" the clay on the wheel, but rather a sort of intuitive understanding and opening to what the clay is communicating about its current potentialities. The possible range of shapes and outcomes is deeply dependent on the type of clay being used, the tools that mediate intra-action, and the techniques by which the ceramicist and the piece are intra-acting. The piece produced is a testament to cooperation between the ceramicist, tools, techniques, materials, and more. There are ways to create that do impose a hierarchical relationship between the 'creator' and the 'created,' but these are often seen to diminish a piece's overall vitality. A sentiment in traditional Japanese ceramics is that great pots are 'born, not made.'10 While the meaning of this statement is somewhat obscure, it seems entirely reasonable to relate this 'birth' to the generative intra-action between actors in the ceramic process: the potter's present state of mind; the potter's acquired skills (themselves embodied intra-actions between the potter and prior creations and experiences); the clay body used, in all of its intricacies (temperature, mineral/chemical content, water content, etc.); the techniques/traditions present; as well as tools, slips,

¹⁰ This phrase is variably attributed to Shoji Hamada and Soetsu Yanagi, two instrumental figures in the scholarship of mingei, Japanese folk craft. The closest direct reference I can find is from the English potter Clive Bowen, who attributes it to Yanagi (Wright, 2014, 7:00).

glazes, kiln atmosphere/temperature, and many more factors. It is a long, chaotic and unpredictable endeavor, and the ceramicist is just one of many actors that give birth to a finished piece.¹¹

What Makes Ceramics as Ecological Art Important?

The previous two sections posit that art is an inherently ecological process, and that ceramics serves as a particularly interesting portal into ecological thought. But what is seen when one looks through that portal?

Part of the answer lies in the section above: the onlooker witnesses the piece, in all of its guiet power, and the traditions that went into the creation of that piece. These two qualities make for a fairly interesting reflection, but they are not all that's being offered. After all, art as an intra-active conversation between material and artist reveals exactly that: the material and the artist. In ceramics, the materials used play a much more central role than materials in other media of art. Clay is an ancient substance, and in the right conditions can remain workable indefinitely. Ceramic traditions vary widely based on what clay they had available; for example, porcelains allow for a completely different range of possible forms, aesthetics, and presences than stonewares do. Many glazes are mixed from materials which, while not necessarily mundane, are readily available, often even byproducts of other human endeavors, such as wood- or straw-ash. Until the point in the firing that the clay begins to vitrify, clay can always be recycled and used again. Once vitrification is reached, the clay becomes effectively immortal; a hyperobject, its life stretching far beyond the limited scope of human time. The oldest fragments of subceramic pottery (pottery which has not been fired at a hot enough temperature to fully vitrify) that have been identified are around 20,000 years old (Wu

¹¹ This concept of 'finished piece' may be scrutinized as well. Why does a piece have to be fired to be a 'finished piece?' Perhaps this is a testament to the unseen power that Tradition has on our artistic sensibilities. It would be as difficult to convince somewhat that an untouched lump of clay was a vase as it would be to place tubes of paint next to an empty canvas and call it a painting. Difficult – and stinking of dadaism.

et. al., 2012), and the oldest baked clay figurines 26,000 years (Vandiver et. al., 1989). Modern, fully-vitrified ceramic pieces are even more durable than these subceramic pieces.

The other central actor in this intra-active conversation is the artist. As with any art, rich layers of identity are imbued into the finished pot. As Bernard Leach puts it, "a pot in order to be good should be a genuine expression of life" (1965, p.20). Ingold posits that the role of the artist is to "join and follow the forces and flows of material that bring the form of the work into being" (2011, p.216). The experiences, traditions, intentions, and techniques of an artist may be seen as materials in this flow, co-mingling to produce a symbiogenic product, its ancestors clearly traceable. Every ceramic piece is an artifact of the necessary presence of all the intra-actors that conspired in its creation — it is the tuned and balanced flow of these forces that yields subtle beauty.

Clay also contains within it a deep aesthetic synergy with landscapes. From Koetsu's famous Raku bowl *Fuji* to Anne Mette Hjortshøj's press-molded bottles, many of the most contently internal pieces spontaneously and completely connect to very specific ecological experiences. Hjortshøj describes one bottle as "exactly the same color as when it's winter and it's just about to be sunset and there's a white thick snow with a little bit of moss coming up through the snow – and the blue sky" (Wright, 2012, 19:01). Even more radically is the realization that this connection is not one of representation but of something else, some internal quality that both the bottle and Hjortshøj's embodied experience of winter. After all, the most beautiful 'natural' things are wildly quietly (pun intended) and internal. Mountains, while presenting a sublime grandeur, also possess a deeper, more subtle beauty. The fact that a small tea bowl can bear similarities to a mountain is, itself, astounding, but when we realize that those similarities come primarily in the stillness, presence, and mystery of both the mountain and the teabowl, their similarities suddenly feel akin to sympathetic magic, bearing the implications of a rich human—thing and thing—thing social cosmos whose existence our

Dominant culture regularly attempts to deny. By witnessing such entanglements, we are allowed a profound glimpse at the weave of reality. Once again, this is the Mesh discussed by Ingold and Morton: a woven intra-active tangle of identity and action.

Of course, the act of working with clay is also one of deep cultural and historical connection. While the oldest clay pieces found are 26,000 years old, it would be naïve to think that the human—clay relationship began there. After all, the clay artifacts that have been found are at least somewhat vitrified, a resource- and skill-intensive process that would have been the result of an established relationship between humans and clay. As an abundant, naturally-occurring and malleable substance, clay may have been central not only to technological innovations, but also — and just as critically — to cultural and individual practices (Craig, 2021). How long before the adoption of baking clays did the human—clay relationship exist? How many millennia of clay artifacts have dissolved back into the soil from which they came, the soil to which humans return as well? To work with clay is to work directly with an ancient and deeply-entangled kin.

METHODS

The Earliest Stages

The original idea for this exploration of intra-active entanglement through ceramics developed as an evolution of a printmaking project planned for the Spring of 2021. My grandmother, a life-long artist and art teacher, had spent the last decade painting botanical watercolors with a patience, skill and precision that I deeply admired. I wanted to create a series of polychromatic prints that used the overall layout and design of one of her pieces to explore rapid reproduction of art, along with degradation, uniformity, and the power of an evolving series. I realized at the time that, in addition to paying tribute to her work, I wanted to be in conversation with my grandmother in one of the only ways that I knew how. Her husband (my grandfather) had passed away the

previous summer, and her mental and physical strength was failing a little more every time I saw her. Whenever I created any art, though, I could feel a connection with her. Being surrounded by her art and art-making filled me with a quiet strength and inspiration that I didn't find anywhere else.

In the end, ceramics got in the way of the initial project. That Spring I took two of my first ceramics classes, and quickly found that it eclipsed my other artistic endeavors. In addition, despite derailing that printmaking project, I found an even deeper connection to my grandmother, who spent many years making pottery long before I was born. In fact, it is at least partially because of a pottery workshop that she attended in 1967 that I was born and grew up where I did on the coast of Maine. In working with clay, especially on the potter's wheel, I found a deep, beautiful artistic space in which to go beyond the near-ancestral-worship that I had held for Grandma's art and move into something akin to collaboration and conversation, something that pondered space, materiality, home, agency, bodily expression, family, legacy, and more. At the time I didn't realize the depth offered by this exploration or its ability to offer a glimpse into a beautiful and vast mesh of intra-activity.

When considering the topic of this thesis, I found myself returning to the multilayered nebulosity of the original printmaking project, but within the novel framework of ceramics. I imagined the topic as generally being about 'community in clay,' and was particularly drawn to the animate qualities that we ascribe to thrown pots, complete with terms like 'body,' 'lip,' 'belly,' 'shoulder,' and 'foot.' Ultimately, though my initial conceptualizations focused on tensions between individualism and communities, they were deeply anthropocentric. Something about that didn't sit well. Nascent questions about representation versus non-representational art were forming. Why did a pot need to be defined in human terms? Could it be as significant without focusing on those ascribed similarities?

During this ideation process, in late November of 2021, my grandmother passed away. I had pieces being fired in the glaze kiln when it happened, and when they came out of the kiln, I realized just how deeply those pieces were informed by my relationship with her and with our shared home, the Maine coast. Inspiration swirled quietly regarding the nexus-like role that ceramics could play in generating a poly-vocal and intersectional exploration. My attention turned to research, where I began to see the parallels between my experiences with the affective force of pottery and others'.

A breakthrough in the ideation process occurred when I read Timothy Morton's *All Art is Ecological* and was introduced to their re-imaginings of ecology. The expansion of concepts like 'Nature,' 'person,' 'agency,' 'things,' led me to lean into the interactions between us as people and the ceramic pieces as objects, in the hopes of eventually complicating those roles for the viewer. I found myself called to an outwardly-simple composition: a fully set dinner table. This would be the setting in which the person-object relationship would be most obvious to onlookers, a perfect point of departure for complications.

The next major decision was that of interaction. It didn't feel right for the pieces and the onlooker to be separated. Ceramics is often a very tactile and spatial form of art, and the relationship that most people have with ceramic pieces is one of use (as with a bowl) and/or decoration (as with a vase). Ideas came and went, but I finally found a solution in an arguably unrelated field: board game design. By developing evolving, generated rules for the pieces on the table, a rich web of questions come swirling together, from symbiogenesis to intra-action to agency itself.

The Ceramics

The bulk of the creative project was spent creating the ceramic pieces. The design process for the pieces was somewhat fraught; I wanted to avoid representational decisions, favoring the idea that I could dig into more fundamental patterns of

relationship, as well the relationships that can emerge from arbitrary decisions. I wanted the pieces to demonstrate the sort of intra-active identity-making that is central to the Mesh: for the pieces to be different from one another but for their relationships to be undeniable.

I settled on eight distinct table settings, each containing a bowl, a plate, and a cup. In addition, I decided to make eight center pieces: a vase; a large bowl; a tray; a teapot; a pitcher; a game board with pieces; and two candlesticks.

The distinctions between table setting implied the undeniable difference between individuals around a table, and the community that is nurtured despite those truly unbridgeable gulfs of discreet experience. Inspired by contemplations of cyclicality, identity, and place, as well as the concepts of temporal hyperobjects and symbiogenesis, I decided to incorporate seasonality by considering one of eight evenly spaced sections of the year while designing each set. Because the eight points in the year corresponded to the modern Pagan Wheel of the Year, I came to call each setting by the name of the Pagan festival celebrated at the corresponding time of year. Modern Paganism borrows from various pre-Christian religions throughout Europe, especially Gaelic and Saxon traditions, and while this has been done with much effort and respect (Kelly, 2017), it is certainly a modern synthesis, nearly equal parts indigenous European spiritual/cultural tradition and modern interpretation and fabulation (Drury, 2009). Additionally to the Wheel of the Year, I considered the Later Heaven Sequence of the I Ching's eight trigrams, also known as the Manifested Bagua, a rich contemplation of seasonal changes and cycles that emerged alongside the ancient I Ching, or Book of Changes (Wilhelm,

1967).¹² The specific overlay of Later Heaven Sequence, the Wheel of the Year, and the equinoxes and solstices are shown in Figure 1 on the following page.

It is important to note that these two primary points of contemplation, the Wheel of the Year and the I Ching, are not orthodox scholarly sources. They are arbitrary and messy at times, even esoteric, but they serve as important windows into embedded traditions of many cultures around the world. The Wheel of the Year borrows from many pre-Christian European traditions and festivals, which entangles and expands my own European ancestry. Though I have no cultural claim to the I Ching, its global influence and illumination of non-Western possibilities for wisdom practices made it a powerful tool for contemplation while I made the eight table settings. My interpretation of these two wisdom practices are just that: my interpretations. I make no claim to the superiority – or, frankly, validity – thereof. Such interpretations are useful creative acts, themselves symbiogenic weavings of personal experience and cultural

In conclusion, the I Ching provides an interesting framework of changes that often diverges from Western traditions, and it is included here for *some*, not all, of its insights.

¹² Interestingly, Proto-Indo-European culture, which Abrahamic cultures and indigenous European cultures were heavily influenced by, has many surprising similarities to the framework presented in the I Ching. PIE culture presents a somewhat dualistic core pantheon of 'Sky-Father' and 'Earth-Mother' (an archetype most obvious in the story of Christ's birth from the coupling of a 'Heavenly Father' and the earthly Mary, but also critical in modern metaphors like 'Mother Earth,' 'Gaia,' etc.) that is almost identical to the relationship between the I Ching's 'Heaven' and 'Earth' trigrams (Ramsden, 2021).

¹³ I believe it is also important to acknowledge here that, like many wisdom traditions that have developed in patriarchal societies, the I Ching often puts forth explicitly sexist conclusions, often counter to its fundamental structure. For instance, the 'pure yin' trigram Earth and the 'pure yang' trigram Heaven are associated with the female and the male, respectively. Despite being regarded as balancing forces that necessarily beget one another at an identic level, a treatise attributed to King Wên of Chou around 1150 BCE opens with: "Heaven is high, the earth is low; thus [...] inferior and superior places are established" (Wilhelm, 1967, p.280). This is extrapolated into commentary about the 'correct' relationship between husband and wife, gender roles in politics, etc – all while deepening an already entrenched gender binary. Now, these may be because of the specific interpretations and changes made by patriarchy-influenced scholars and translators over the years. I'm no Sinologist, and could not say for certain, though there's evidence that the French Sinologist Cyrille Javary has written about this topic and the influence that Confuscious had on the matter. Unfortunately I can't find any supporting source material – which would likely be in French anyway.

influence, and therefore any 'conclusions' I draw are intended to solely be part of the artistic process.

In the following sections I describe the decisions made during the creation of each of the eight sets, as well as an overview of the techniques and processes by which I made them. Figures of each set are included in Appendix B, with figures 17 and 18 showing the full layout of the table.

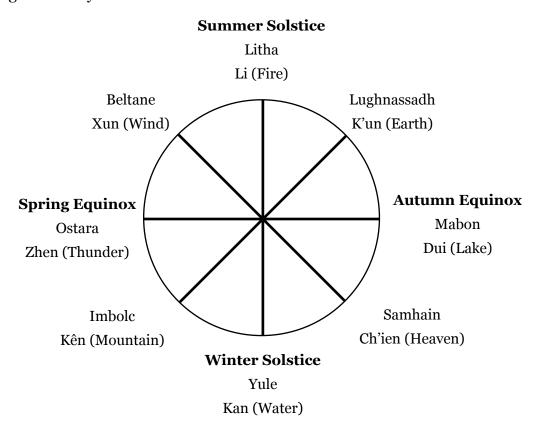


Figure 1. A diagram of the modern Pagan Wheel of the Year and the Later Heaven Sequence of the I Ching's eight trigrams overlaid on a cyclical representation of a year.

Setting One: Early Spring; Imbolc; Kên (Mountain)

This setting (Appendix B, fig. 2) represents the earliest stirrings of spring, when the potentiality of the verdant parts of the year are slowly emerging. To capture this sense of potentiality, the pieces are in their earliest form: as lumps of clay, waiting to be shaped.

They are approximately the volume of clay required to throw a bowl, cup, or plate on the wheel. Once allowed to dry to a leather hard stage, they were cut open and hollowed out in order to minimize the possibility of breaking in the firing process. They were then painted with slip – the cup white, the bowl dark brown, and the plate black – to liken them to smoothed and varied stones smoothed by the water. Finally, borrowing from Toshiko Takaezu's ceramic process, I added a single small ball of clay to each hollowed out center, allowing them room to rattle around. The small clay balls represent the interiority of the pieces, the inner-life and potentiality, and critically are only discovered when the pieces are moved, and even then can only be heard and vaguely felt.

The trigram Kên (Mountain) is also referred to as Keeping Still. It rests in a transitional state of the Later Heaven Sequence, representing "the end of every thing joined to a new beginning" (Wilhelm 271). Similarly, if clay is not fired, it can be reclaimed over and over again, cycled and recycled indefinitely. These lump-forms hold the vibrant potentiality of future creations while also acknowledging the deep history of clay, both in and out of interaction with humans.

Setting Two: Spring Equinox; Ostara; Zhen (Thunder)

This setting (Appendix B, fig. 3) was heavily inspired by some of the oldest ceramic techniques discovered to date, namely cord-marking. These markings were so important that the earliest named historical period of Japan is the Jōmon Period, which translates to "cord-marked" (Mason 14). Ceramic pieces bearing cord marks have been found across the world from a variety of cultures, but most famously amongst peoples in North America and in Eastern Asia. The benefits of the technique are twofold. When wrapped around a paddle, the chords allow the potter to flatten and strengthen the walls of a wet pot without the clay sticking as much to the paddle's face. Additionally, the added texture increases the pot's surface area, which improves heat transfer to the contents of the pot. This increases the piece's efficiency while boiling water and cooking food.

Finally, the markings provided a simple aesthetic quality to what may have previously been little more than shaped vessels, which expanded into a wide variety of derivative marking techniques in many cultures, epitomized by the seventy styles and four hundred variations of cord-marked ware associated with the ten thousand year long Jōmon period (Mason, 14).

In order to make these pots, I draped thin slabs of clay over wooden forms (or on a flat surface, for the plate) and carefully paddled the slabs into shape, turning the piece slowly as I went. I fettled the rims with my fingers, and the inside retained some of the creased and cracking textures of the wood.

I decided to use this technique because of the metaphorical parallel it draws with the early vibrancy of the spring equinox. It is intrinsically beautiful, and it also presents a sort of momentum into the interim developments in pottery making, just like spring carries momentum into the coming year. The symbiotic relationship between aesthetic and utilitarian elements are also at the forefront of these pieces. This technique transcends the discussion of whether 'form follows function' or whether art should be uninhibited by utility, both heavily reliant on the hylomorphic presupposition of creation (Ingold, 2011).¹⁴ Instead, the cord marks are simply both useful *and* decorative, ignoring the illusion of duality between the two properties.

Setting Three: Early Summer; Beltane; Xun (Wind)

Beltane is associated primarily with fertility, with a heavy focus on flowers, fire, and communal efforts. Uninspired by the idea of a gaudy flower themed set, I used this set (Appendix B, fig. 4) to dig more deeply into the idea of gradual maturation. Each piece in the set is painted with black slip, and few of the common anatomical elements of

¹⁴ The hylomorphic model is demands that any act of creation require form and matter, and according to Ingold (2018), has become "increasingly unbalanced." Form came to presuppose an "actor with a particular design in mind," while matter was "rendered passive and inert" (p. 210)

ceramic pieces are present in the base form – no belly, shoulder, or feet.¹⁵ Each one, however, has four hand-made baby legs attached to it, painted white. The juxtaposition of the undifferentiated base forms with the detailed legs implies a certain movement into self-acknowledgement and identity. The legs are all facing opposite directions – after all, the realization of mobility and agency before fully comprehending one's surroundings and context is often ironically disorienting.

Xun is associated with wind and, by extension, wood, and is also called The Gentle. The wind "melts the rigid ice of winter" while the wood "develops organically," (Wilhelm, 270) emerging into the form held in the seed. More vitally, the form that is an intra-active conversation between the genes in the seed and the environment and lived experience of the wood. Beltane is a time when potentiality widens, and exploration becomes possible. It is a time when a tree grows large enough that it begins to differentiate its form from other trees and a child begins to develop deeper personality. However, there is still necessarily a focus on the the mysterious process of coming-into-being that these pieces are engaging with. Their agency is almost palpable, as if they could walk off the table at any moment. The legs are articulated and clear, but they ultimately bear the dark, undifferentiated bulk of the vessel above.

Setting Four: Summer Solstice; Litha; Li (Fire)

The Summer Solstice – Midsummer, or Litha – is the time of the year with the longest days. It is a time of celebrating the light outside and within, while also considering the coming turn towards shorter days and colder times. Li (Fire), the trigram associated with midsummer, is also called The Clinging, in relation to the way that fire clings to its fuel to continue burning. It represents interconnectedness, the reliance on the external for vibrance and vitality, and the assemblages and hyperobject that these pieces are necessarily a part of.

¹⁵ in the ceramic sense, as in "foot-ring." It's quite undeniable that these pieces do have feet.

Despite its humble appearance, this set (Appendix B, fig. 5) was the most timeand material-intensive to complete. By digging into the relationship between ceramic pieces and inheritance or ancestry, this set focuses on the hyperobjectivity of ceramic pieces. Each of the three pieces included on the table were made 32 times in total. These 32 iterations were all distinct pots, many of which have survived through throwing, trimming, bisque firing, glazing, and glaze firing. In their creation and consideration, I maintained their continuity of identity. Many of the iterations didn't make it to a "finished" form – a wall collapsed, a bottom was trimmed through, etc. – but they are each still crucial parts of the 32 iterations. This is not to say that the set is a culmination of this process, however. The pieces included in the final table setting aren't necessarily the 32nd piece thrown of their form. In fact, I intentionally didn't track what order the pieces were thrown in, reacting instead to the moment and piece at hand. As Robert Ashley intoned in his bizarre masterpiece *The Park*, I "worked with the forwardness and the backwardness/...with what things are ahead ... and what things are behind" (2017, 5:37). Not only did the fifteenth bowl I threw contain some aspect of the fourteenth bowl I had thrown, but also some aspect of the sixteenth bowl I had yet to throw. The directionality of their ancestry/progeny is ultimately confused and confounded, allowing again a balance/tension between individuality (the pieces, even within each form, are certainly not *uni*form) and collective identity. Instead, they are most fully regarded as a sort of collective identity. The pieces cling to each other, are fueled by each other, but are necessarily separate. My hope is that the viewer gets a nagging feeling that the three forms presented are part of a semi-present miniature tradition.

As a final note, I chose 32 as the number of iterations per form intuitively – even arbitrarily. First of all, there are 32 ceramic pieces on the table, creating a sort of mathematically square quality to the entire creation that I find satisfying. It also means that this *full* set represents 96 different iterations on form. The lumps of clay representing Imbolc (early spring) are closely entwined with this set, making 99

"iterations." This last part is mostly the justification that I have found for that number, and therefore somewhat strange to include here, but I think that the acknowledgement of the role intuition played in the creation of this set is necessary to acknowledge.

Setting Five: Early Autumn; Lughnassadh; K'un (Earth)

This time of the year is one of the major harvests. K'un, the Receptive, represents bountiful harvests and reaping the benefits of joint labor. K'un is quiet and fertile, like dark soil. Lughnassadh, or Lammas, is traditionally a grain-harvest festival. If a farmer harvested their grains before Lughnassadh, it would mean that they had run out of their harvest from the previous year, and would be a burden on their community. The time is one of collective joy and prosperity while also bearing the somber mutual responsibility of work, respect, and restraint.

The setting (Appendix B, fig. 6) that I created for the Early Autumn was one of the least conventional and most troublesome. Inspired by the hardening husks of nuts and seed, I set out to create 'nested' and fragile pieces. For each form (plate, cup and bowl) I threw and trimmed two or three pieces that would nest within each other. After a few failed attempts at creating pieces that balanced on fragile spines, I settled for making pieces that would be loosely intertwined, allowing some shifting and rattling like a seed within a a dried pod. Of course, to release the loose pieces, they must be permanently broken. Similarly, when grains are harvested once, they can't be harvested again. Harvest is both joyful and solemn, as it is the moment that potentiality becomes reality, and Lughnasadh marks the beginning of a long string of those harvests, ending around Samhain in Early Winter.

Additionally, the connections within the pieces are very fragile. If one or two break, no great harm will come to the piece as a whole, but more and more burden will be placed on the other connections until the piece finally splits apart. This holds true of any community, especially when considered in the light of the annual grain harvest.

Community is based on reciprocal aid and collective responsibility. A few members taking advantage of those assumptions can lead to the entire community crumbling. This is obvious within solely-human communities, but is true of other ecological communities as well. For instance, if a species is introduced into an ecosystem that has no natural predators, they will likely overpopulate the ecosystems they inhabit, beating out competitors and throwing the entire system into disarray, only to eventually overconsume and die back to a stable state – or extinction.

Setting Six: Autumn Equinox; Mabon; Dui (Lake)

The Autumn Equinox is the time of the year that the days are most quickly shortening. It is in the midst of the harvest season, and is often related to gratitude. The festival Mabon was, by all accounts, introduced wholesale by modern Pagans; there is no historical evidence of any specific Autumn Equinox festival in the Celtic tradition (Kelly, 2017). There are, however, many festivals around this time in the Northern hemisphere that focus on gratitude for a bountiful harvest. Even Thanksgiving, now celebrated in late November, likely had its origins in early October.

Dui (Lake), also called the Joyous, means "smashing and breaking apart" and "dropping off and bursting open" (Wilhelm, Baynes 279). This presents a strange truth about the season – there is at once a celebratory maturation of the year's toil and a recognition that the time of harvest is necessarily a time of death as well. Fruits rot on their branches, mushrooms creep up from soggy undergrowth, and trees begin to shed their leaves.

In order to capture the fecund decay of this season, I decided to combine several different states of clay. For the body, I dug wet clay from the reclaim buckets (where excess unusable clay is put to settle and be processed into fully usable clay) and mounded this on a plaster bat to dry. I moulded it into the dish forms while it was still completely wet, allowing my movements to be imprecise and gestural. I also

incorporated splashes of dark brown, black, blue, and white slip into these movements, hoping to nurture the illusion of mold. The resulting forms were lumpy and misshapen, but functionally still a plate, cup, and bowl. Once leather hard, I hand trimmed the bottoms of the pieces – again imprecisely – and attached small fungal growths to the forms. Finally, I cut a textured slab of clay into strips and attached them to the pieces to serve as a sort of improvised foot-ring (Appendix B, fig. 7).

The clay in the reclaim buckets is the direct product of the pottery process, much of it coming directly from abandoned pieces. Despite their near formlessness, these pieces contain in them the memory and material of recent pieces. To me they represent the turning point of the year, the liminal space between the joys of the brighter half and the quietude of the darker half of the year. They are also literally the excess of the harvest: the discarded material left to fester, mold, break down, and re-emerge the following year. There is an alien quality to the pieces, almost akin to Jung's 'Shadow,' for these pieces represent the weave of life and death, of creation and destruction, that our modern Western culture is often repulsed by. Additionally, I had never heard of anyone else mounding slip to make ceramic pieces before, and this creativity, ironically situated amongst destruction, is emblematic of the potentiality of all materials, including artistic traditions.

Setting Seven: Early Winter; Samhain; Ch'ien (Heaven)

In the second to last set, Early Winter, I explored themes of representation, abstraction, and delineation (Appendix B, fig. 8). This time of year is commonly associated with mourning the year's losses, coming to terms with aging, and generally reflecting on the passage of time. The deciduous trees finally shed the last of their leaves, the geese fly south, and the last of the harvest is processed and stored. During this time, the festival of Samhain compels one to reflect on the year and the past in general to draw strength from moments of success and failure, and to prepare for the coming winter. Chi'en

(Heaven), though from a wisdom tradition that is almost entirely culturally alien to modern Paganism, once again resonates deeply with the underlying message of Samhain. Chi'en, the Creative, is the counterpart to K'un, and represents pure yang energy. It is assertive, spiritual, unyielding, ordered, abstract, and generative (Wilhelm, 1967). It also reveals the deep patriarchal foundations of the I Ching, representing "the father" and ruling over K'un, the Earth and mother. This time of year is one of judgment of the year's actions before the darkest days arrive, but because of the shadow of Kên (Keeping Still) from the Primal Arrangement and the contrast to K'un, the physical aspect, this judgement is primarily contemplative.

To represent the manifold aspects of this time of year, I decided to employ a technique called nerikomi, in which different colored clays are combined in a single block so that a pattern is revealed when thin cross-sections of the block are removed. In order to represent the dualism that underpins our concepts of judgement and order, I decided to use a dark clay body (created by kneading an extra 2% Iron Oxide into our studio clay) and a reclaimed white stoneware.

Once the clay bodies were prepared, I rolled out long coils, squared and moistened their sides, and combined them, making sure that no air was trapped within the new, thicker coil. I then began cutting cross sections of this coil, laying them on dry molds of the dish firms that I had created a few weeks prior. I allowed the edges to drape over the edge of the forms. After allowing the clay to dry somewhat, I carefully removed the molds, leaving the thin nerikomi form behind and reattaching thin pieces that had snapped off in the extraction. These pieces represent the surface of a form that only existed in the negative space, the chitinous memory of a dish. They are riddled with cracks, underscoring the fragility and porousness of 'surfaces,' literally and conceptually.

Setting Eight: Winter Solstice; Yule; Kan (Water)

The final set (Appendix B, fig. 9) represents the Winter Solstice. This is the darkest time of the year and is commonly associated with rebirth, renewal, and the turn back towards lengthening days. The contemplations for this came primarily from the trigram from the I Ching associated with this time.

Kan (Water), the Abysmal, is a very nuanced trigram. Many interpretations of it are negative, relating it to hardship, suffering, and obstacles, but at its core it represents the mysterious agency of the things that surround us. Water plays a central role in the Tao Te Ching, constantly being used as a model for how people should act. It flows to the lowest point, gradually wearing down even the hardest stone. In this way, it is not inherently bad, but it certainly contrasts with a society that idolizes perfection and immortality. Water represents the untamable, the furtive, the mysterious. It also represents the path of least resistance, and so could be generalized to represent large scale natural processes – such as evolution – as a whole.

The set I made is fairly small compared to other pieces. Each piece was thrown and then allowed to quickly dry, leading to a few intentional cracks. I then used the high-pressure nozzle on the sink to texture the bottom/exterior of each piece, leaving the surface slightly eroded. I then burnished the top/interior of each with a stone, applied a small amount of both white and iron-rich slip to the burnished surfaces, and put them through the bisque firing. I proceeded to glaze the burnished surfaces of these pieces with a thick layer of transparent glaze. The surface is mysterious and clouded with the underlying clay and slips peeking through the crackled glaze, like water trickling under a sheet of ice. Once again, there is a subtle agency that peers out of the depths of these pieces, as if the glaze is about to melt and the water beneath about to start flowing.

The Centerpieces

The eight centerpieces were brainstormed and produced in relation to the frameworks used for the eight sets above, but weren't directly situated on any specific points of the Wheel of the Year. I'll run through each briefly:

- The pitcher (Appendix B, fig. 10) is heavily influenced by medieval English pitchers and jugs. This decision was made as a continuation of the role of tradition in ceramics. The heavy handle helps to counter balance the pitcher when it is filled with water, and motifs on the outside elicit images of flowing and pouring water.
- The teapot (Appendix B, fig. 11), like the pitcher, was made very traditionally, but drew inspiration from Japanese ceramics rather than English. It is a yokode kyūsu a sidehandled teapot. Each part of it was thrown on the wheel before being trimmed, cut, and constructed. Like the pitcher, the slip was poured onto the form.
- The serving bowl (Appendix B, fig. 12) was thrown, trimmed, and then inscribed with a chattering pattern from a loosely held piece of modified band-iron. Its presence is massive compared to the primarily-modest pieces around the table.
- The platter (Appendix B, fig. 13) represents what Lao Tzu called "uncut wood" (LeGuin, 1997, 23). It is deeply gestural and improvisational, with the hope of producing an image of raw materiality. To create it, I rolled out a slab, roughly cut it to the approximate dimensions desired, and then wiped various tools across its surface, creating the various pits and crags in the face of the piece. Finally, I sponged some iron slip onto the surface and attached small feet. It is a gestural and purposefully-imperfect piece.
- The board game (Appendix B, fig. 14) was a relatively late addition to the project. It is meant to be a sort of direct contrast to the game rules discussed in the following section. No rules are provided for this small board game in fact, it's a game that I

designed and that no living person other than myself knows the current rules of.¹⁶ That being said, it is obviously a game, unlike the scattered collection of dishes lying across the table, which, despite the appearance of not being a game, *have* literal game rules provided.

- The candlesticks (Appendix B, fig. 15) are a pair, loosely representing Yin and Yang in classical Chinese philosophy. They are complementary rather than oppositional, balancing forces that are stronger together than isolated. They were thrown as a single tall, spindly form, and cut apart once leather hard.
- The vase (Appendix B, fig. 16) is the only piece on the table that I didn't make. My grandmother made this vase in the 1960s or 70s. It represents my personal traditions, the highly subjective lenses through which I engage with this craft and with the rest of my life. Vases carry fleetingly beautiful flowers, which classically serve as *memento mori* in European still-life paintings. It seemed right to balance this immediate beauty of flowers with the venerable beauty of my grandmother's pottery, which will exist in one form or another for hundreds of years to come. Of course, everything exists in different cycles, and this vase will eventually decay, re-weaving into new forms, just like the flowers and my grandmother.

The 'Game Rules'

In order to encourage deeper engagement with questions of human/semi-human/non-human intra-action, I decided to incorporate a framework of game rules that people could use to interact with the pieces. These were to be in the same vein as many abstract strategy games like chess, checkers, hnefatafl, and xiangqi. I set myself a few restrictions early in the brainstorming process:

1. that the rules couldn't include any elements of chance, such as cards, dice, etc;

¹⁶ This is *probably* true. I have taught two people how to play the current rules, but I'm fairly certain that neither of them remember how to play.

- 2. that only the pieces on the table be used in the game, and similarly that the rules incorporate most of the pieces on the table; and
- 3. that the game not be entirely oppositional (as most strategy games are), even if it seems so at first.

The third restriction was the most difficult to design around. Unless the game was made to be cooperative, it seemed as though any game with a win-condition would end up being oppositional, clearly determining a winner and a loser. Would people be drawn to manipulate the pieces on the table if the stakes of winning or losing were taken away?

A solution came in the form of creating many similar – but ultimately different – games, with rulesets that flowed into one another. When one ended, the next would begin, and that next ruleset could be determined by the end-state of the game that had just finished. In fact, by declaring an *end*-condition rather than a *win*-condition, there would be no explicit opposition, just a dance through constantly shifting rules. Any declarations of victory would in fact be testament to the power of the concept and traditions of what a 'game' is, aligning with the greater efforts of this thesis.

Once again, however, I was stymied by the actual process of designing the rules. To make a single coherent, balanced set of rules is difficult; to make multiple interwoven has never even been attempted as far as I'm aware.¹⁷ It also felt wrong to intentionally design the rules that would generate a landscape of possibility for the onlookers and the pieces. The beauty of games is their exploration, and it seemed fitting to find a way to allow for that exploration to be truly and utterly novel. In other words, I realized, I was wondering how I could make fully playable rules for games without being part of the design process. The answer, in the end, was to write a script that would generate multiple usable rule-sets at once. While no great work of software engineering, the

¹⁷ The closest game that I'm aware of to this is *504*, designed by Friedman Friesse, which uses a 'mix-n-match' style book with nine modules, any three of which players can combine to make a playable game, resulting in 504 different permutations.

resulting script can create thousands of rulesets in the click of a button as well as the distinct paths between these games. The vast majority of these games are playable, but I doubt that many could be considered *fun*. Some may even be impossible to complete: it's statistically unlikely but completely possible for a game to require more pieces to be stacked together than exist on the board in order for it to end. A sample set of 5 games, including general rules and terminology, is included in Appendix C, and the code is located in Appendix D.

DISCUSSION

This thesis was undeniably complex, by design and discovery. A constant theme within the body of research was the necessity to allow things to be complicated, and the clarity that complications allow. There have been so many moving parts in the project, so many processes, points of research, conversations with people and materials, intuitive decisions, non-academic explorations, journal entries, and fate-filled happenings that it almost seems like a disservice to the experience to immediately try to reflect on it in any meaningful way. In the end (if it is the end), I'm not entirely certain that this project has concluded. It's like a postmodern movie where the final scene lingers, implying continuation beyond screen. I've made the pieces I set out to make, read the books I wanted to read, and written down what I've needed to, but I can't help but feel as though much more has begun than has concluded. Everything is in a state of ongoing emergence and things will (hopefully) continue to bubble up from these explorations far into the future. After all, this is a meeting point of many different ideas, entities, and frames of being – some here despite my efforts, and some coaxed into the conversation with great difficulty. As usual, I find wisdom on this point from Tim

 $^{^{18}}$ The chance of this is $2/(5 \times 2^{31})$, or approximately one in 5 billion, for each ruleset.

Ingold, in a discussion focussed originally on the practice of Anthropology but which applies perfectly here: that the practice I've nurtured through this thesis is "to *open up* the world, rather than to seek closure.... It is the constant awareness of alternative ways of being, and of the ever present possibility of 'flipping' [from] one [way of being] to another.... Wherever we are, and whatever we may be doing, we are always aware that things might be done differently" (Ingold, 2011, p.239).

Challenges (and why they're okay)

This project has been full of challenges. First of all, I am almost entirely operating from a Western, white, straight, culturally-Christian, atheist, reductive, objective, Scientific cultural background, and learning many of the novel concepts presented in this thesis – especially novel Ontological frameworks and the implications thereof – have felt as equally invigorating and impossible as learning another language. Because of this, I constantly found myself rationalizing, delineating, reducing, circumscribing, and analyzing throughout the process despite my best intentions and efforts. These aren't entirely antithetical to the thesis of this project – if anything, it emphasizes the power that these cultural hyperobjects have over us – but the subconscious reliance on them as foundational mental frameworks by which to engage with the world is counter to the project. I found myself having to slow down and ponder whether a decision or conclusion I was making was intuitive or habitual. The line is thin between these two categories, but they are not entirely synonymous. I'm sure, however, that despite my best efforts there were many moments when I introduced invasive ideas into this conceptual ecology that I was building. While that's not ideal, I think that conceptual "purity" is ultimately antiquated and problematic, and that an openness and active perception of the various forces within a conceptual space nurtures a much more fruitful perspective than one of anxiety and extermination. After all, such messiness is an affirmation of one of the central discoveries of my project: that, despite our firm beliefs,

boundaries are always permeable. Identities and actions flow between things, including ideas, whether we acknowledge that truth or not.

In addition this limited viewpoint extends, in some ways, to the authors and artists cited in this project. While there is a fairly diverse array of authors of various genders, they are overwhelmingly white. This makes a fair amount of sense, as academic scholarship remains an exclusive, segregated space. Many of the alternative theories are linkable to various modes of Feminism, including Feminist Realism and Feminist Ecology, that were unsurprisingly pioneered by women. I'm especially conflicted about the fact that this paper does not cite many modern Indigenous thinkers. On one hand, the knowledge that these scholars offer is immense and points towards many of the same goals as the scholars that dominate this paper. On the other hand, the history of colonizing indigenous knowledge is undeniable, and is often fueled by good intentions (or, as often, 'good intentions'). My decision to not dive deeply into the wisdom present in traditional ecological knowledge reflects my goal to ensure that I can respectfully represent the communities whose cultural heritage I discuss and represent.

Another challenge has been working in direct opposition to the strong minimalist sentiment present in all forms of art. As Cicero allegedly said, "every word that is unnecessary only pours over the side of a brimming mind." I often wonder whether I have incorporated too much into the project, whether it has become overloaded, top heavy and inaccessible. The metaphor I generally find myself returning to in those moments of uncertainty is that of a forest. In a forest, there is a vast and complex web of relationships unconcealed by artificial simplicity and delineation. Each member of that web is itself a complex web of relationships, and each member of *that* web and so forth, each element unapologetically exposed to the world. Yet few are overwhelmed by this reality when walking in the woods. In fact, there is a certain point at which our minds seem to accept the dense mystery of the world around us, and our curiosity quickly moves from holistic exploration ("does this forest *feel*?") to something more analytic

("what types of bugs live under this rock?"). This piece is not meant to be an aggressive barrage of things, but rather an invitation for the onlooker to wander as deeply as they would like into the subtle and complex worlds present on the table in front of them. It's meant to be honest, allowing for meaningful questions at all levels of exploration.

Reflections

I am deeply proud of the work that I have put into this thesis. It was a radical weaving of so many supposedly-disparate disciplines together, and I was deeply uncertain at first about the value and outcome of that. I could see some of the connective threads but the vast majority were elusive. I was saved by the fact that, unsurprisingly, Environmental Humanities is generally deeply interdisciplinary, with books regularly exploring ecology, philosophy, anthropology, art, spirituality, geography and more. In fact, the deeper into the literature one digs, the less these disciplines seem significantly distinct.

I also grew immensely as a potter. I estimate that I made around 140 or 150 pieces for this project alone. That's easily 30-40% of all the pieces that I've made in my life. Like so many things, pottery is a very long, very gradual relationship with the materials and techniques (that relationship is no doubt a powerful hyperobject itself), and a large amount of skill is derived solely from being with clay for a long, long time. Through those hours I have felt my knowledge of clay expand, both in ways that can be articulated, like the differences between modifying a clay body with RedArt clay versus Iron Oxide, and ways that cannot, such as the pressure and speed at which to make the final pull on a tall cylinder.

Future Directions

There are many future directions that this work could – and will – go in. I had numerous ideas for potential sculptures, pots, games, areas of research, poems, and stories that could spill forth from this experience. One of the most pressing questions

that I'd like to work on is how to effectively communicate to folks the 'findings' of this project and others like it, especially to people involved in environmentalism. There is a fundamental split between dark ecology and mainstream environmentalism in the way that ecology includes not only the relationships between non-human life, but amongst *everything* – human and non-human, alive or not-alive. Dark ecology and its concept of the Mesh are radical departures from bright ecology and mainstream environmentalism. Because of the Modernist rejection of alternative epistemologies, expansions of ecology like dark ecology are often misconstrued as inherently religious, nonscientific, and 'New-Agey,' and therefore naïve and backwards at best. This does not have to be the case, however. The framework of relational philosophy, much like Nurit Bird-David's observation of animism as "relational epistemology," is widely applicable to the various intersections of thought explored in this thesis. Environmentalism seldom considers its deep Modernist roots, and I hope to work on ways of considering the world through both rationalist and relational lenses, in my life and others.

On a more personal note, I am deeply thankful for the affirmation that this project offered on the complexity of life. One of the major reasons why I decided to allow my project to flow between a wide range of disciplines is because that's how my own thoughts and interests move. I'm terrified by the fact that interdisciplinary studies – and lives – are so often repressed or even rejected in society. This project affirmed my belief that deep meaning can be (*must* be, one could argue) derived from the connections and intersections between many modes of inquiry and being. The narrative of 'atomic careers,' in which one must choose a single thing to spend their life doing, has led me to constantly wonder whether I would choose to be an artist, a scholar, an author, a designer, a scientist, or any other number of possibilities. Now I feel a sense of relief that, no matter what, I will bear the experiences and discoveries of all parts of my life into every other. Like how the Pagan Wheel of the Year represents interrelated aspects of the year (Drury, 2009), or the way that yin and yang balance each other in a dynamic

relationality (LeGuin, 1999), so too can I consider each stage of my life a different mode of access into the continuous, cyclical, and deeply entangled life that I am living and world that I am a part of. This affirmation is easily the most significant outcome of the project for me.

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Appendix A: Artist's Statement for Subtle World 1

Subtle World 1 attempts to erode the audience's presuppositions of fact, individuality, agency, and animacy, extending ecological understandings of inter-being beyond their traditional scientific foundations and into an epistemological and ontological framework of reality in general. Subtle World 1 consists of interwoven communities of 32 ceramic pieces in various intuitive and prescriptive arrangements, including a traditional table setting, reflection of the Wiccan Wheel of the Year, the Manifested Bagua, and nonlinear generated board game rules. Subtle World 1 presents opportunities to explore various shifting layers of relationship and identity woven amongst things. It presents no answers, attempting instead to complicate our assumptions and boundaries, allowing questions we have been convinced don't need to be asked to quietly re-emerge. Threaded through these emergent mysteries lies a powerful question: what aspects of reality do we deny when we objectify 'things?'

Appendix B: Images of Subtle World 1



Figure 2. Early Spring (Imbolc)



Figure 3. Spring Equinox (Ostara)



Figure 4. Early Summer (Beltane)



Figure 5. Summer Solstice (Litha)



Figure 6. Early Autumn (Lughnassadh)



Figure 7. Autumn Equinox (Mabon)



Figure 8. Early Winter (Samhain)



Figure 9. Winter Solstice (Yule)



Figure 10. Pitcher

Figure 11. Teapot



Figure 12. Serving Bowl



Figure 13. Platter



Figure 14. Board Game



Figure 15. Candlesticks



Figure 16. Grandma's Vase



Figure 17. Full view of Subtle World 1 from the side. Note the book of rules on the pillar to the right.



Figure 18. Subtle World 1 from one end of the table.

Appendix C: Sample set of 5 generated rules, preceded by general rules and terminology.

Rules for the Games:

Each game is randomly generated. There are many, many possible rulesets, but they all share common terminology and some overarching rules, described here.

In the first section of each ruleset, the players are assigned pieces from the 8 sets: Imbolc; Ostara; Beltane; Litha; Lughnassadh; Mabon, Samhain; and Yule. If assigned a set, you may move pieces of that set, and you may not move pieces of sets you haven't been assigned. In addition, a certain number of Centerpieces are included in the game. These centerpieces may be moved by any player on their turn.

Games consist of alternating turns, starting with whomever is sitting closest to north around the table. A turn consists of a single complete move. In each ruleset, each active piece likely has a different rule for their movement. Interpreting a move rule can be tricky, and is explained later in these General Rules.

Coordinates and cardinal directions appear throughout the rulesets. If possible, it's recommended to play along the axes of geographical North, South, East, and West, aligning each of the four sides of the board to be roughly perpendicular to one of those directions. Otherwise, decide on a correspondence of direction/side and stick with that through all games. The coordinate A1 corresponds to the square in the Northeast corner (if North is a short side) or the Northwest corner (if North is a long side). Letters refer to the shorter side of the board, while numbers refer to the longer side of the board. "Orthogonal" refers to maintaining the same rank or file (in other words, A1 and A2 are orthogonally adjacent, as are A2 and B2), while "diagonal" refers to incrementing both rank and file by 1 or -1 (A1 and B2 are diagonal, as are B2 and A3). [Using chess as an example: Rooks move orthogonally; bishops move diagonally]

Pieces may be stacked on other pieces as follows:

- Plates may be stacked on other plates;
- Bowls may be stacked on plates or other bowls; and
- Cups may be stacked on plates, bowls, or other cups.
- Centerpieces may not stack on other pieces or be stacked on.

Any time any move would end on a space that already has a piece or pieces in it, the piece that is moving attempts to stack on the pieces currently occupying the target square. Any move that would lead to an illegal stack cannot be taken. Each ruleset then specifies how stacked pieces behave. It is always legal for a piece on top of a stack to move off of it.

The next section of the rules are the specific moves allowed for each type of piece. There are several types of move, many of which are self explanatory. One type of move, in which an orientation is first described, may be confusing at first but are easy to decipher with a bit of practice.

- First, a move specifies **orientation** using cardinal directions, as described above.
- The first segment of movement is then described. **Orthogonal** movement is along a straight line in a cardinal direction. **Diagonal** movement is along a diagonal line on either side of a cardinal direction; in other words, diagonal movement facing North proceeds along the Northeast and Northwest axes. In addition, there are three kinds of movement:
 - Sliding moves a piece along the board, and may not move off the edge of the board. While sliding, a piece may not legally move through spaces occupied by other pieces, though they may end on an occupied space if they can legally stack on the occupying pieces.
 - Jumping moves a piece over the board, and may not move off of the edge of the board. While jumping, a piece may move over other pieces.
 - Wrapping moves a piece along the board, but that piece may move off of the edge of the edge of the board, wrapping around to the other side as if the board looped (for example, if a piece wraps off of the North edge of the board, they would continue moving from the South edge of the board.)
- The length of the movement is either a specific number or 'n,' which may be any number.
- Here, some rules include a second segment of a move. This begins with a rotation, and then another length of movement. The rotations are 45°, 90° or °135, and can be performed clockwise or counter-clockwise unless the direction is specified. Note that turning 45° or 135° changes the movement from diagonal to orthogonal and vice-versa. A piece may not stop part way through a movement. Additionally, if the length of the first segment and the second segment are both 'n,' 'n' must stay the same number. For example, if a rule was roughly "this may jump orthogonally n spaces, turn 90°, then jump n more spaces,"

the piece may jump 2 spaces, turn, and jump 2 more spaces, but may not jump 2 space, turn, and jump 4 spaces.

The above notation can describe many different 'shapes' of movement. For example, the following phrasing would describe a Knight's move in chess:

-Oriented north, east, south, or west, this may jump orthogonally 2 spaces, turn 90° counter-clockwise, then jump 1 more space.

Some moves include **effects** on other pieces; these can target pieces you or your opponent(s) control, or a center piece. These are always optional, and follow the same notational standards as described in the segmented moves above. As always, a move may never end with an illegal stack of pieces.

A game is completed when: the specified end goal is achieved; there are no legal moves; or a player forfeits. At this point, the next game's ruleset is decided based on the winning space. The winning space is the space that the most recently active piece ended in. Pieces that were moved as part of an effect aren't consider active, and are therefore not considered when determining the winning space. Once the space is determined, refer to the table at the end of each ruleset, proceeding to the ruleset whose number corresponds to the winning space.

Some of the Centerpieces have special rules:

- The Bowl occupies four spaces in a 2x2 square. Because it may not stack on pieces, it is very difficult to move, as most movement will result in an illegal move. The center of the Bowl is technically on the intersection between the four spaces it occupies, but if a specific space is ever needed (such as for determining the winning space) a player may use any of the four squares the Bowl is occupying. When wrapping around the edge of the board, the Bowl cannot end its move split between multiple sides of the board; it must occupy a 2x2 square of adjacent spaces at the end of any move.
- The Tray occupies two spaces orthogonally. Before moving the Tray, the active player may rotate the Tray 90° clockwise or counter-clockwise if there are no pieces in the square the Tray would pass through, i.e. the square diagonally adjacent to the Tray. Like the Bowl, if a specific square of occupation is needed, such as for the winning space, either of the two spaces the Tray occupies are allowed. Also like the Bowl, the tray may never be split between multiple sides of the board; it must occupy adjacent spaces at the end of any move.

- The Candles are a complementary pair. When moving either one, the active player may choose to move both. If doing so, both must use the same move rule (if the Candles have multiple rules to choose from), but may otherwise differ in specifics.
- The Board Game: A move that is always allowed whether or not the Board Game is in play is to make a *legal* move in the Board Game. The Board Game is a different game than described in these rules (variably called Royals, Kralski Osobi, or Taiyō To Tsuki), and the rules are similar but ultimately quite different like chess and checkers. At any point, if anyone makes a winning move on the Board Game, the current game is complete, and the space that the Board game is occupying is considered the winning space.

When you begin playing, set the pieces out in the following arrangement:

Imb = Imbolc, Ost = Ostara, Lth = Litha, Lgh = Lughnassadh, Mab =
 Mabon, Smh = Samhain, Yul = Yule, and cen = centerpiece

P = plate, b = bowl, and c = cup

Ptc = the Pitcher, Brd = the Board Game, Cnd = the White Candle, Vas =
 the Vase, Tray = the Tray, Bowl = the Bowl, and Tea = the Teapot.

Note that the Tray takes up two spaces and the Bowl (centerpiece) takes up four spaces.

Game 1

Player 0: Samhain, Beltane, Mabon, Litha

Player 1: Ostara, Lughnassadh, Yule, Imbolc

Additionally, the following Center Pieces are in play. Their rules are described after the Set Pieces':

-The Tray

-The Candlesticks

-The Large Bowl

Pieces underneath other pieces may move, bringing pieces on top with them.

Plates

-Oriented east or west, this may wrap orthogonally 4 spaces, turn 90° counter-clockwise, then wrap 1 more space. You may then move an adjacent piece next to another player's piece

Bowls

- -You may switch spaces with an adjacent piece.
- -Oriented east, this may jump orthogonally 1 space. You may then pull a piece n spaces away along a orthogonal to a space adjacent to this piece.

Cups

- -Oriented north, east, south, or west, this may slide orthogonally 2 spaces.
- -Oriented north, east, south, or west, this may slide orthogonally 2 spaces, turn 135°, then slide 2 more spaces.

The Tray

-Oriented north, this may jump orthogonally 2 spaces.

The Candlesticks

-Oriented north, east, south, or west, this may wrap orthogonally 4 spaces.

The Large Bowl

-Oriented north, east, south, or west, this may slide orthogonally 1 space.

This game ends when spaces B6, A13, E13, E1, B1, and D4 are occupied by a single player's pieces, when a player forfeits, or when one player cannot make any legal moves. When this game ends, refer to the following table to determine the next game:

	1 •	۷.	٥.	4.	э.	0.	/ •	8.	9.	10.	11.	12.	13.
Α	4	2	3	5	4	4	2	3	2	5	2	5	1

B 3 5 4 5 1 5 5 5 5 5 5 5

С	5	1	1	1	1	3	5	1	3	5	2	3	1
D	2	2	5	1	3	3	5	4	3	1	1	2	2
F:	4	2	1	4	3	4	5	2	1	4	2	1	4

Game 2

Player 0: Litha, Mabon, Beltane, Lughnassadh

Player 1: Samhain, Yule, Imbolc, Ostara

Additionally, the following Center Pieces are in play. Their rules are described after the Set Pieces':

- -The Pitcher
- -The Candlesticks
- -The Large Bowl

During this game, all pieces may slide, jump, and push off of the corner spaces (A1, E1, A13, and E13), wrapping to the opposite edge (or edges) and continuing movement if applicable.

Pieces underneath other pieces may not move.

Plates

-Oriented east or west, this may jump diagonally 1 space. Bowls

- -You may switch spaces with an adjacent piece.
- -You may slide this piece to any free space around an adjacent piece. Cups
- -You may slide this piece to any free space around an adjacent piece.

The Pitcher

-Oriented north, this may slide diagonally 3 spaces.

The Candlesticks

-Oriented north, east, south, or west, this may wrap orthogonally 3 spaces.

The Large Bowl

-Oriented north, this may wrap diagonally 3 spaces.

This game ends when spaces A9, E6, and B12 are occupied by centerpieces, when a player forfeits, or when one player cannot make any legal moves. When this game ends, refer to the following table to determine the next game:

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Α	3	5	2	3	3	4	4	3	5	1	3	5	1
В	5	4	5	2	1	4	1	5	2	4	4	3	5
C	2	3	1	4	4	2	2	5	4	2	2	1	1

D	1	3	5	2	5	5	4	2	3	4	3	2	5
E	5	1	3	3	2	2	4	1	1	5	Δ	4	5

Game 3

Player 0: Samhain, Imbolc, Ostara, Lughnassadh

Player 1: Beltane, Yule, Mabon, Litha

Additionally, the following Center Pieces are in play. Their rules are described after the Set Pieces':

-The Large Bowl

-The Teapot

Pieces underneath other pieces may move out from under other pieces.

Plates

- -Oriented north, this may slide orthogonally 4 spaces.
- -You may then move a neighboring piece to any black square..

Bowls

-You may switch spaces with an adjacent piece.

Cups

-You may push a diagonally adjacent piece 1 space directly away from this piece..

The Large Bowl

-Oriented east, this may wrap orthogonally 2 spaces.

The Teapot

-Oriented north, east, south, or west, this may slide orthogonally 1 space, turn 90°, then slide 2 more spaces.

This game ends when at least 2 pieces are stacked (including 2 cups) on a single square, when a player forfeits, or when one player cannot make any legal moves. When this game ends, refer to the following table to determine the next game:

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Α	5	5	4	2	4	2	2	2	4	2	1	1	2
В	2	5	4	5	1	3	3	5	4	3	1	3	3
С	2	2	5	1	1	4	2	1	3	4	5	4	3
D	5	4	4	2	1	2	2	1	2	1	1	2	3
E	2	4	1	5	3	1	5	3	1	1	5	4	2

Game 4

Player 0: Ostara, Lughnassadh, Litha, Beltane

Player 1: Mabon, Yule, Samhain, Imbolc

Additionally, the following Center Pieces are in play. Their rules are described after the Set Pieces':

- -The Pitcher
- -The Tray
- -The Vase

Pieces underneath other pieces may move out from under other pieces.

Plates

-Oriented east, this may wrap diagonally 1 space.

Bowls

-Oriented north or south, this may slide orthogonally 1 space, turn 45°, then slide n more spaces. You may then push a diagonally neighboring piece 1 space away diagonally.

Cups

- -Oriented north, east, south, or west, this may wrap orthogonally 3 spaces, turn 135° counter-clockwise, then wrap n more spaces.
- -Oriented east or west, this may jump orthogonally 2 spaces, turn 135° , then jump 2 more spaces.

The Pitcher

- -You may slide this piece to any free space around an adjacent piece. The Tray
- -Oriented north, this may slide orthogonally 3 spaces, turn 45° clockwise, then slide n more spaces.

The Vase

-You may switch spaces with an adjacent piece.

This game ends when spaces C7, D13, B10, B6, C1, and E12 are occupied by any player's pieces, when a player forfeits, or when one player cannot make any legal moves. When this game ends, refer to the following table to determine the next game:

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Α	4	5	1	2	5	5	3	5	3	1	5	4	2
В	4	1	5	3	3	1	3	3	4	2	5	3	4
С	2	3	4	1	2	4	2	2	4	5	2	5	4
D	5	4	4	5	1	1	1	1	3	1	5	1	3
E	5	5	2	1	3	4	2	2	3	5	3	3	3

Game 5

Player 0: Litha, Lughnassadh, Yule, Imbolc

Player 1: Beltane, Ostara, Mabon, Samhain

Additionally, the following Center Pieces are in play. Their rules are described after the Set Pieces':

-The Large Bowl

-The Candlesticks

-The Teapot

Pieces underneath other pieces may not move.

Plates

-You may jump this piece to the opposite side of an adjacent piece.

-Oriented east or west, this may jump diagonally 3 spaces, turn 45° , then jump 2 more spaces.

Cups

-Oriented north, east, south, or west, this may jump orthogonally n spaces. You may then push an orthogonally neighboring piece 3 spaces away orthogonally.

-Oriented east or west, this may slide orthogonally 1 space.

The Large Bowl

-Oriented north, east, south, or west, this may slide diagonally 2 spaces.

The Candlesticks

-You may switch spaces with an adjacent piece.

The Teapot

-Oriented west, this may slide diagonally 3 spaces.

This game ends when spaces D6, A12, E12, and A13 are occupied by any pieces, when a player forfeits, or when one player cannot make any legal moves. When this game ends, refer to the following table to determine the next game:

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Α	5	4	1	2	3	4	2	2	3	1	2	5	1
В	4	2	5	4	3	2	1	1	3	5	5	1	3
C	1	2	5	5	5	4	5	4	1	2	3	5	1
D	5	2	1	4	4	4	3	2	5	2	2	2	4
E	2	5	2	5	4	3	4	1	4	3	2	4	2

Appendix D: Rule Generation Script (written in Python)

```
##Globals
import random
centerPieceIDs = ["Candlesticks", "Large Bowl", "Tray", "Vase", "Teapot", "Pitcher"]
setPiecesIDs = ["Imbolc", "Ostara", "Beltane", "Litha", "Lughnassadh", "Mabon", "Samhain",
         "Yule"]
numPlayers = 2
##Classes
# MoveArch is used as a template to pull from during generation. It's sort of unnecessary, but I
         think it's good to have.
class GenRuleArch:
    stackingPoss = ["may not move.", "may move out from under other pieces.",
                     "may move, bringing pieces on top with them."]
    numCenterPieces = 0
    qameEndings = ["spaces", "stack", "spaces", "stack", "unstack"]
    wraps = ["North edge of the board", "South edge of the board",
             "East edge of the board", "West edge of the board",
             "corner spaces (A1, E1, A13, and E13)", "center spaces (A7, C1, C13, and E7)"]
class MoveArch:
    moveCategories = ["basic", "basic", "basic", "neighbor"]
    # Orientation
    # Note on orientation convention - 'noon' is 0, goes clockwise to 7 on each 45 degree
          increment.
    orientations = ['north', 'east', 'south', 'west']
    oriSets = [[0, 2], [1, 3], [0, 2], [1, 3], [0], [1], [2], [3], [0, 1, 2, 3], [0, 1, 2, 3],
          [0, 1, 2, 3]]
    possibleSegments = [1, 1, 2]
    rotation = ["45º", "90º", "135º", "45º", "90º", "135º", "45º", "90º", "135º", "45º
         clockwise", "90º clockwise",
                 "135º clockwise", "45º counter-clockwise", "90º counter-clockwise", "135º
          counter-clockwise"]
    directions = ["diagonally", "orthogonally"]
    # Magnitude -- might replace the values with a binary growth calculator. This works well
    magnitudes = ["1", "1", "1", "2", "2", "2", "3", "3", "4", "n"]
    moveType = ["slide", "slide", "jump", "jump", "wrap"]
    # Outcome -- extra things, like moving other pieces, stacking, etc.
    outcomeEffect = [False, False, False, False, True]
    outcomePart1 = ["pull", "push", "teleport"]
    outcomeStackConditional = ["stackNeighbor"]
    outcomeMags = ["1", "1", "1", "2", "3", "n"]
    teleportOptions = ["to the center space",
                        "to a corner space",
                        "to this piece's original space",
                        "next to another player's piece",
                        "next to a piece of yours",
                        "to any empty space",
                        "to any black square"
                        "to any white square",
```

```
"to any square",
                       "random"]
    neighborOptions = ["jump this piece to the opposite side of",
                        "switch spaces with",
                       "slide this piece to any free space around",
                        "effect"]
#This is also pretty unnecessary for what I'm doing here... I don't really need to construct an
         object.
class MoveArray:
    def __init__(self):
        self.orientations = []
        self.moveCategory = "'
        self.movementType = ""
    class Move:
        def __init__(self):
            self.direction = ""
            self.magnitude1 = ""
            self.segments = 1
            self.rotation = ""
            self.magnitude2 = ""
    class Outcome:
        def __init__(self):
            self.hasEffect = False
            self.effect = ""
##Utilities
# basically a die roller. min/max are inclusive
def roller(min, max, quant):
    if quant < 1: quant = 1</pre>
    x = 0
   y = 0
   while x < quant:</pre>
        y += random.randrange(min, max + 1)
        x += 1
    return y
def write(file, string):
    if debug: print(string)
    file.write(string)
# for returning pretty spaces.
def pluralizeSpaces(num):
    num = str(num)
    if num == "1":
        return num + " space"
        return num + " spaces"
def randomCoord():
    return random.choice(["A", "B", "C", "D", "E"]) + str(random.randrange(1, 14))
def randomCoords(mirrored, num):
    coords = []
    if mirrored:
```

```
if num not in [2, 4]: num = random.choice([2, 4])
        coords.append(randomCoord())
        # if center, breaks here
        if coords[0] != "C7":
            \# if single mirror across the center
            if num == 2:
                coords.append(SwapAlph(coords[0][0]) + str(14 - (int(coords[0][1]))))
            # if 4-way mirror around the center
            else:
                coords.append(SwapAlph(coords[0][0]) + str(14 - (int(coords[0][1]))))
                coords.append(coords[0][0] + str(14 - (int(coords[0][1]))))
                coords.append(SwapAlph(coords[0][0]) + coords[0][1])
   # if just random
   else:
        i = 0
        while i < num:
            coords.append(randomCoord())
            i += 1
    return coords
def SwapAlph(letter):
    if letter == "A": return "E"
    if letter == "B": return "D"
   if letter == "C": return "C"
   if letter == "D": return "B"
   if letter == "E": return "A"
def BinaryGrowth(t):
   b = roller(0,1,1)
   if b == 1 :
       t += 1
        t = BinaryGrowth(t)
   return t
##Functions
# used to actually create the array of moves from the moveArchitecture blocks.
def createPattern():
   pattArray = MoveArray()
   pattArray.Move = MoveArray.Move()
   pattArray.Outcome = MoveArray.Outcome()
   pattArray.moveCategory = random.choice(MoveArch.moveCategories)
   if pattArray.moveCategory == "basic":
       pattArray.orientations = random.choice(MoveArch.oriSets)
       x = 0
       ors = ''
       1 = len(pattArray.orientations)
        if 1 == 1:
            ors = MoveArch.orientations[pattArray.orientations[0]]
        elif 1 == 2:
            ors = MoveArch.orientations[pattArray.orientations[0]] + " or " +
         MoveArch.orientations[
                pattArray.orientations[1]]
        else:
            for i in pattArray.orientations:
                if x == 1 - 1:
                    ors += ", or " + MoveArch.orientations[i]
```

```
elif x == 0:
               ors += MoveArch.orientations[i]
               ors += ", " + MoveArch.orientations[i]
           x += 1
   pattArray.orientations = ors
   pattArray.Move.direction = random.choice(MoveArch.directions)
   pattArray.Move.magnitude1 = random.choice(MoveArch.magnitudes)
   pattArray.Move.segments = random.choice(MoveArch.possibleSegments)
   if pattArray.Move.segments == 2:
       pattArray.Move.rotation = random.choice(MoveArch.rotation)
       pattArray.Move.magnitude2 = random.choice(MoveArch.magnitudes)
   pattArray.movementType = random.choice(MoveArch.moveType)
   # This constructs an effect. Sorta. Really just chooses one.
   pattArray.Outcome.hasEffect = random.choice(MoveArch.outcomeEffect)
   if pattArray.Outcome.hasEffect:
       pattArray.Outcome.effect = random.choice(MoveArch.outcomePart1)
       # if the effect is to pull a piece to a space next to you.
       if pattArray.Outcome.effect == "pull":
           pattArray.Outcome.effect = "You may then pull a piece " + pluralizeSpaces(
               random.choice(MoveArch.outcomeMags)) + " away along a " + random.choice(
                ["diagonal", "orthogonal"]) + " to a space adjacent to this piece."
       # if the effect is to push a neighboring piece.
       elif pattArray.Outcome.effect == "push":
            pattArray.Outcome.effect = "You may then push a" + random.choice(
                [" diagonally", "n orthogonally"]) + " neighboring piece " + pluralizeSpaces(
               random.choice(MoveArch.outcomeMags)) + " away " +
     random.choice(["orthogonally.", "diagonally."])
       # If the effect is to teleport a neighboring piece.
       elif pattArray.Outcome.effect == "teleport":
            pattArray.Outcome.effect = "You may then move an adjacent piece " +
     str(teleport())
if pattArray.moveCategory == "neighbor":
   pattArray.Move.magnitude1 = random.choice(MoveArch.neighborOptions)
   if pattArray.Move.magnitude1 == "effect":
       pattArray.Outcome.effect = random.choice(MoveArch.outcomePart1)
       # if the effect is to pull a piece to a space next to you.
       if pattArray.Outcome.effect == "pull":
           pattArray.Outcome.effect = "You may pull a piece " + random.choice(
               ["2 spaces", "3 spaces", "4 spaces", "n spaces"]) + " away along " +
     random.choice(
               ["a diagonal", "an orthogonal"]) + " to the space adjacent to this piece."
       # if the effect is to push a neighboring piece.
       elif pattArray.Outcome.effect == "push":
            pattArray.Outcome.effect = "You may push a" + random.choice(
                [" diagonally", "n orthogonally"]) + " adjacent piece " + pluralizeSpaces(
               random.choice(MoveArch.outcomeMags)) + " directly away from this piece."
       # If the effect is to teleport a neighboring piece.
       elif pattArray.Outcome.effect == "teleport":
            pattArray.Outcome.effect = "You may then move a neighboring piece " +
     str(teleport() + ".")
```

return pattArray

```
def teleport():
    tel = random.choice(MoveArch.teleportOptions)
    if tel == "random":
        mirror = random.choice([False, False, True])
        tel = "to the square"
        coords = randomCoords(mirror, random.randrange(1, 5))
        1 = len(coords)
        if l != 1:
            tel += "s "
        else:
            tel += " "
        i = 0
        while i < 1:
            if i != 0: tel += ", "
            if i == 1 - 1: tel += "and "
            tel += str(coords[i])
            i += 1
    return tel
def makeWrapRules():
    wrap = ""
    1 = roller(0,3,3)
        wrap = "During this game, all pieces may slide, jump, and push off of the " +
         random.choice(GenRuleArch.wraps)
        if 1 == 9:
            wrap += " in a" + random.choice(["n orthogonal", " diagonal"]) + " direction"
        wrap += ", wrapping to the opposite edge (or edges) and continuing movement if
         applicable."
    return wrap + "\n"
def makeEnding():
    ending = '
    type = random.choice(GenRuleArch.gameEndings)
    if type == GenRuleArch.gameEndings[0]:
        ending = makeSpacesEnding()
    elif type == GenRuleArch.gameEndings[1]:
        ending = makeStackEnding()
        ending = "This game ends when all pieces are unstacked"
    return ending
def makeSpacesEnding():
    ending = "This game ends when space"
    storage = []
   targNumEndSpaces = roller(1, 3, 1) + roller(1, 3, 1)
    i = 0
   while i < targNumEndSpaces:</pre>
        mirror = random.choice(MoveArch.outcomeEffect)
        if mirror and 4 >= targNumEndSpaces - i > 2:
            t = 0
            for r in randomCoords(True, 4):
                if r not in storage:
```

```
storage.append(r)
                    t += 1
            i += t
        elif mirror and targNumEndSpaces - i == 2:
            t = 0
            for r in randomCoords(True, 2):
                if r not in storage:
                    storage.append(r)
                    t += 1
            i += t
        else:
            t = 0
            for r in randomCoords(False, roller(1, 3, 1)):
                if r not in storage:
                    storage.append(r)
                    t += 1
            i += t
   if len(storage) != 1: ending += "s "
   i = 0
   for stored in storage:
        if i == len(storage) - 1:
            ending += "and "
        ending += stored
        if i != len(storage) - 1:
            ending += ",
        i += 1
    ending += " are occupied by " + random.choice(
        ["a single player's pieces", "any pieces", "centerpieces", "any player's pieces"])
   return ending
def makeStackEnding():
   ending = "This game ends when at least "
   #determines the size of the intended stack.
   stackSize = BinaryGrowth(2)
   ending += str(stackSize) + " pieces are stacked"
   #This next section of code is a real mess...but it works.
   includingSpecs = random.choice([False, True])
   if includingSpecs:
        ending += " (including "
        #target number of piece to include in these special requirements
        t = roller(1,stackSize,1)
        arr = ["cup", "plate", "bowl"]
        #chooses some random pieces, can def be duplicates, adds a value to a little num array.
        i = 0
        pNum = [0, 0, 0]
        while i < t:
            pNum[random.randrange(0,3)] += 1
        #makes an array that holds the sentence fragments. If there's anything to add for
          a certain type of piece, it adds that string to the new array, w pluralization.
        stringArray = []
        i = 0
        while i < 3:
           hold = ""
            if pNum[i] != 0:
                hold += str(pNum[i]) + " " + arr[i]
```

```
if pNum[i] > 1:
               hold += "s"
           if hold != "":
               stringArray.append(hold)
           i += 1
       #sets c, which is how many elements are in this array, and then puts them together
        grammatically correctly.
       c = len(stringArray)
       i = 0
       if c == 1:
           ending += stringArray[0]
       elif c == 2:
           ending += stringArray[0] + " and " + stringArray[1]
       else:
           while i < c:
               if i == c - 1:
                   ending += ", and "
               elif i != 0:
                  ending += ", "
               ending += stringArray[i]
               i += 1
       ending += ")"
   inSpace = random.choice([False, False, False, True])
       ending += " on the square " + randomCoord()
   else: ending += " on a single square"
   return ending
def makeNextGrid():
   nextGrid = " 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.\n"
   i = 0
   while i < 5:
       nextGrid += ["A", "B", "C", "D", "E"][i] + " "
       j = 0
       while j < 13:
           s = str(roller(1, targetNumGames, 1))
           if j == 12:
               nextGrid += "\n"
           j += 1
       i += 1
   return nextGrid
# unwraps a pattArray (which is of type MoveArray) into a string.
def unwrapPattern(pattArray):
   unwrapped = ""
    # if the move is a normal segmented structure
   if pattArray.moveCategory == "basic":
       unwrapped = "Oriented " + pattArray.orientations + ", this may " + pattArray.movementType
                   pattArray.Move.direction + " " + pluralizeSpaces(pattArray.Move.magnitude1)
       if pattArray.Move.segments == 2:
           unwrapped += ", turn " + pattArray.Move.rotation + ", then " + pattArray.movementType
        + " " + pattArray.Move.magnitude2 + " more space"
           if pattArray.Move.magnitude2 != "1": unwrapped += "s"
```

```
unwrapped += ". "
        if pattArray.Outcome.hasEffect:
            unwrapped += pattArray.Outcome.effect
    # if the move is related to neighbors
    elif pattArray.moveCategory == "neighbor":
        if pattArray.Move.magnitude1 == "effect":
            unwrapped = pattArray.Outcome.effect + "."
        else:
            unwrapped = "You may " + pattArray.Move.magnitudel + " an adjacent piece."
    return unwrapped + "\n"
def unwrapPiecesAssignment():
    unwrapped = ""
    partwrapped = []
    i = 0
    while i < numPlayers:</pre>
        partwrapped.append(["Player " + str(i) + ": "])
    i = 0
    # Round Robin assignment
   while i < 8:
        partwrapped[i % numPlayers].append(setPiecesIDs[i])
        i += 1
    for part in partwrapped:
        unwrapped += part[0]
        i = 1
        while i < len(part):
            unwrapped += part[i]
            if i != len(part) - 1:
                unwrapped += ", "
                unwrapped += "\n"
            i += 1
    return unwrapped
def unwrapCenterPiecesInPlay(targNumCenter):
    unwrapped = "Additionally, the following Center Pieces are in play. Their rules are described
        after the Set Pieces':\n"
    i = 0
    while i < targNumCenter:</pre>
        unwrapped += " -The " + centerPieceIDs[i] + "\n"
        i += 1
    return unwrapped
### Main Program
# Sets up the main file
fileName = input("What would you like the name of the output to be? ")
targetNumGames = int(input("How many games would you like to generate? "))
debug = bool(input("Would you like to debug? (True/False)"))
newFile = open(fileName, "w")
newFile = open(fileName, "a")
# Loop for num of games needed.
g = 0
while g < targetNumGames:</pre>
    write(newFile, "-----\nGame " + str(g + 1) + "\n----\n\n")
```

```
# What pieces are controlled by whom:
random.shuffle(setPiecesIDs)
assignments = unwrapPiecesAssignment()
write(newFile, assignments)
# What centerpieces are in play:
random.shuffle(centerPieceIDs)
targetNumCenter = roller(0, 2, 1) + roller(1, 2, 1)
write(newFile, unwrapCenterPiecesInPlay(targetNumCenter) + "\n")
# Writes the rules for wrapping.
write(newFile, makeWrapRules())
# Writes the general stacking movement rules
write(newFile, "Pieces underneath other pieces " + random.choice(GenRuleArch.stackingPoss) +
      "\n\n")
# sets up this array
setPiecesArray = [["Plates", []], ["Bowls", []], ["Cups", []]]
# makes rules for the 3 types of pieces.
p = 0
while p < 3:
    targRuleNum = 1
    targRuleRand = random.randrange(0, 100)
    if targRuleRand < 65:</pre>
        targRuleNum = 1
    elif targRuleRand < 90:
        targRuleNum = 2
    else:
        targRuleRand = 3
    i = 0
    while i < targRuleNum:</pre>
        setPiecesArray[p][1].append(createPattern())
        i += 1
    # debugging, writing to the file.
    write(newFile, setPiecesArray[p][0] + "\n")
    for move in setPiecesArray[p][1]:
        write(newFile, " -" + unwrapPattern(move))
    p += 1
# makes/writes the rules of the centerpieces.
write(newFile, "\n^n)
while i < targetNumCenter:</pre>
    write(newFile, "The " + centerPieceIDs[i] + "\n -" + unwrapPattern(createPattern()))
# How does the game end?
 \mbox{write(newFile, "\n\n" + makeEnding() + ", when a player forfeits, or when one player cannot } \\
     make any legal moves. ")
# makes the "next game" reference board:
write(newFile, "When this game ends, refer to the following table to determine the next game:
write(newFile, makeNextGrid())
write(newFile, "\n\n\n")
g += 1
```