DIEGETIC ARTIFACTS:
Exploring the relationship between speculative fiction
and its objects

by

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Diegetic Artifacts: artifacts from design fiction; fictional prototypes that exist in the social sphere of a narrative's structure

Abstract

Discursive practice enables the critical examination of future potentials highlighting explicit and implicit scenarios reflecting history(ies) and social and cultural constructs.

Within this discourse, the functionality of an object and its material agency in relationship to the environment and technology, elicits a meaningful exploration of the lived experience.

This thesis draws upon these components and presents a contextual approach and methodology that considers the way in which diegetic artifacts and their relevance can be considered.

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And finally, I would like to dedicate this to Rajalakshmi Narayanan, my grandmother who embodied the virtues of selflessness and humility. Her love and compassion will always be a beacon of light.

Table of Contents

Designer Statement

I am a practice-based designer, educator, and musician originally from Vancouver, Canada. I reside and work on the traditional, ancestral, and unceded territory of the Musqueam, Tsleil-Waatuth, and Squamish first nations. I offer gratitude to the First Nations for their stewardship of the land and to honor their care and teachings.

I have worked in academic institutions supporting Art & Design for over a decade, teaching digital fabrication and woodworking. The skills and techniques that I've acquired and developed form the foundation of my practice. I have cultivated a practice that investigates the intersection of digital design components with more traditional craft-based methods. It is constantly expanding and informs nearly every aspect of my design practice. As we collectively move into a society that is built on/around information, it is crucial to find agency and competency in the manual act of making and fixing. The ethic of craftmanship relies on a deep level of reflection towards material, purpose, and meaning.

I am currently a Master of Design candidate and Teaching Fellow at Emily Carr University of Art & Design. My practice explores, and is supported, by philosophical/theoretical underpinnings found in Object Oriented Ontology (OOO) and Material Engagement Theory (MET). It witnesses the human-world-object relationship through a discursive lens, in order to design artifacts that engender elevated discourse. I employ a speculative approach to predict "what if" scenarios that aim to weave narratives that are considerate of human relations, interactions, aspirations and dreams. Through the development of speculative fiction and diegetic artifacts, my design practice aims to navigate sociocultural, technological, and biological landscapes by provoking discussion through design potential.

Introduction

Design employs a four-field framework that considers various agendas: commercial, responsible, experimental, and discursive. A discursive design agenda "refers to the creation of utilitarian artifacts whose primary purpose is communicative. They are a form of discourse whereby the artifacts are understood to be deliberately embedded with, positioned as, or engendering discourse. They encourage reflection and also often aim to initiate subsequent debate" (Tharp and Tharp 51). This approach considers intentions over outcomes and is heavily affected by context.

Discursive design is tasked with conveying or communicating ideas. It creates discourse and reflection in order to provide an intellectual service. It's composed of other distinctive yet related tracks such as speculative design, critical design, design fiction, interrogative design, and adversarial design. It challenges many areas of traditional design such as: functionalism, formalism, commercialism, individualism, rationalism, positivism, realism, and ethnocentrism. My practice is located at the intersection of design fiction and speculative design with an emphasis on the relationship between diegetic artifacts and narrative construction. (See figure 1)

My practice considers futures through the development of narrative. It relies on the utilization of the imaginative to construct fiction. It then focuses on the design and production of the artifacts from that narrative, which is supported by a practice built around making and material engagement. These artifacts, combined with the speculative fiction, provide a springboard for the discourse.

The discourse is generated by the content of the narrative, which is embedded with issues that

Figure 1 (Tharp & Tharp 85)

DISCURSIVE DESIGN

SPECULATIVE DESIGN

DESIGN FICTION

MY PRACTICE
(DIEGETIC ARTIFACTS + NARRATIVE CONSTRUCTION)
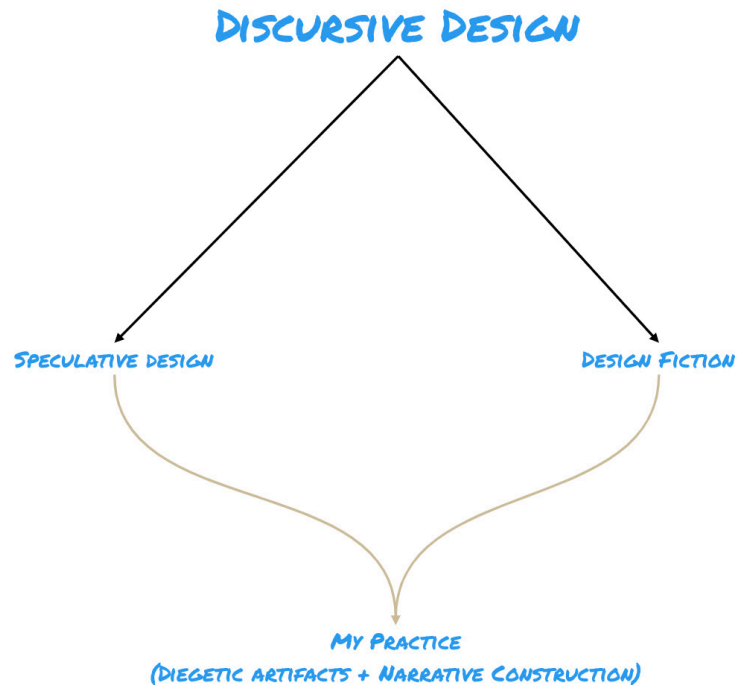
are relevant to the present and uses them to examine the future. These issues include ecological, social, and cultural constructs. The narrative is a reflection of a present-day society and its reluctance to prioritize these concerns. The result is a future in which specific types of artifacts must be designed to mitigate the overall environmental and social consequences that have evolved into normalized everyday life.

My intention is to elicit discourse through a type of provocation that is engendered within the narrative and is enhanced by direct interaction with its artifacts. It provides the type of immersive experience that is often necessary to propagate or promote real/actual change.

It is important to distinguish between diegetic artifacts and diegetic prototypes. Cinematic narratives and its real-world technologies are enhanced through diegetic prototypes. This can often lead to new technology and service innovation. However, diegetic prototypes exist within a testing phase and while they serve as a type of design artifact, their primary purpose is to generate feedback. It is through the feedback and subsequent refinement that an object ceases to be a prototype and is instead an artifact. The diegetic artifact demonstrates the type of modifications not found in a natural object, and a finality of existence which is not found in a prototype.

Artifacts are manmade artificial objects. They can be unique, handmade and human powered. They can also be machined for precision, powered by non-human sources, and integrated with mechanical components.

In discursive design, the artifact is deployed to lead the audience towards specific frames of thought. Scenarios are designed and constructed in a manner which is conducive towards audience relatability such that their own experiences correlate to a designed object. An implicit scenario occurs when an artifact stands alone without any explanation. The artifact evokes the scenario. An explicit scenario occurs when a scenario drives itself. The scenario evokes the artifact. (See Figure 2)

Figure 2 (Tharp & Tharp 220)

ARTIFACT-LED

artifacts⟶scenario⟶world⟶discourse

SCENARIO-LED

scenario⟶(+ artifacts)⟶world⟶discourse

ARTIFACT-SCENARIO ALLIANCE

(artifacts + scenario)⟶world⟶discourse

Within these scenarios, we must consider the three types of artifacts that can be deployed: principal, depictive, and explanatory. Principal artifacts are usually diegetic and are central to the scenario. Depictive artifacts exist outside the scenario, and are often visual props or imagery that show what is going on directly to an audience. Explanatory artifacts exist outside the scenario and are typically used to provide information about the principal artifact and the scenario.

Artifacts can be supportive, they can assume the lead role, and they can act independently. They can exist as narrative and/or as physical objects. The diegetic artifact is the culmination of human existence and experience. In essence, a speculative approach is used to predict futures and solutions. While this use of speculation stems from the consequence of humanism that privileges our existence, the use of speculative realism supports creative ways for envisioning futures. It "provides the best means for creative work to be done, and it provides genuine excitement to think that there are new argumentative realms to explore" (Bogust 132).

Approach

The interplay or syncopation of human-world-object relationships is a foundational component within my research investigation. The "thinginess" of an object; its phenomenology; and its genesis and evolution.

In a capitalist society, consumerism drives most object design. Its technological advancement and its aesthetic qualities are a direct reflection of the contemporary trends and sensibilities. Objects service those requirements while proliferating a demand for refinement. This often comes at the expense of non-human entities due to a privileging of human interests or indifference towards outlying considerations.

A more philosophical examination into the nature of the object requires a more abstract frame of mind. There's a duality in object functionality "-to be put into use and to be possessed" (Baudrillard 91). The first involves an objects' mediated action satisfying an intended purpose. The second involves possession.

When an objects' functionality is to be possessed, it becomes subjective. It becomes part of a collection. The object is systemized and becomes abstracted from its function forging a new relationship with its subject. It now embodies new meanings beyond the original intentions

The abstracted form of function leads to further examination. This is where my approach considers **Object Oriented Ontology (OOO)**. OOO posits that "objects-whether real, fictional, natural, artificial, human, or non-human-are mutually autonomous and enter into relation only in special cases that need to be explained rather than assumed" (Harmon 12). It also suggests that the tense relationship between an object and its properties leads to all of the change that occurs in this world. OOO breaks down objects into two kinds: real and sensual. Real objects exist regardless of whether or not they affect anything. Sensual objects exist in relation to real objects. Real objects can not directly relate to another real objects but rather indirectly through sensual objects. (See figure 3)

Figure 3 The Quadruple Object (Harmon 80)
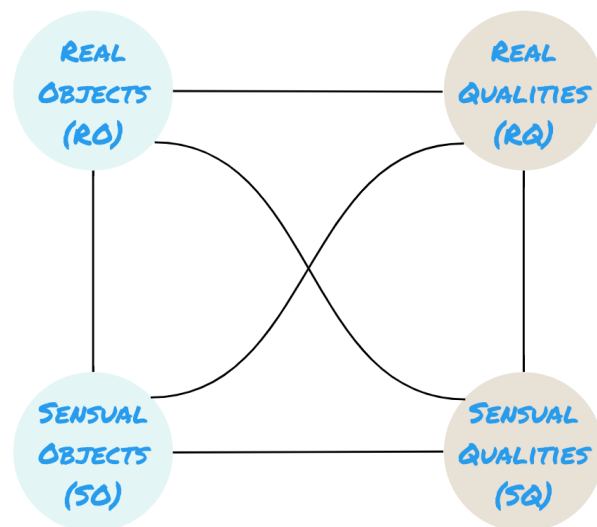
There are two kinds of objects and two kinds of qualities: real and sensual, in both cases. Real objects and qualities exist in their own right, while sensual objects and qualities exist only as the correlate of some real object, whether human or otherwise. Since objects cannot exist without qualities and vice versa, there are only four possible combinations, indicated by the four lines between the circles above.

There are five principals found within OOO: flat ontology, anti-mining, fracture in things, aesthetics as first philosophy, and objects which act because they exist. Their contributions to my research approach vary in significance but do warrant distinction within the philosophical context.

Flat ontology encompasses past and present without dividing into a taxonomic classification. By casting a wide net around everything, there is a certain level of consistency and equity.

The literalist notion that an object is "the sum of its qualities or effects" (Harmon 257), or both, is rejected when applying the principal of anti-mining. This is especially true in my practice, in which my curiosity observes the abstracted form of function.

Both the object/qualities rift and aesthetics as first, are personified here (see figure 3). These two principals also locate themselves in a far more prominent position in my research by considering more aesthetic conventions in the design process.

This last principal reinforces the discursive nature of how I view and practice design. To provoke discourse, an object must manifest a more communicative message, therefore never privileging human interests above others. To reiterate, artifacts are artificial objects that are man-made. They occupy both the techno-cultural space of machines and the individual (or independent) pursuit of intention through craft.

Beyond the philosophical context of OOO, the nature of objects and artifacts owe some degree of their existence to material agency. My design approach utilizes **Material Engagement Theory (MET)** to enhance that position. MET provides a unique way to think about the relation between cognition, affect and materiality, or the co-constitution of people and things. It is the relationship between cognition and material culture, posing major challenges for philosophy, cognitive science, archaeology, and anthropology.
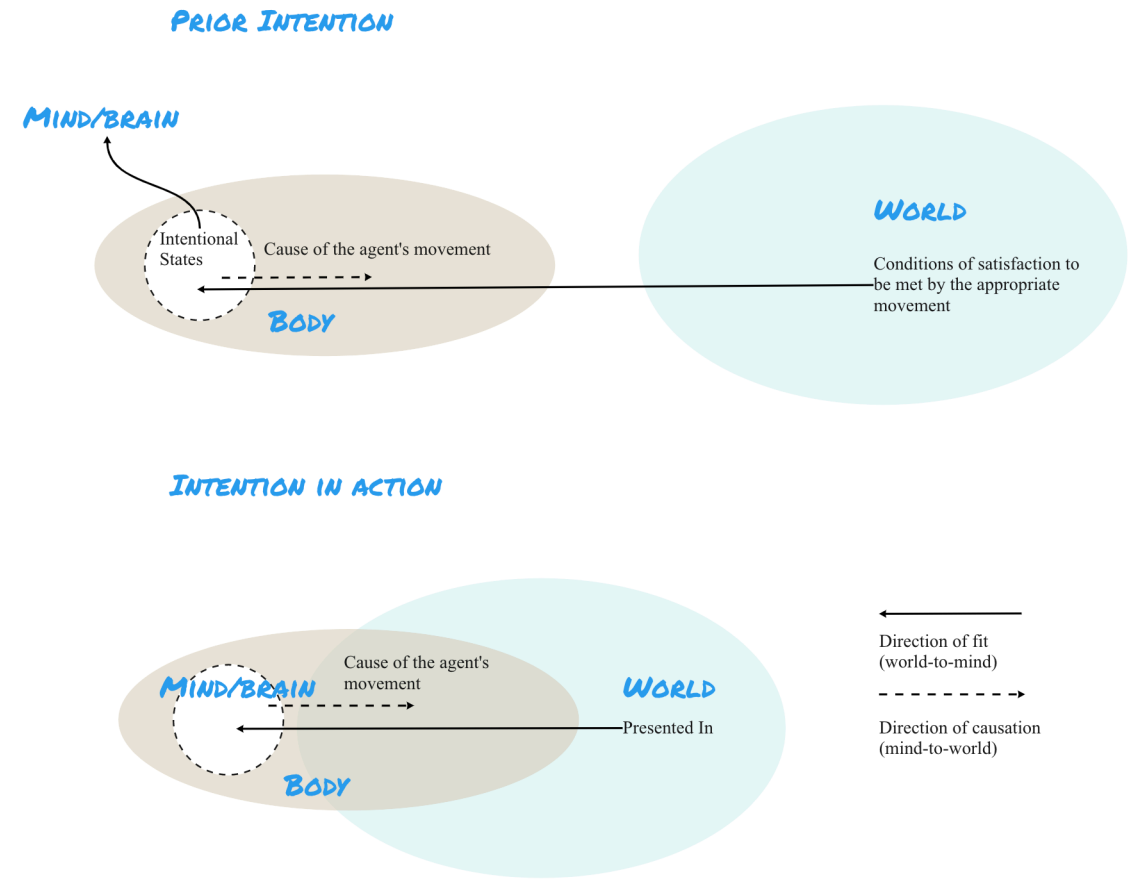
What is creative material agency is and how does it exist? Is it found in the object? Is it manifested through action? Can true agency emerge within mediated action?

It is overwhelming at times to try and decipher the implications of these questions and therefore it is preferable to consider material things as agents. However, to consider them as active within a manner of objects or in a manner of people, leads to inconsistency and creates pitfalls. There is a link between intentionality and agency which I refer to as "prior intention and intention in action" (Malfouris and Renfrew 137). (See figure 4)

In order apply MET into my approach, I rely heavily on the interaction between materiality and craft/technique. The act of making is a crucial step in my design process. In the same way OOO considers a philosophical context, MET employs a practical one. MET is evident both as intention in action and prior intention in my work. Quite often, I must engage intention in action before any prior intention can reveal itself.

I explore material agency and intention through making and fabrication. The intentions and agency contribute and transform the creative practice. They are then re characterized into an embodied artifact with the potential to elevate, change, or provokes discourse.

Figure 4 (Malfouris and Renfrew 137)

PRIOR INTENTION

MIND/BRAIN

Intentional States

Cause of the agent's movement

BODY

WORLD

Conditions of satisfaction to be met by the appropriate movement

INTENTION IN ACTION

MIND/BRAIN

Cause of the agent's movement

BODY

WORLD

Presented In

Direction of fit (world-to-mind)

Direction of causation (mind-to-world)

In my research, Narrative Theory serves as the framework to synthesize the philosophical, theoretical, and practical contexts into something fluid and dynamic. The narrative is made up of 2 aspects: "1) the events, the actions, the agents, and the objects that make up the stuff of a given narrative and 2) the shape that those events, actions, agents, and objects take when they are selected, arranged, and represented in one or another medium" (Puckett 2). (See figure 5)

Figure 5 (A Hero's Journey, Joseph Campbell)

Science Fiction is the most influential form of narrative for me. It is the primary genre that is used in my research. Through the cinema of science fiction, we experience a point of interest called "Virtual Witnessing" (Kirby 43). It suggests that prototyping from the narrative extends the analytical utilization and leads to real world technological development. It also suggests that cinema enhances the visual and narrative rhetoric. More specifically, it encourages audience support for the development of technology on screen which can be contextualized by embedded diegetic artifacts.

The narrative asks as to consider the clues we are given by well-designed and poorly designed objects. Well-designed objects give us the clues enabling us to understand and interpret their function or operation. However, poorly designed objects "provide no clues-or sometimes false clues. They trap the user and thwart the normal process of interpretation and understanding" (Norman 3). The diegetic artifacts of my thesis are informed by the narrative but also exist alongside of it.

Methodology

Our perceptions into dystopian futures vary geographically and culturally. They are subject to scrutiny based on generational bias and indifference. Working with speculations or future scenarios, promotes the ability to create imagined futures and try to design for the possibilities of those outcomes.

My practice and thesis are situated in the discursive realm with a heavy emphasis on speculative futures and the subsequent human-world-object relationship. The imaginative is where design originates for me. It began through an immersion into science fiction, film, graphic novels, and RPG's (role playing games). It now exists as an exploration of speculative fiction and its artifacts. The goal is to create discourse. The diegetic artifacts should provoke response. This could be in the form of reflection and debate. It could also provide inspiration for real-world technological development and/or service innovation.

My methodology relies on a three-step process; world building, speculative fiction, and prototyping.

World Building

The main components for this stage of methodology relies heavily on storytelling, character development, and world building.

A great source of inspiration in world building comes from my experience in role play-ing games (RPG's). In particular, Dungeons & Dragons. In this game groups of people create nuanced characters with strengths and weaknesses, while a single member creates the world and challenges. The game was created in 1974, and is somewhat analog in comparison to the video gaming world. However, unlike the digital RPG's, this is played as a collective making it seam-less and improvised. It remains to be the ultimate source of inspiration for the modern gaming.

For my project this stage needed to consider the actor motivation/intention, the environ-ment, and their everyday actions. "A key challenge is, however, demonstrating how speculation is realized and how the fictional accounts of the designed context are explicated through the aesthetics, technologies, interaction and behavior of consumers" (Harwood et al. 62).

The environment itself considers the future as more dystopian in nature. It is definitively altered through human intervention. This could be the result of many things that are reflective of our contemporary society as a whole. However, for this purpose all that is known or posited by the narrative correlates to an atmospheric anomaly. This is the explicit factor of the diegesis.

The point of view or perspective of the fiction is written in the first person from a tertiary character who provides a level of plot advancement through a type of narration within the fiction. The characters stem from somewhat autobiographical to third person. A secondary character ex-ists as an homage to my own experiences working in conservation and plant science. It's written in first person and utilizes many specific skills that were employed during my time as a biolo-gist. This character's arc employs a familiar literary device often employed by graphic novels: the flashback. This arc is not in a chronological order and doesn't appear until the 3rd chapter. While this does satisfy some holes in the backstory, it is non-linear allowing the reader/audience to begin their own speculative journey.

The protagonist of the story is written in observation, occupying yet another literary device: point of view. This character arc is still in development and will appear as a short chapter in the fiction. This intention behind this chapter is to engage the audience with the everyday human-object and human-world interactions. The goal is to "build a perceptual bridge between the future concept to be explored and its potential realistic values to users disjunct of utopian or dystopian contexts" (Harwood et al. 62). This section will rely on the protagonist of the story to interact with the world and engage in interactions that deploy the depictive artifacts.

Constructing the Speculative Fiction

In this stage, I utilize all components to actualize the world through creative writing. It begins with a series of flash writing exercises. It is in this process, that ideas come forward and can be developed into story.

The development of the story is written with the option of being visually supported. In this way it is heavily influenced by graphic novels, which rely on imagery to support the narrative.

It's a series of scenarios or vignettes that embody the world and characters I've created. "The challenge is how to imagine and subsequently construct pertinent and resonating narratives about the emergent technology that may be visualized through the diegetic prototyping process" (Harwood et al. 64).

This process involves an imagined "portrayal of interactions between actors" (Harwood et al. 64) and successfully develop a "series of activities in the characters may engage in" (Harwood et al. 65). It is imperative that these scenarios, while fictional, are also plausible.

Plausibility inevitably provides the credibility to speculative fiction granting a design potential. Ultimately, this potential could lead to technological innovation.

The fiction represents the principal artifact for this thesis.

Prototyping

While the speculative fiction is the explicit diegetic artifact, it is paramount for the visual representation of the narrative to be populated with physical artifacts. These exist in a more implicit/ supportive role and could be characterized as being depictive or explanatory. However, their existence and relevance are crucial. It enables an interactive and engaging experience with the audience.

There are 2 diegetic artifacts that have been designed and fabricated. This will be done by utilizing a combination of digital fabrication and craft-based techniques. It will initially involve several rounds of experimentation with materials, calibration, and mechanics. This will concurrently run with prototyping. There is a possibility that some elements of the artifacts will be outsourced for quality.

Finally, all artifacts will need to be assembled and finished.

Projects

The following section outlines a series of projects I developed in support of my research.

Blue Islands in the Pine

In this project, I relied heavily on material exploration and object-oriented ontology. As a desk it exhibits a very specific purpose which offers a utilitarian function. However, by adding a map of islands to the surface, it evokes images of paradise and feelings of relaxation. For some, it instantly offers sympathetic responses which transport us to a different place. These illicit responses act trans formatively to turn the desk into an embodied object. The desk now asks us to interact with it in a different way prompting our senses, memories, and fantasies.

Figure 6 (Shankar Padmanabhan)
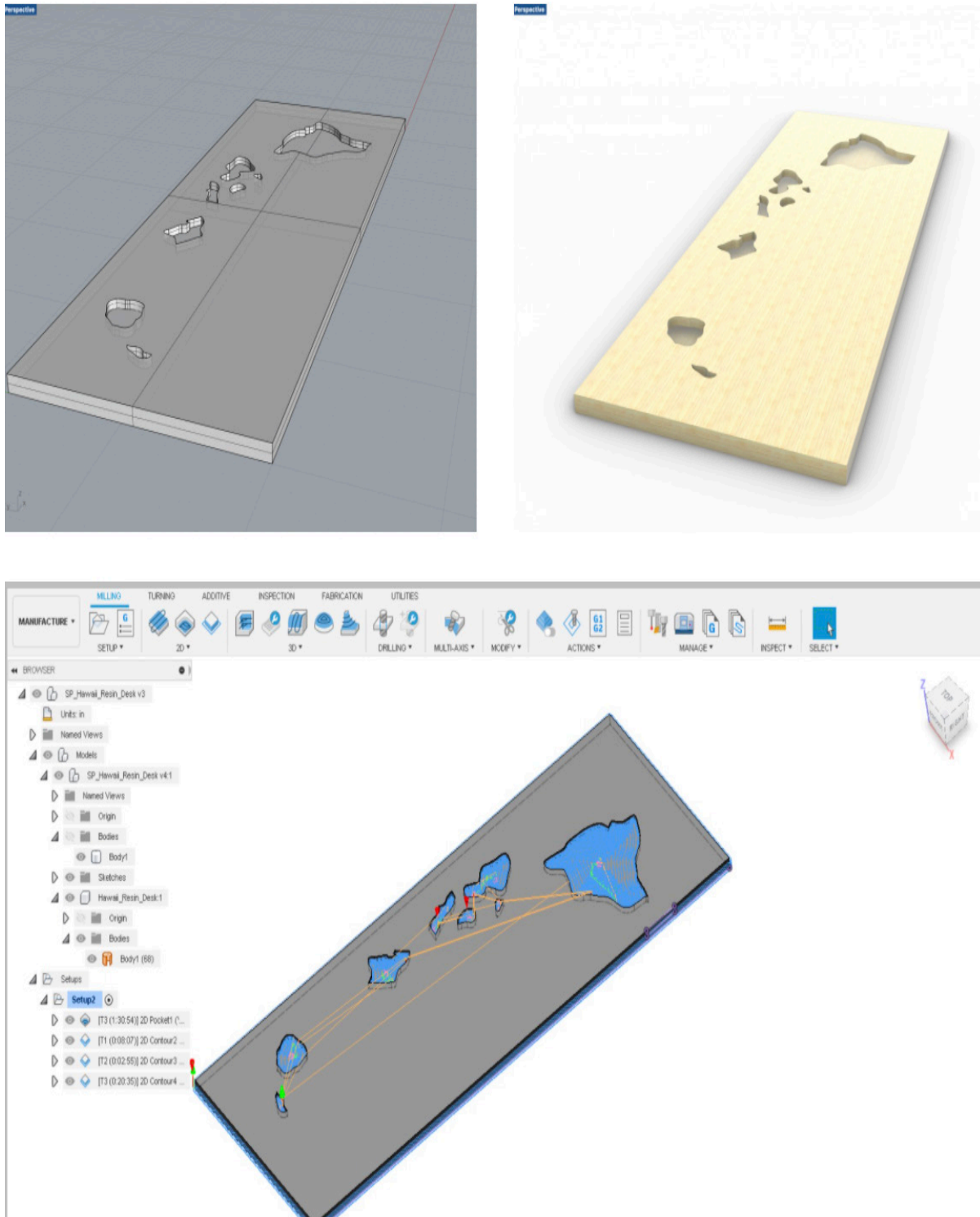
Figure 7 (Shankar Padmanabhan)

Figure 8 (Shankar Padmanabhan)

Choice and Probability

In this project, I designed a world building workshop that utilized the rules and parameters of the role-playing game, Dungeons & Dragons. The participants created characters in the workshop and then the various strengths and weaknesses were determined by chance, or a roll of the dice. All of these characteristics were then plugged into to a parametric form, which I designed in Rhino/Grasshopper. The result is a completely unique form embodying the characteristics of each participants' characters. Those rendered 2D forms were then printed using a Risograph.

Figure 9 (Shankar Padmanabhan)
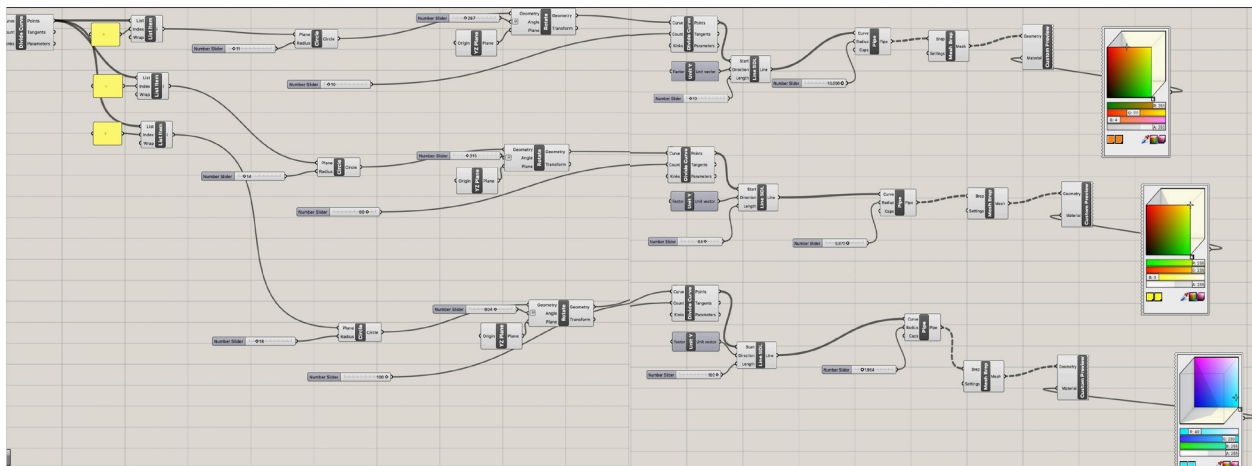
Figure 10 (Shankar Padmanabhan)
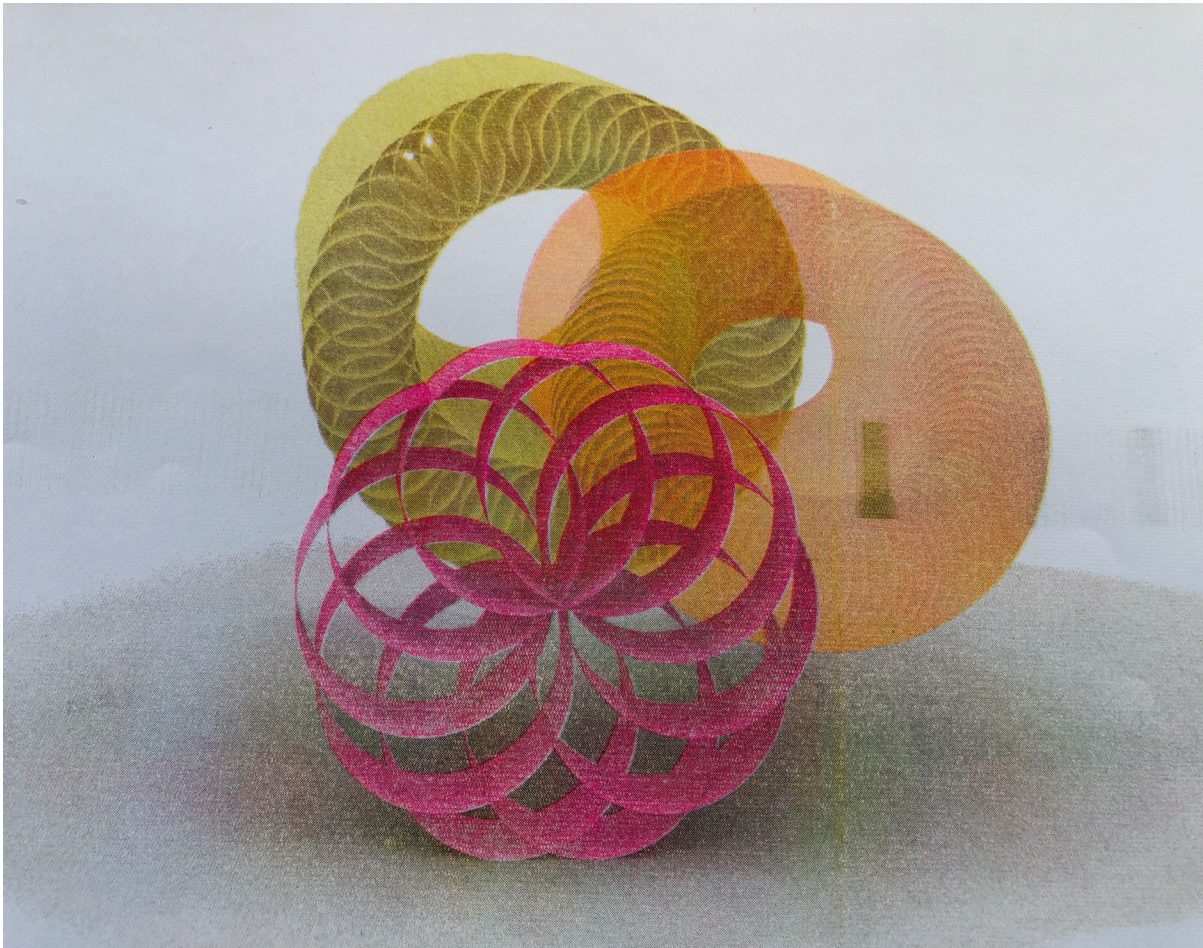
Figure 11 (Shankar Padmanabhan)
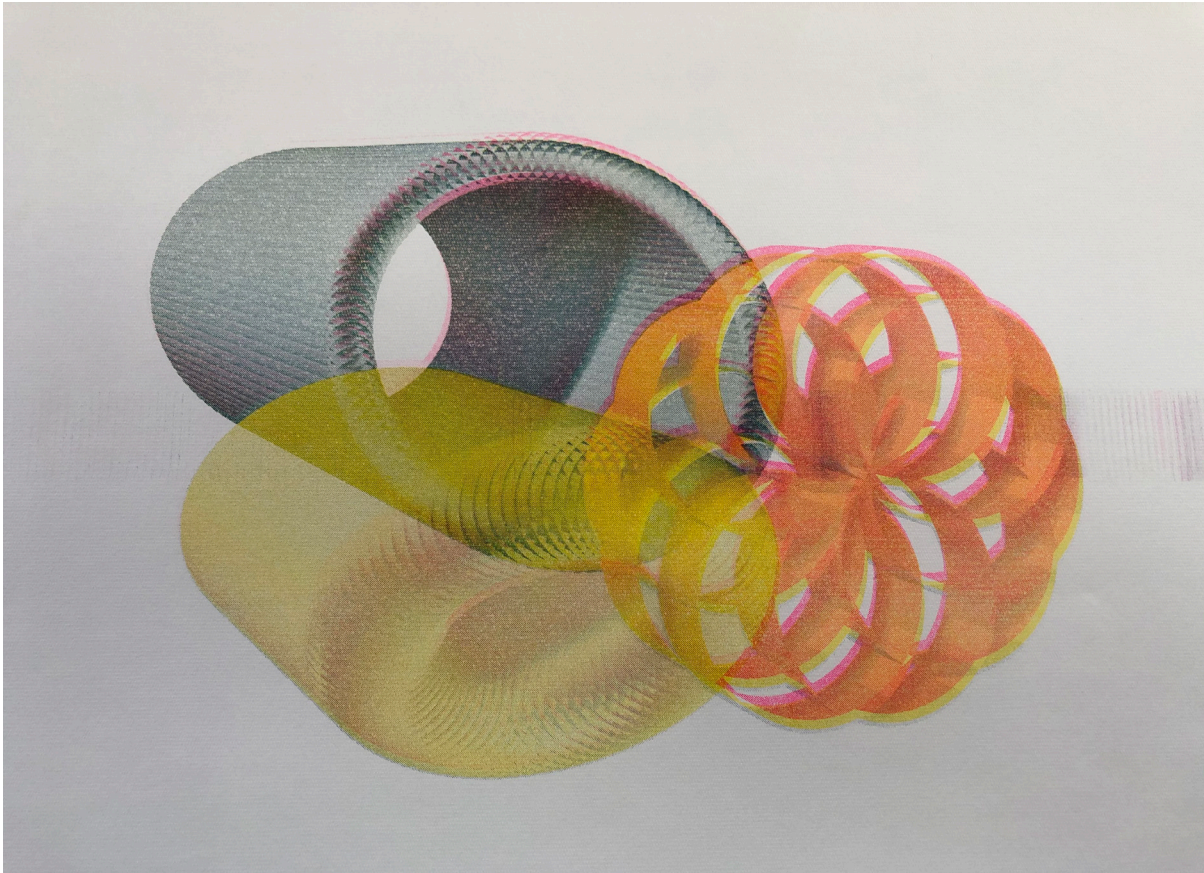
Figure 12 (Shankar Padmanabhan)
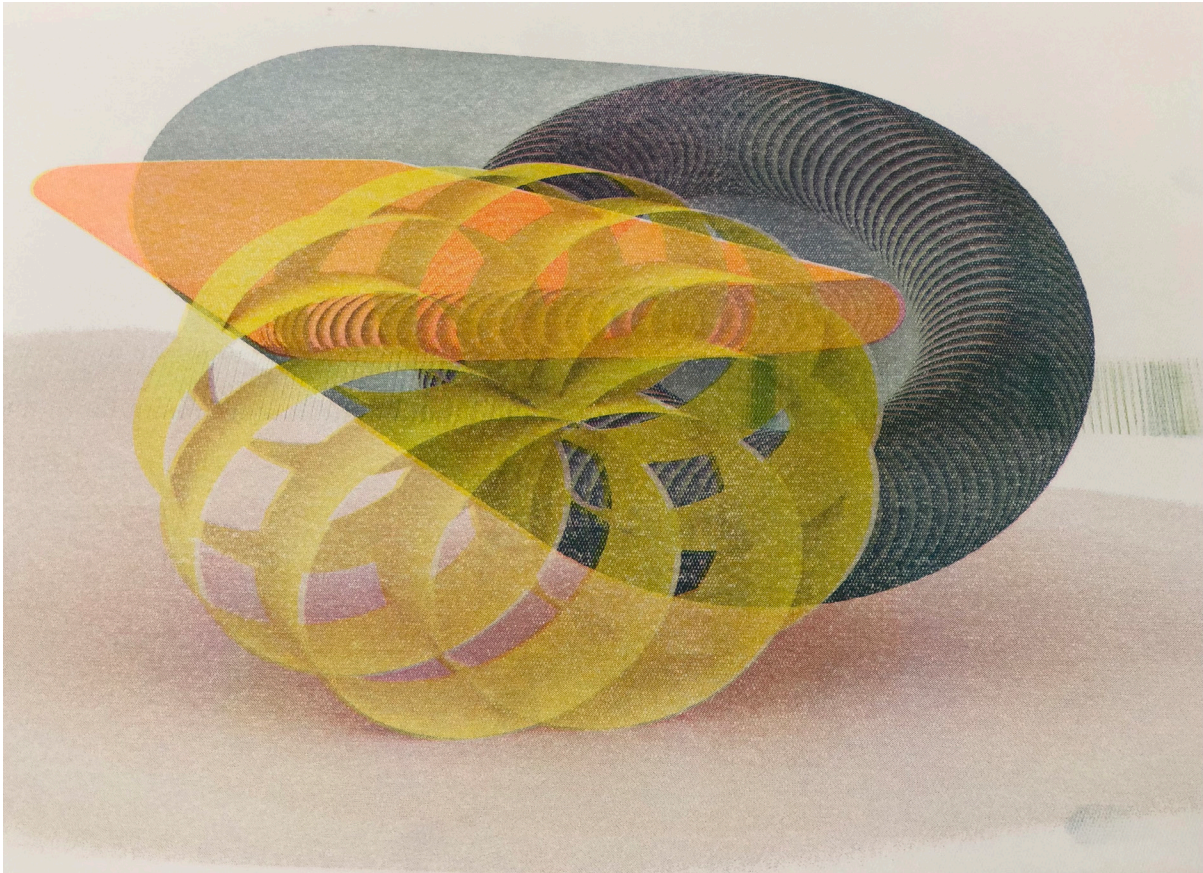
Intentions in Actions

The goal of this project was to explore material agency and to engage with a more philosophical approach towards material. It is suggested that "seeing" is a core component like the power of intuition as it relates to the abstract or concrete. It is a born faculty or "gifted". On the contrary "knowing" is a periphery component that is acquired. It is within the intersection of these that you can find value or beauty in an object (Yanagai & Leach).

1. Just look; set aside the desire to judge
2. Do not treat the object as an object for the intellect
3. Be ready to receive passively

I utilized this methodology to work with a new material and skill set to create a collection of 30 thrown objects. It explores creative material agency and its existence through questioning. Is it found in the object? Is it manifested through action? Can true agency emerge within mediated action?

Figure 13 (Shankar Padmanabhan)

Flash Fiction

This project was inspired by a prompt that would inevitably lead to a fundamental step in my thesis methodology. Flash writing unlocked a very crucial component of my creative process, allowing a narrative based framework to encompass my approach for this thesis. This project was the beginning of exploring speculative fiction as a dystopian future.

Untitled

As the ship breaks through the rich and dense atmosphere on the resource rich moon of (blank), my companions and I touch down in a meadow adjacent to the vast forest. Both hail from a ravaged world besought by war and decimated of beauty and nature. As we disembark, I see beyond their masks into the confusion that perpetuates their gaze. The wonderment in which they bear witness and the awkwardness of terrestrial interaction. "We don't need the masks; the moon's atmosphere is rich with O2". As we remove our masks and take in our first breaths of fresh oxygen, the smells of the forest transport me back to my childhood.

Throwing down our bags at the end of school and running into the forest to play as my mother yells at me in a mother tongue language now extinct, "Don't go past the stream!"

And here we are now, in the present, the single sound of a falling fruit echoes throughout the forest masking any indications of where it may originate. I turn to my companions again, "Here is where we can live. The forest will provide us shelter and food. We can build our homes utilizing the resources and materials." As I say these words, I'm conflicted by their implications. How do we avoid the mistakes or our predecessors? How do we find the balance with our surrounding and our needs? Are we capable of making a beneficial covenant with this place that considers all within it? What mysteries and challenges lie ahead? I could never have anticipated what would happen next.

Thesis Projects

The following section outlines the specific projects of my thesis.

Spires

This artifact of representation could be actualized as a book, graphic novel, animation, or film. It is the principal diegetic artifact.

Chapter 1: Slow Crawl

When the spires began appearing randomly throughout the globe, humanity was forced to deal with the consequences and find solutions.

The intensity of CO2 production continued to heat the planet causing a severe degradation in our atmospheric composition. Ten years ago, that instability led to the creation of sky tunnels. These tunnels extended up 10km in height and up to 2 meters in diameter. At first, they seemed to be isolated to regions with low to moderate ozone layers. But then something shifted. A series of events manifested into an unexplained, unpredictable phenomenon. These random sky tunnels began to appear all over the planet without warning. Unfiltered solar radiation where ozone vanishes in small cylindrical pockets sometimes lasting up to 10 minutes. They were called 'spires' for their shape and] piercing effect.

The severity and erratic nature of the spires led to chaos and forced governments around the world to create legislation limiting carbon emission. The scientific community believed the effect could be reversed but would were uncertain when and how this would happen. The fossil fuel companies were forced to shut down their operations. However, their corporate wealth and ties to government heads of state enabled a new monster.

They became stewards of a global markets where de-regulated energy could be sold and traded like the stock market. The new currency.

As is always the case, the wealthy dominated the markets and consolidated all of the electricity for themselves, stock piling it to power their lives. The rest of us, were forced to live in new ways. We created solar kites. These parasol-like objects were made of a reflective copper-like material that absorbs the radiation and converts it into electricity. When deployed in a spire, the solar kite could provide protection for up to 2 minutes and provide up to 12-18 hours of battery life. The same solar kite technology was used to create massive cells which the energy companies used for their energy production. Because of the unpredictability, predicting a spire was impossible. New watch technology sent pulses into your wrist when temperature increased by a degree. It wasn't 100% accurate, but it did provide a warning mechanism. By adding a safety radius around the signal, one can deploy the kite and remain in a safe zone.

Nine years ago, a biologist stumbled on mixed material that utilized bio resin from radiated Pine. What he couldn't have predicted was that that mixed material not only conducted energy from the spires but could be used to make a battery that would store massive amounts of energy. This technology would allow the rest of us, the ones left behind, to find a new way to adapt.

Chapter 2: I am JessX

Even in the abandoned building huddled together inside, the cold still finds its way into my bones. The battery is slowly dimming as the AMB charge has faded. This loft has a fireplace but risking a smoke plume is risky. Some of these folks are hiding out.

JessX seems to be impervious to the cold. She sits perched on the fire escape perched like a falcon. In complete stillness, steely gazed, observing all below. Suddenly her pulse alert goes off and the is over the rail like its a line change. Hopping from one fire escape to another, alternating back and forth and then on to the elevated train track which is overgrown with weeds and grass. And finally, one last drop on the dark street below.

The thing about spires, on a cloudy day you can see them form and push through. The intense heat burning up the clouds and an activating that cold dense air around it. It looks inviting and offers the same optical refraction of a rainbow. Only difference is if you're caught underneath, you're toast...literally.

Then I see JessX again, already 200 meters from the train track. Eyes up evaluating the risk, calculating the telemetry. All while in full sprint. She knows what's at stake. Electricity for the night, hot drinks and warm food and possible some music to enjoy.

Her left hand gracefully grabbing the solar kite by the hilt, as her right hand brings the battery to connect to the bottom of the hilt. She slides like she's on ice, actives the kite, it deploys and perfectly lands in the center of the spire. JessX is crouched with her shades lowered, left hand holding the kite by the hilt while the battery illuminates as the energy charges AMB geode.

Ninety seconds....and it's over. She did it. And we're not gonna freeze tonight!

Chapter 3: AMB 110

As I explored the terrain, I realized how many times I had walked this path. Creating isotope mixing models for groundwater, rain water, and fog. Loading the data into spreadsheets of an 8-year-old laptop and sharing the results to my counterparts around the globe, praying that one of them finds a solution. I was told that the cabin used to be a Parks service outpost. It's now a relic of another time outfitted with air and water purifiers which I repeatedly hack to ensure functionality, and my own survival. It may be remote, but it's safe. Away from the violence and despair. The air is breathable but can be toxic over long durations so it's important to limit exposure. And I have Amber, my loyal canine companion, who listens to my rants, delights in our synthetic protein meals, and tolerates my nightly ukulele serenade.

At first the isolation was invigorating but lately it was
making me crazy. I was one step away from typing
the same sentence over and over. Needless to say, my
supplies have run dangerously low. A viable source of
power and a reliable building material would prove to be
invaluable.

I've been toying with my own material. A bio resin
which I tap from the radiated ponderosa pines around
my area. Unlike other softwoods (gymnosperms), the
resin canals in most Pinaceae plants are large. They
run radially and vertically and produce reparative and
protective resin. With temperatures rising, the grow-
ing season runs later and my options to harvest are
far longer. I've been experimenting with different sub-
strates that would prolong the viscosity under high heat
but also ensure fast curing times. If successful, I could
create a mixed material utilizing the radiated Bio Resin
to print the parts I need.

I'm on trial 109.

Solar Kite

This is the large artifact for the thesis. The kite is made of an absorptive material used to block radiation. The body uses mixed material combining the radiated bio resin as a conductive element that channels the energy from the shade into a battery made of the mixed material.

The large hilt is semi hollow and houses a pneumatic charge that disperses the kite from the top. At the bottom of the hilt is a magnetic connection for radiated pine resin battery. When the shade is dispersed the energy first powers the pneumatic charge before powering the battery.
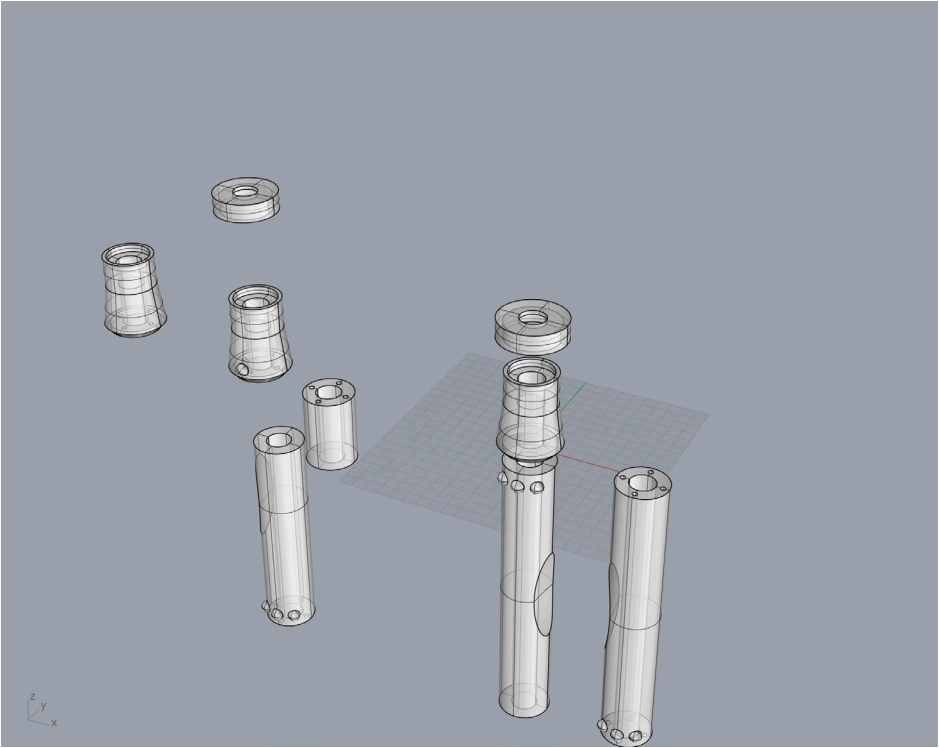
Figure 14-15 (Shankar Padmanabhan)
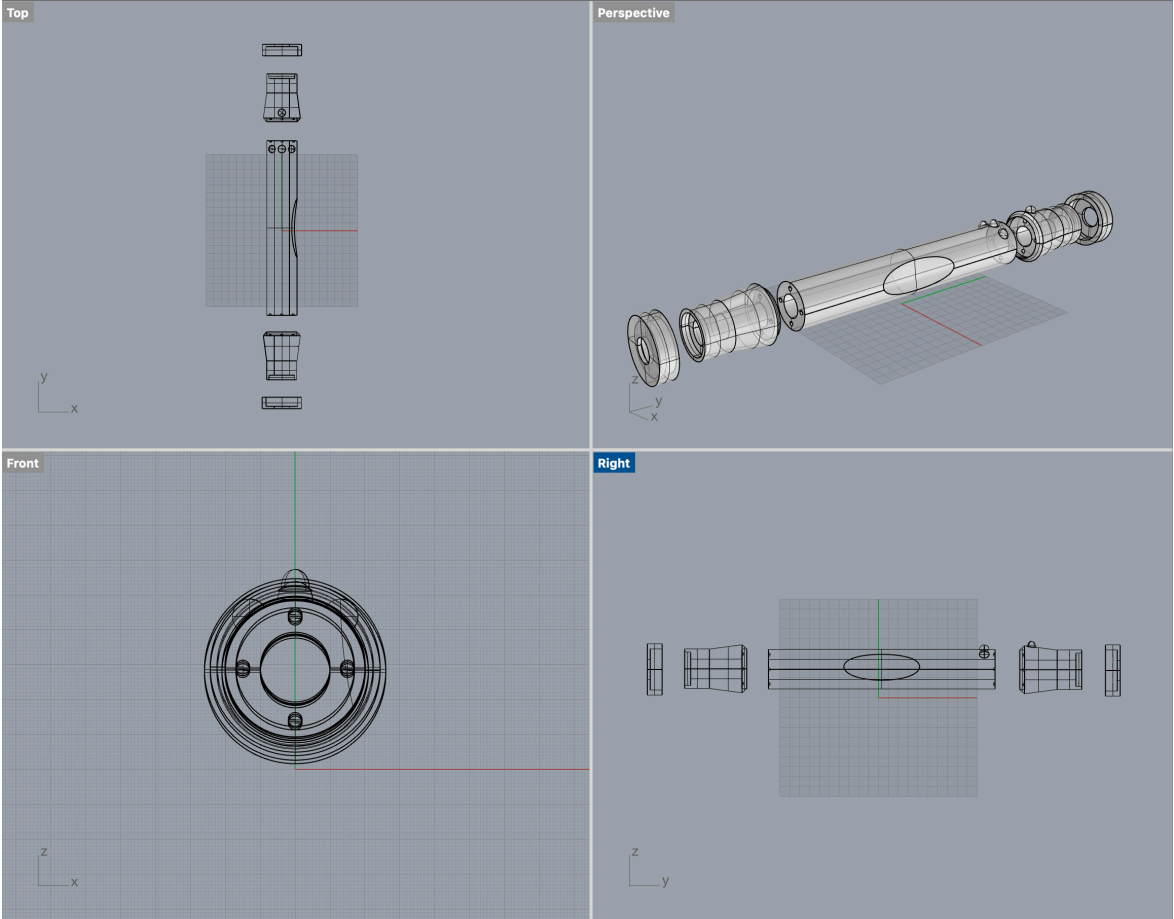
Figure 16 (Shankar Padmanabhan)
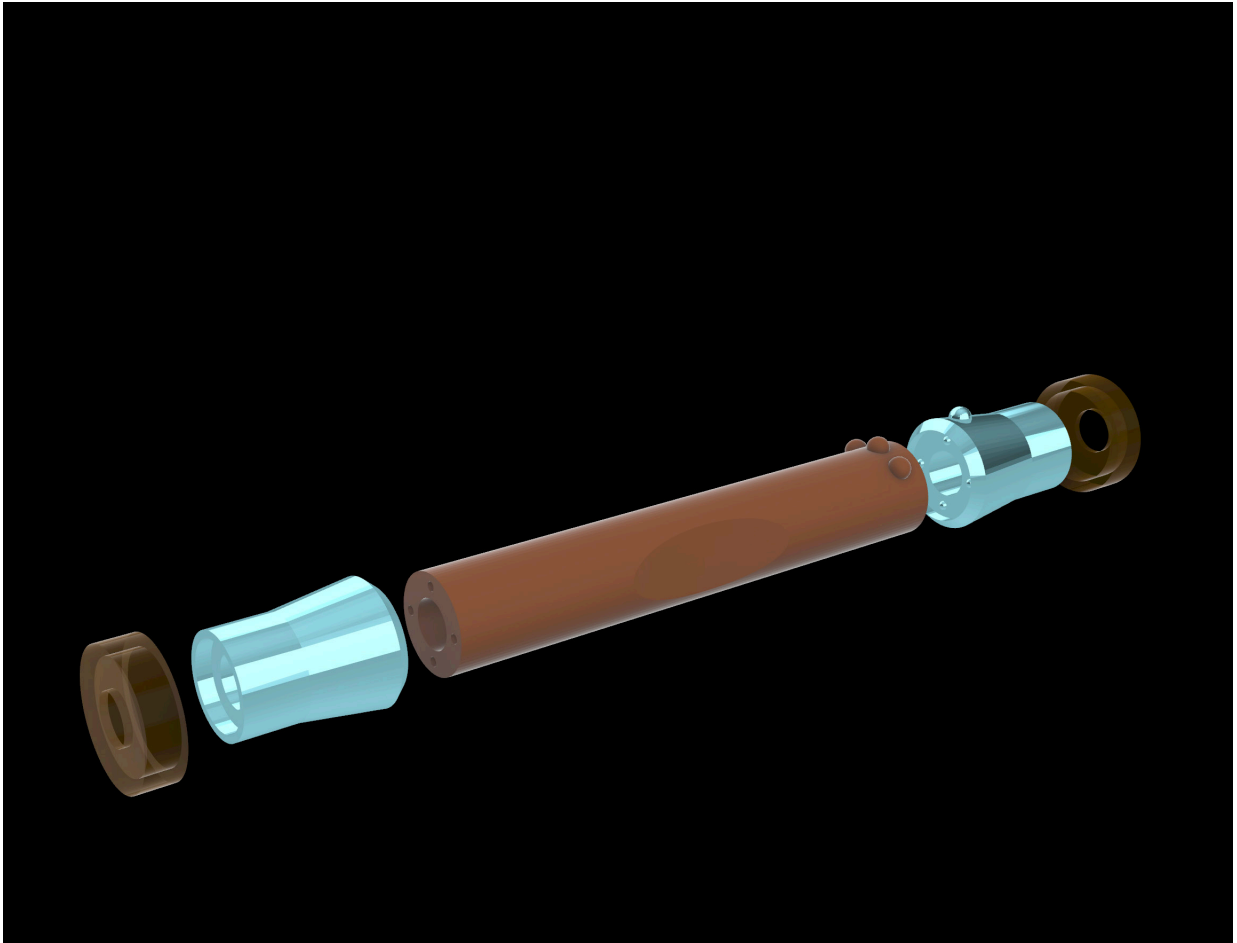
AMB110 Battery

This artifact utilizes a housing body that is composed of the AMB110 mixed material. The energy is absorbed through the solar kite, conducted through the frame, hilt, battery housing into pure AMB110 geode. There is can be transferred via magnetic interface into any electric powered device.
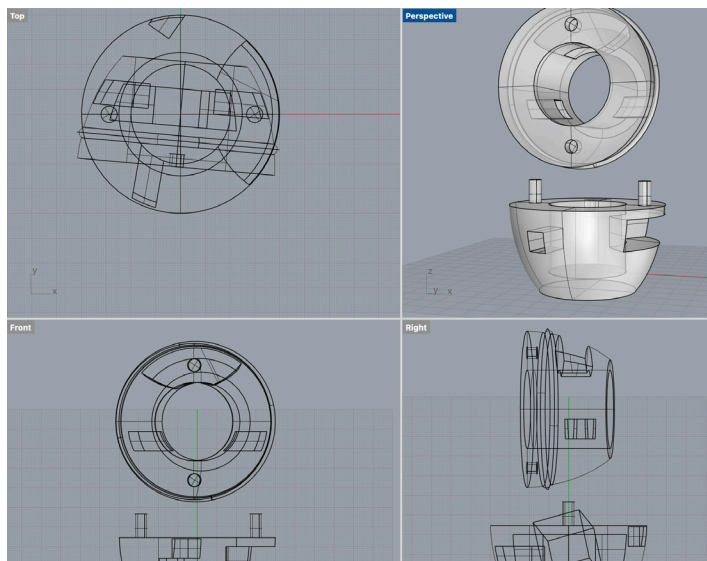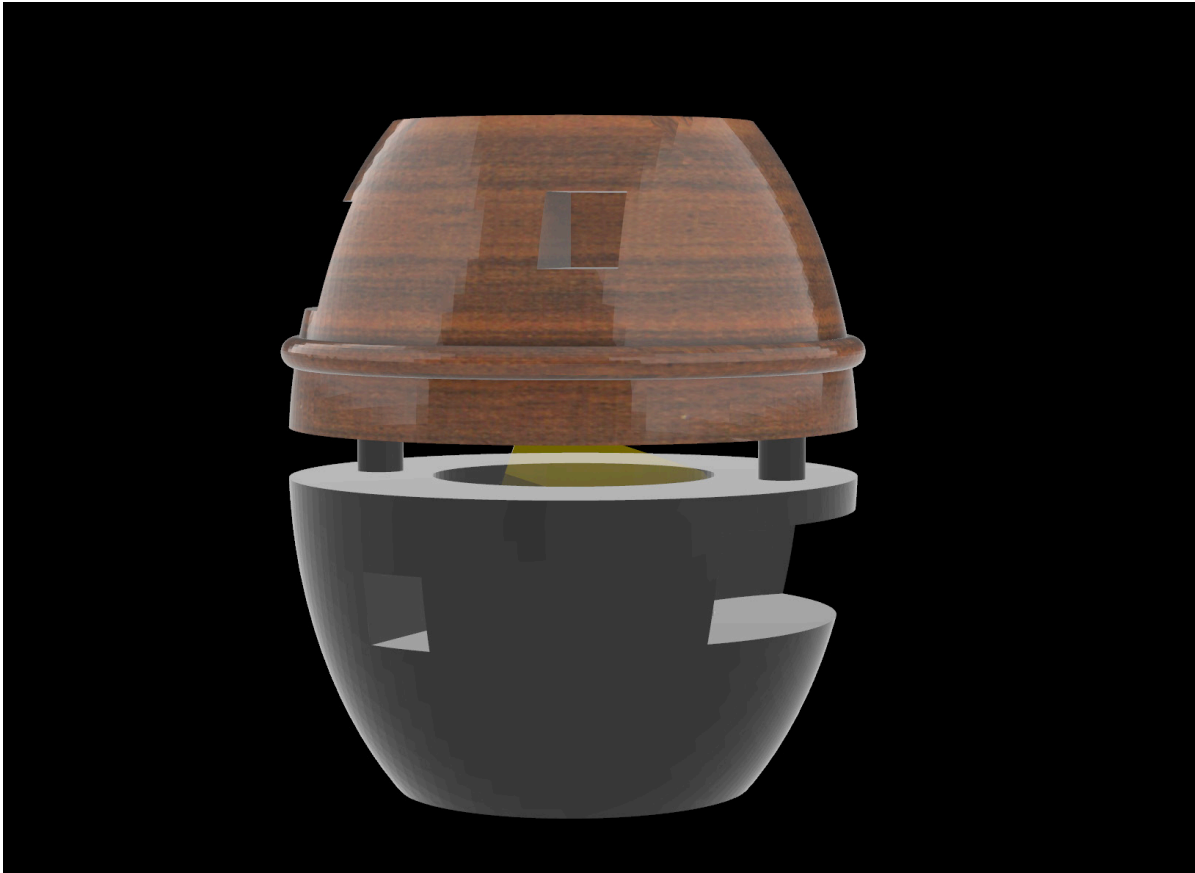

Figure 17-18 (Shankar Padmanabhan)
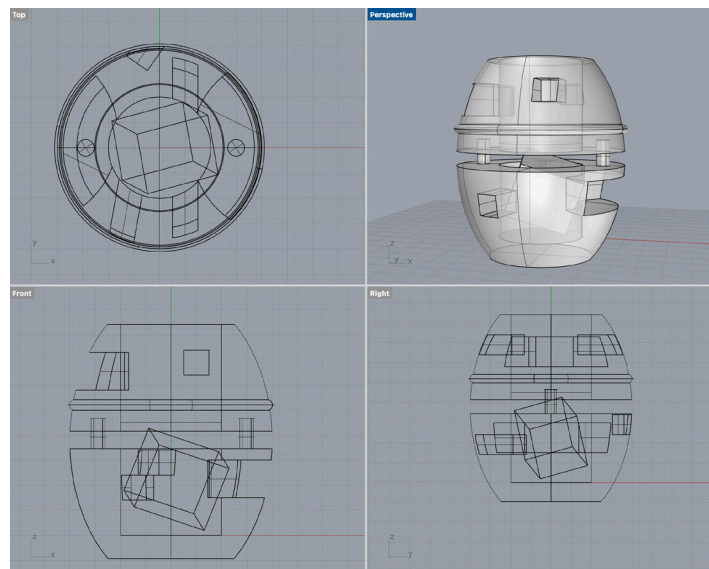
Figure 19 (Shankar Padmanabhan)

Conclusions

This research provided an opportunity to re-think design, and how I would like to practice. Initially my interests sought to investigate the intersection of craft and digital fabrication. And while that skilling and knowledge base proved to be advantageous, my interest shifted. An exploration into the nature of objects and material agency came to the foreground. And with it came questions into the "what if" and "what it can be".

As a result, I found my practice gravitating towards an emphasis in the Discursive. This represents a significant milestone that has re-defined where my practice is situated and where my intentionality is leading. It has established an optimal pathway for my research and represents the primary component of my practice.

The other critical component of my practice involves pedagogy. My perspectives into pedagogy have been shaped through many professional teaching opportunities that include science and music, in addition to design. Teaching provides an important pathway to explore and disseminate my own research. It also activates an academic arena that is crucial for elevated discourse.

Prior to my graduate experience, my teaching methods focused on a more utilitarian approach, with regards to design. Form and function were mutually exclusive and the role of reflection was often absent. Result oriented methods were more favorable which was enhanced when considering the role of tools, equipment, and software applications. While this is considerate of my expertise, it fails to address individuality and operates in a very top-down format.

The research and teaching experiences of my graduate program have transformed my pedogeological strategies. The incorporation of ideation, reflection, and empathy lead to a more nuanced foundation for design potential and synthesis. It enhances creativity and individuality. It also aids in the establishment of collaborative practice. This is a far more favorable way to support student development and address individual needs and adopts a more bottom-up format.

This period of research began amidst a pandemic. This thesis is a product of an uncertain, meandering journey. It has left me with new optimism into the field of design and a direction in which I will pursue. In addition to shaping my design practice, it has re-shaped my pedogeological approach. There are elements of my research that will remain open or unresolved, and I believe that is commensurate with the start of a new kind of practice. I am grateful for the opportunities that await and look forward to engaging with these new challenges in a deeply meaningful way.

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List of Figures