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Afterlight

THESIS

submitted in partial satisfaction of the requirements
for the degree of

MASTER OF FINE ARTS

in Art

by

Kyle Franklin Welker

Thesis Committee:
Professor Antoinette LaFarge, Chair
Professor Miles Coolidge
Professor Simon Leung
Professor Jesse Colin Jackson

2018

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ABSTRACT OF THE THESIS

Afterlight

By

Kyle Franklin Welker

Master of Fine Arts in Art

University of California, Irvine, 2018

Professor Antoinette LaFarge, Chair

An essay describing the realization of the thesis exhibition *Afterlight*. The writing describes two artworks included in the exhibition; *Respiring Lawn*, and *Afterlight*, as well as a collection of earlier works which informed the creation of the project. The piece explores topics related to the artworks such as historic lighthouse lens technology, contemporary lawncare technologies, beekeeping, Colony Collapse Disorder, invasive plant species, and the detrimental effects of pesticide use on the environment. The writing also dabbles in the spiritual connection to plants, bees, and technology; and investigates the contemporary influences of Dark Ecology upon ecologically-minded artmaking practices. The essay concludes by positing a theory on how artworks will exist and be utilized in the aftermath of the Sixth Extinction.

AFTERLIGHT

Two objects fill the space.

The first is a low hill of grass, not unlike the turf which grows unnoticed just outside the doors of the gallery. Why is it here? The patch of lawn is not small and appears to have been carefully removed from the earth. Measuring a total of three inches deep, a cross section reveals green blades of grass rippling through dark earth, encased at the bottom by a dense webbing of rhizomatic roots that form a matting upon which the entire mass rests. The hill rises no more than a foot off of the gallery floor. The lawn is lit by two spotlights which hang from the ceiling directly above. The arc of light falls off just before the edge of the lawn. In the transition between light and shadow, a shift appears between the blades. The hill begins to lower, creeping down towards the gallery floor, and slowly back upwards again. The unnoticed suddenly becomes uncanny.

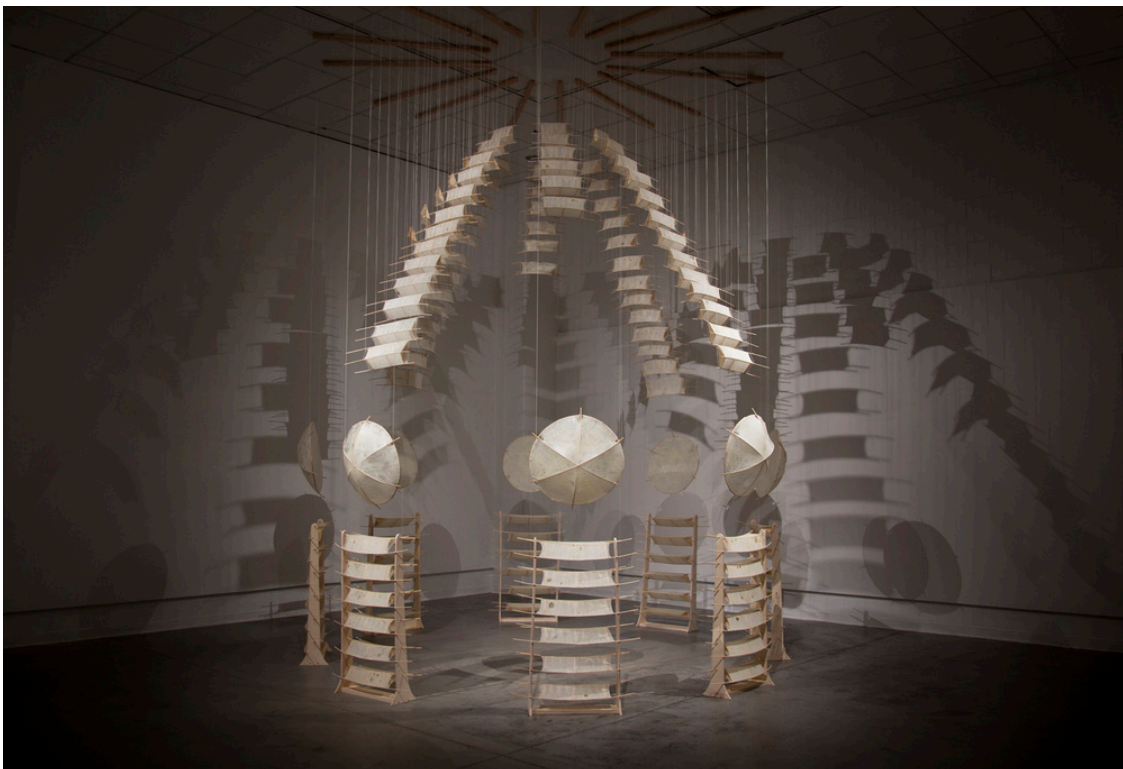
The lawn is breathing.

Figure 1: Respiring Lawn as seen in Room Galley



A second object resides in the opposite corner of the room. A large octagonal form comprised of many parts, measuring 13 feet tall with a footprint of 12 feet in diameter. It is lit from its perimeter by several spotlights, which cast a cool glow upon its mottled surface. The structure is comprised of numerous objects resembling vertebrae, which are suspended individually from the ceiling. Each form becomes smaller as they travel upwards in concentric circles moving towards the crown. Eight circular discs float beneath the spinal columns at eye level which are grounded by eight pillars arranged in a circle along the gallery floor. The object appears organic in finish, however its infrastructure hints at something more. The form is technological and industrial, yet somehow archaic; as if looking through a lens into another time. In counterpoint, the sculpture is made of simple materials such as wood and string. The entire object is coated in beeswax.

Figure 2: *Afterlight* as seen in Room Gallery



The first light of my early work appeared in the deserts of Southern California. These sculptural works were placed as interventions within the abandoned agricultural and mining locations that pepper the landscape of the Mojave Desert. These were not pristine environments, rather they were spaces that had once been appropriated by humans and were now disintegrating back into the natural environment. The sculptures too, were left behind to weather and decay while nature reclaimed its foothold. The artworks were small interventions in the environment, similar to bees building hives in the walls, or packrats who would make nests in the floorboards of the abandoned spaces. They were acts of observing nature - seeing how these artworks were changed and altered through natural and environmental changes. This ethos of observing nature continued into my first significant work in the MFA program, in which I restructured the design of a traditional working Langstroth beehive into the shape of a hexagon and kept bees inside.

Figure 3: Modified Hexagonal Langstroth Hive



The hexagonal hive began as a project about perfection. Each part of the traditional hive was carefully measured and reconfigured into a hexagonal form. The hive was made of sugar pine and was hand-selected, milled, shaped and joined in a process taking nearly four months. The hive contained no nails (with the exception of the wiring nails, a traditional object within all Langstroth hives) and was held together by compounded box joints bonded by hide glue. Each aspect of the build process was executed with care and attention to detail and served as a foundation course in woodworking, a craft in which I had previously very little experience.

The problem with perfection is that nature doesn't seem to care. When an aberration appears within a bee's comb, they will not remove the defect. Rather they will slightly adjust the size of each of the surrounding comb cells until an order is restored. In the hex hive, the surface area of each frame matched that of a traditional deep super. Due to the new shape, the hex hives had a frame height of nearly 15 inches, while a more traditional deep super carried a depth of only $9 \frac{5}{8}$ inches. This proved problematic for the bees, who preferred to not draw their comb lower than the $9 \frac{5}{8}$ inch mark, leaving a large open area at the base of the hive. This allowed wind to enter the hive and slowed their production in the cooler months of spring.

Figure 4: A frame from the hexagonal hive

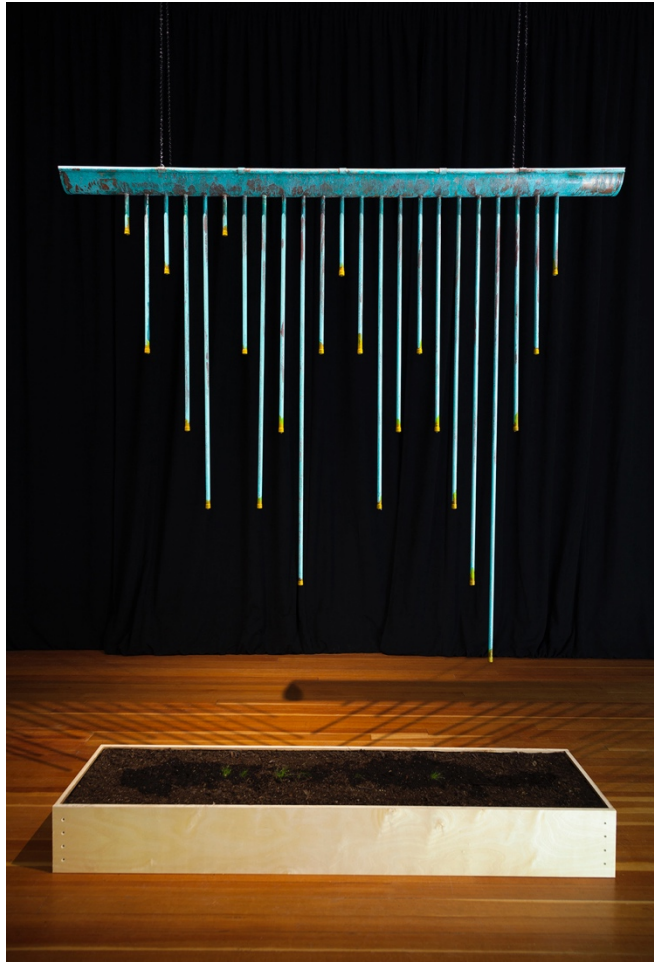


In winter, there was change. Los Angeles received rain for two weeks. The once brown hillside upon which the hive sat erupted in a sea of green grasses. The blades of grass created bridges to the hive, upon which ants climbed. The ants raided the hive of all its honey reserves and the colony, already weakened by the cold, was unable to survive. This was a major turning point for my work. I felt as if the experiment had failed. More importantly, I felt responsible for the deaths of countless bees, and I began to question the ethics of working with living entities as a basis for an artmaking practice. I began to see the project as having been an act of controlled nature in which I was arranging and maintaining a set of parameters through which nature was made to adapt. While

problematic in some ways, I continued to push the idea of controlled nature in the two works that appeared in my candidacy review exhibition shortly thereafter.

This exhibition contained two works which were enacted as experiments in both the studio and the gallery. In reaction to my concerns with working with insects, I chose instead to work with *Festuca rubra*, a grass which is native to southern California. The works attempted to create an infrastructure through which the grasses could grow in the indoor space of the gallery, temporarily reclaiming its original growing space that was overtaken when the gallery was built. *Rhizome* envisioned hundreds of test tubes in which grass seed was planted and allowed to grow under fluorescent grow lights. The resulting grass pods were then articulated in a spine-like curvature which was suspended from the gallery wall by a complex webbing of infrastructural wires. The second work was a suspended fountain that was filled with water once at the beginning of the exhibition and allowed to drip slowly through 23 pinhole-sized apertures into a planter box below. The box was seeded with the same native grasses. In light of the fact that I had lost my bees only a month earlier, the work was titled *Weeping Cloud*. Both works served as the basis for a new way of thinking about the works that I make, the *ephemeral* and the *still*.

Figure 5: *Weeping Cloud* as seen in University Art Gallery



Rhizome and *Weeping Cloud* were both ephemeral works in the sense that they had a predetermined lifespan. When the exhibition closed, the grasses were allowed to die and along with it, the work died as well. This method of working was in direct response to the death of my bees. If death was to be an unavoidable part of the work that I made, it should then be considered as equally as any other aspect of the work. Unlike the death of the bees, which was accidental, death could even be something that is controlled. I chose grasses as the living element in these works because for myself, the moral and ethical concerns of dealing in death was far less weighty with plants, than it would be with insects or other living creatures. I see this kind of work in opposition to a

traditional model of artmaking in which an artwork must exist in a perpetually unchanged state, the moment it leaves the artist's studio. Robert Smithson touches on this idea in his essay *Some Void Thoughts on Museums* in which he refers to the museum as a tomb containing artworks that have settled into a stupendous inertia.¹ Ephemeral works are vastly different in that they are very much alive for a period of time and are then allowed to die; ceasing to be works of art. This sentiment is seconded by Dan Flavin a contemporary of Smithson who referred to his sculptures as 'on-and-off' artworks and stated that the moment the lights of his sculptures were turned off, it ceased to be an artwork.² Flavin's view differs from mine in that his represents a forced death through language; once the parameters of his works change, (the lights being turned off) the work becomes conceptually dead. I wonder how Flavin would respond to a bulb that burns out, instead of being turned off? What kind of death is this?

1 "Some Void Thoughts on Museums." *The Collected Writings*, by Robert Smithson and Jack Flam, Univ. of California Press, 2000, p. 42.

2 Weiss, Jeffrey S., and Briony Fer. *Dan Flavin: New Light*. Yale University Press, 2006.

The properties of an ephemeral work as it is conceived of in my practice are as follows:

1. The work contains a living element, most often plants or animals, but this can also be expanded to water, wind or other kinetic elements.
2. The work has a lifespan or a point in which the sculpture ceases to be a work of art.
3. Changes often happen quickly with the work and may be observable during the course of the exhibition.
4. The work is maintained during the course of the exhibition, however this maintenance can be suspended or adjusted in response to observations and changing conditions.
5. The works can be repeated, even years later.
6. These are works that cannot exist as parts of permanent collections.

Not all of the work that I make fits easily into this category, so it is important to allow room for a second category. A still work is an object that employs a more traditional approach to artworks in that it exists for a longer period of time in an unchanged state.

The properties of a still work as it is conceived of in my practice are as follows:

1. The work is still or slower to change.
2. The work can exist in perpetuity and does not necessarily have a predetermined lifespan.
3. Change can still occur with these works; however, they will happen at a much slower pace.
4. The works are subjected to regular maintenance and can be restored and repaired in order to maintain aesthetic and structural integrity.
5. These works are suited for long-term installations and/or permanent collections.

While the parameters of the ephemeral and still works are somewhat rigid, this is not a strict binary. Unlike Smithson's site / non-site dialectic³, not all works fit easily into one category, nor should any work be relegated to one category indefinitely. In her essay *Sculpture in the Expanded Field*, Rosalind Krauss describes how sculpture should not be relegated to strict binaries but can be expanded to fit somewhere in between; it can be both one *and* the other.⁴ I often find that the bones of an ephemeral work are reanimated into future projects and can become still works. The hex hive is an example

3 "A Provisional Theory of Non-Sites." *The Collected Writings*, by Robert Smithson and Jack Flam, Univ. of California Press, 2000, p. 364.

4 Krauss, Rosalind. "Sculpture in the Expanded Field." *October*, vol. 8, 1979, p. 10 *JSTOR*, www.jstor.org/stable/778224.

of this wherein the project was an ephemeral work during its time as an active beehive. After the bees died, I burned and restructured the dead hive into a new work entitled *Reliquary*, which now exists as a still work. My thesis exhibition contains one example of each approach. *Respiring Lawn* exists as an ephemeral work that enacts the mechanism of breath through a technological infrastructure, whereas *Afterlight* is a still work, that restructures a First Order Fresnel lighthouse lens, an archaic technological object once used to condense light, pushing it ever outwards into the ocean. This lens is made in homage to the bees.

Figure 6: *Reliquary*, the hexagonal hive restructured as a still work



Let me describe the lens again. No longer does it function. No longer does it bend light, projecting it outwards and into the ether. This lens has gone dim and rests in stillness, cataracted by the wax of countless tiny workers. Each prism is articulated in an exploded diagram of fossilized bones, suspended from the rays of the sun-shaped

hanging apparatus. The base of the structure is arranged in a ritualistic circle, each section spaced far enough to enable access to the center of the ceremonial ring.

Go inside

In the center of the temple, there is light. The structure becomes a weightless swarm of threadbare wings, traveling upward towards the sun. In the glow of the spotlights outside the lens, each prism reveals its inner workings. The lens is now a lantern, pulling light inwards and towards its center. The web of its internal infrastructure manifests itself through the veil of wax, revealing systematic string cross-weavings which serve as a support upon which mellified light can rest.

In 1923, Esotericist Rudolf Steiner delivered a series of lectures about the honey bees. Like much of his previous work, the lectures were situated squarely within the parameters of *Geisteswissenschaft* or the 'sciences of spirit' and expressed an enchanted worldview of topics such as science and technology. In his first lecture delivered on November 26, 1923, in Dornach, Switzerland, he spoke about bees, particularly the queen, as being children of the sun who contain all the energy and powers of the sun within their bodies and project it outwards to the rest of the hive.⁵ It is this spectral light that the rest of the colony lives in rapture of, spending their lives in dedication to the queen and her phantasmal resplendency.⁶ It is in this light that I began

⁵ Steiner, Rudolf. *Bees Lectures*. Anthroposophic Press, 1998, p. 10.

⁶ Steiner, Rudolf. *Bees Lectures*. Anthroposophic Press, 1998, p. 14

to piece together the idea of mellified light, or light that has been made tangible through the processing of bees.

Mellification is the process through which a bee processes nectar gathered from the flowers of plants into honey. During collection, nectar is stored in a specialized nectar sac, which will continue to store the nectar until full, at which point the bee will return to her hive. Once returned to the hive, the bee will regurgitate the nectar into comb cells. The colony will then begin to chew on the nectar, passing it from mouth to mouth while an enzyme called invertase within their saliva begins to break down the sugars within the nectar, turning it into honey. The honey will then be stored within a wax comb cell and fanned by worker bees to help evaporate much of its moisture content. Once the moisture has reached proper levels, the cell comb is then capped with fresh wax and maintained as storage until needed.⁷ A bee's entire life's output will equal 1/12th of a teaspoon⁸ and it will take 8.4 pounds of honey to generate the energy to make one pound of wax.⁹ The act of mellification is a process which only bees are capable of producing. It is bee specific. To expand on the term, mellification is a restructuring process enacted by bees - in addition to honey, I am including the production of wax in this definition.

7 Sammataro, Diana, et al. *The Beekeeper's Handbook*. Comstock Pub. Associates, Division of Cornell University Press, 2011, pp. 26-28.

8 "National Honey Board - Honey Trivia." *National Honey Board*, www.honey.com/newsroom/presskit/honey-trivia.

9 Coggshall, William L., and Roger A. Morse. *Beeswax: Production, Harvesting, Processing and Products*. Wicwas Press, 1995, p. 35.

Wax and honey are compounds which have the ability to transcend time in that they do not go bad or decay. Ancient honey has been discovered in Egyptian tombs which dates back to 1000 BCE and is still perfectly edible.¹⁰ It is through this act of mellification that the fleeting light of flora becomes a deathless afterlight. This act of mellification has not been lost on humankind. Several early cultures relay the legend in which a dying person chooses to consume only honey until death, at which point they are interred in a coffin of honey and left for 100 years. The mellified light-being spends its century in darkness until it is opened once again. The resulting confection is highly prized for its medicinal value and brings light induced vitality from a century's past into the tinctures of the future era. It is not known whether a mellified corpse ever really existed. The legend has appeared in 16th-century Chinese medical texts and can be traced as far back as the 4th century in Greece. Still others suggest that the Chinese texts were referencing observations first seen in Arabic countries. Regardless of origin, it is most fascinating to me that several cultures saw medicinal value in a corpse steeped in honey.¹¹

Steiner himself saw medicinal value in honey, albeit without the added ingredient of a mellified corpse. His work and the esoteric tradition is interesting to me because it appears historically in an almost perverse reaction to the disenchantment of post-enlightenment rationalist thought. In a time when science was turning on the lights and revealing the hidden apparatus of how the world worked, the Esotericists were

10 "Honey In The Pyramids." *National Geographic*, 23 Nov. 2015, www.nationalgeographic.com.au/history/honey-in-the-pyramids.aspx.

11 Roach, Mary. *Stiff: the Curious Lives of Human Cadavers*. W.W. Norton & Co., 2004, pp. 221-222.

responding by pushing further into the darkness and bringing back the enchantment of spirituality, magic, and wonder. In retrospect, this outlook is flawed in that it anthropomorphizes nature as operating in rapture of a higher being. I might argue that the bee, in her quest for pollen is no more considering the scientific reasons for her labors as her spiritual reasons. Both science and spirituality are human constructs.

Figure 7: *Respiring Lawn* (detail)



The lawn is breathing. A transparent blue pneumatic coil hose works its way out from under the lawn, ending at a bank of timed air valves mounted on the wall. The valves open and close pumping air from an attached air compressor into the lawn in one-second increments. The mechanistic sounds of the pneumatic apparatus pierce the quiet of the room and recall the sounds of hospital equipment; machines which connect to the organic, and aid in sustaining life. Once the shudder of the machines dies down,

a quieter sound can be heard. The sound of air escaping between the blades as the lawn breathes out, wheezing on the gallery floor.

The lawn is on life support.

The perfect lawn has long been a ubiquitous icon of the American dream. This dream however, comes at a significant cost to the surrounding environment by privileging the monocultural lawn over the diversity of flora that would exist naturally in the ecosystem. The lawn then becomes a green desert, which upends the natural balance to the ecosystem. A study undertaken by NASA estimates these green deserts cover an area of nearly 80,000 square miles within the Continental United States. At this scale, turfgrass is America's largest irrigated crop, with a footprint nearly three times larger than corn.¹² The ecological impacts of lawn maintenance come at a heavy cost to the environment. According to the Environmental Protection Agency, the use of gas-powered maintenance equipment contributes to 4% of all CO₂ emissions.¹³ Lawn irrigation increases outdoor water waste by up to 50% per household, reducing already dwindling water supplies while simultaneously poisoning these scarce resources through pesticide and chemical fertilization runoff.¹⁴ By enacting the theatricality of a living, breathing field of grass, *Respiring Lawn* seeks to forge a connection between these observable technologies, and the often-unobserved infrastructure upon which lawns subsist. The lawn is already connected to the machine.

12 "Looking for Lawns." NASA, NASA, earthobservatory.nasa.gov/Features/Lawn/lawn.php.

13 Banks, Jamie L, and Robert McConnell. "National Emissions from Lawn and Garden Equipment." US Environmental Protection Agency, Sept. 2015, p. 7.

14 "Reduce Your Outdoor Water Use." <https://www.epa.gov/Watersense>, www.epa.gov/.

The lawn is on life support. A green desert is a monoculture without flowers and provides nothing for pollinators. It rises and falls supported by the mechanistic infrastructure of technology. How hard we push to keep it alive. Its deep green color is aided by powdered nitrogen spread across its surface. It is kept alive through irrigation, set in timed cycles of varying durations programmed by small computers affixed to the hose tap. Soils are carefully chosen to provide optimal growth. How can something living be so devoid of life? At what point does life support cease to facilitate life?

It is not a far stretch that the green deserts of the American lawn have contributed significantly to the effects of CCD. to date there are over 30 different chemicals used on lawns alone, 11 of which are deadly to bees.¹⁵ The questions behind colony collapse disorder are not new, and yet somehow the problem remains. Rachel Carson brought these and other ecological concerns to light in her 1962 book *Silent Spring*, which observed the effects of chemical pesticide use on the natural environment. She describes a shadow of death creeping over the land, and the silencing of nature, plants animals and insects, and asks, “where have they gone?”¹⁶ Her words helped spark great changes in the ways that these pesticides were being used, leading to a ban on the agricultural uses of DDT in 1972.¹⁷ The book also helped lead to the creation of the EPA in 1970, an organization that attempts to "...protect people and the environment

15 “Lawn Pesticide Facts and Figures.” *Beyond Pesticides*, Beyond Pesticides, www.beyondpesticides.org/assets/media/documents/lawn/factsheets/LAWNFACTS&FIGURES_8_05.pdf.

16 Carson, Rachel, et al. *Silent Spring*. Houghton Mifflin, 2002, p. 2

17 “DDT - A Brief History and Status.” *EPA*, Environmental Protection Agency, 11 Aug. 2017, www.epa.gov/ingredients-used-pesticide-products/ddt-brief-history-and-status.

from significant health risks by sponsoring research and developing and enforcing environmental regulations.”¹⁸ A 2012 study conducted by Harvard University connects the widespread use of bees as agricultural pollinators in conjunction with pesticide use in those same crops has been shown to be the cause of CCD.¹⁹ The EPA however, is hesitant to make the connection, saying deaths due to pesticide use are almost always avoidable.²⁰ This sleight of hand leads me to question the ethics of the EPA and begin to wonder where their interests truly lie.

A hive affected by Colony Collapse Disorder will slowly become smaller with bees leaving to forage and somehow never returning. The hive becomes abandoned. There is a schism in the collective consciousness of the superorganism where the brain slowly dissolves piece by piece. To answer Carson’s question, ‘Where have they gone?’, the fields are littered with their corpses.

The light of the hive has gone dim.

All living things must die. European folklore has a custom which dictates that upon the death of a keeper, the bees must be immediately notified of the passing by knocking upon the hive and whispering, ‘your keeper has died’. The telling of the bees is

18 “Environmental Protection Agency | USAGov.” *U.S. Data and Statistics*, www.usa.gov/federal-agencies/environmental-protection-agency.

19 “Use of Common Pesticide Linked to Bee Colony Collapse.” *Harvard - School of Public Health*, Harvard T.H. Chan School of Public Health, 31 Jan. 2014, www.hsph.harvard.edu/news/press-releases/colony-collapse-disorder-pesticide/.

20 “Colony Collapse Disorder.” *EPA*, Environmental Protection Agency, 26 Apr. 2018, www.epa.gov/pollinator-protection/colony-collapse-disorder.

imperative, for a hive abandoned in mourning will stop producing honey and may choose to abscond; one soul becoming adrift, in search of another. In our current era of colony collapse disorder and having lost a colony of my own, I am left to wonder, who do I tell?

Amongst beekeepers, it is common knowledge that a hive remembers its keeper. This is striking considering that the lifespan of a worker bee is on average 40 days.²¹ This knowledge of knowing is passed on from generation to generation through the collective consciousness of the hive, which exists well beyond the lifespan of its individual occupants. Steiner would often refer to the hive as a body. He described the three main roles of a colony, the drones, workers, and the queen as operating similarly to the roles of nerves, blood and protein cells in the human head. He would later go on to refer to a hive as a total entity, or complete being. He likens the human body to that of a swarm of bees, wherein each individual cell is like a bee that collectively adds up to a complete entity.²² Steiner argues that if the cells of a human are completely regenerated every seven years²³, yet the soul of the being remains the same, so too does the soul of the hive. This, he says is how bees are able to remember their keeper.²⁴

21 Sammataro, Diana, et al. *The Beekeeper's Handbook*. Comstock Pub. Associates, Division of Cornell University Press, 2011, p. 12.

22 Steiner, Rudolf. *Bees Lectures*. Anthroposophic Press, 1998, pp. 22, 49.

23 Modern science has found that certain cells in the eyes and cerebral cortex do not regenerate and remain the same throughout a person's life.

Opfer, Chris. "Does Your Body Really Replace Itself Every Seven Years?" *HowStuffWorks Science*, HowStuffWorks, 8 Mar. 2018, science.howstuffworks.com/life/cellular-microscopic/does-body-really-replace-seven-years3.htm.

24 Steiner, Rudolf. *Bees Lectures*. Anthroposophic Press, 1998, p.47.

Steiner's descriptions of the hive as a body, floridly describe the concept of the hive as a superorganism. A superorganism can be described as a group of synergistically interacting organisms of the same species.²⁵ This is a community in which the self is far less important than that of the whole. In the hive, bees are divided up into three distinct labor roles; drones, workers, and the queen. Each hive contains one queen to which all others are in attendance to. She is responsible for laying eggs in order to keep the hive going. She may lay up to 200,000 eggs per year. Workers make up most of the superorganism and play many roles within the hive, as collectors, attendants, and protectors. Drones are the male members of the community and are only tasked with mating with the queen. A good sign of a healthy hive is one that is not producing many drones. Similarly, the sudden appearance of drones in a large hive might signify that the colony may be producing a new queen and may swarm.²⁶

Like the bee, the individual blades of turfgrass in a lawn are also interconnected. This connection is formed within the soil. Within its subcutaneous being, the rhizome manifests itself through arterial infrastructure. The roots of a rhizomatic plant spread first horizontally beneath the soil before sprouting up shoots, resulting in a single living entity which exists as a series of many collective 'individual' plants. As it's older shoots grow old and begin to die off, new shoots are continually forming.

25 "Superorganism." *Wikipedia*, Wikimedia Foundation, 3 June 2018, en.wikipedia.org/wiki/Superorganism.

26 Sammataro, Diana, et al. *The Beekeeper's Handbook*. Comstock Pub. Associates, Division of Cornell University Press, 2011, pp. 11-19.

This rhizomatic model of growth has been co-opted into philosophical thinking to serve as a paradigm for a non-hierarchical knowledge and cultural model, first conceived in *Capitalism and Schizophrenia* by Deleuze and Guattari. They posit that unlike the root system of a tree, which can be sourced to a single origin point, the rhizome has no beginning or end and can branch out in a multitude of directions simultaneously.²⁷ While this may appear non-hierarchical, Deleuze and Guattari neglect to consider that for a rhizomatic plant, the purpose of being rhizomatic is to cover as much surface area as possible, without regard to other plants in its path. In this light, the rhizomatic method of knowledge gaining is highly hierarchical and can easily become invasive, overtaking any other ideas deemed less important. The colonization of the West in the interests of transatlantic shipping commerce is an example of the subversive nature of the monocultural rhizomatic structure.

The lighthouse is a symbol of safety, aiding and allowing the safe passage of ships along the European and American coastlines, yet this fact alone would not have been enough to subsidize the substantial costs of integrating such a vast infrastructural network up and down the coasts. Transatlantic commerce was the motivator. In this way, the light of the lens is not a symbol of safety and salvation, but rather a symbol of the colonization which took place along European and American coastlines in the name of economic trade. The lighthouses became the rhizomatic and ethnocentric technology through which colonization continued to stake its claim.

²⁷ Deleuze, Gilles, and Félix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia*. Bloomsbury, 2016.

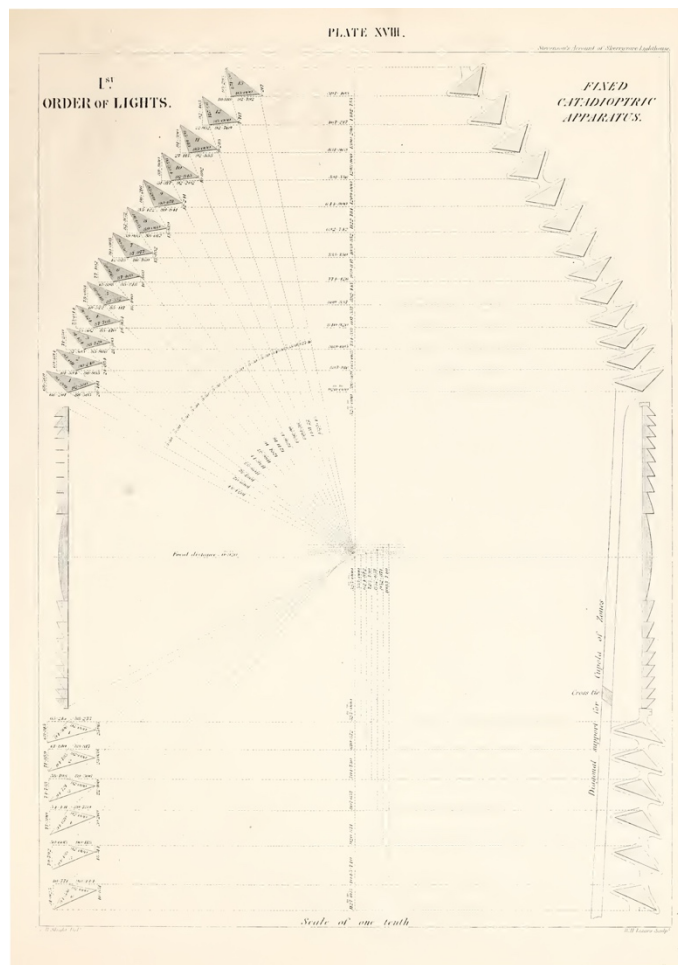
It was a drop of honey that helped Augustin Fresnel prove the theory that light is diffracted in waves, not particles. In 1815 he set about proving the light wave theory by building out a completely dark room, save for a small hole to the outside which allows light to enter. This room, similar to a camera obscura, allowed light to pass through the opening and around a metal wire, the shadows of which were projected along the back wall, which he would then measure. The small aperture of the hole combined with Earth's rotation only allowed sunlight to enter the room for a short period of time. To mitigate this, Fresnel placed a drop of honey from a hive his mother kept, onto a lens creating a convex shape which could capture light for longer durations.²⁸ It was through this lens of mellified light that he began his lifelong quest in search of the properties of light.

Light pushes outwards from its source equally in all directions. Lighthouses at the time continually struggled with finding ways of pushing their light further out to sea. A large convex lens was capable of capturing light and bending it in one direction, however, production of a single lens of this magnitude would have been beyond the capabilities of glass producers of the time. The weight of such a large object would have also made the object nearly impossible to move and place in the upper reaches of lighthouse towers. Fresnel became fixated on finding a lighter and more efficient way of solving the problem. He determined that a single convex lens could be broken up into many smaller prisms, arranged in concentric circles around its center point. This would break the lens down into much smaller, tunable pieces which would be easier to move and install,

²⁸ Levitt, Theresa. *Short Bright Flash: Augustin Fresnel and the Birth of the Modern Lighthouse*. W W Norton, 2015.

while also allowing light to bend in a unilateral direction. The developments became known as the Fresnel lens and were originally built in 6 different orders, or sizes, depending on their uses. The largest was a First Order lens and was used at major coastal sites where light could be pushed far out to sea. *Afterlight* is based on the proportions of this model of lens.

Figure 8: Plate XVIII from *Notes on the Illumination of Lighthouses*



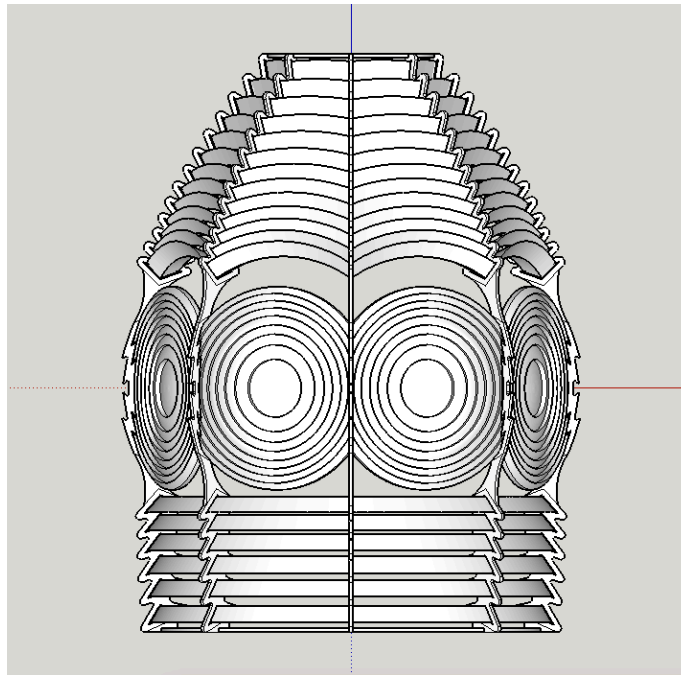
The lens stands in articulated form, each of the 13 upper and 6 lower prisms is built to scale from the proportions noted in the book *Notes on the Illumination of Lighthouses*

which was published in 1848.²⁹ The book contains a cross-section of a fixed catadioptric lens³⁰ which was scanned and used to digitally plot the coordinates of each prism. This 2D cross section was then translated into a 3D model, which provided the dimensions for each lens prism. For ease of repetition, a wooden jig was built for each prism, in which steam bent bamboo could be formed, creating the components of the sculptural work. Whereas a traditional lens emits light and pushes it outwards, *Afterlight* has gone dim. It now serves as a lantern which harnesses light from outside its parameters, revealing its inner infrastructure of string and wood to those standing at its center. In its original state, a First Order lens would have been a technological masterpiece of its time weighing in at over one ton. By contrast, *Afterlight* is hand-made of simple materials and in total weighs less than 50 lbs.

²⁹ Stevenson, Alan. *Account of the Skerryvore Lighthouse: with Notes on the Illumination of Lighthouses*. A. And C. Black, 1848.

³⁰ Catadioptric refers to a lens system that utilizes reflection (catoptric) and refraction (dioptric) in order to reduce aberration. Use of the word fixed refers to a system that does not move once focused.

Figure 9: 3D rendering of the lens



Light as a technological influence is nothing new. Humankind has always been transfixed by light. Countless early religions were thought to have worshiped the sun, though perhaps this sun worship is nothing more than a thorough understanding that light begets life. Generations of watching things grow, in relation to the seasonal changes and shifts of the sun, would certainly lead to an understanding that this is a vital aspect to life; yet does this knowledge make it any less transcendent? It is perhaps, the deeper questions: where does the sun come from and how will it end that asks the larger questions. Light then becomes more than a tool for keeping warm and helping things grow. As the sun sets, the light goes out and darkness seeps into the bones. Haunted by the unknowing of what dwells in the obscurity of afterlight, an invention was born. Fire became the sacred technological light through which we became hypnotized.

It is no wonder that light was chosen as the symbol of Enlightenment, a time when reason began to separate the murky waters of God, Science, and Magic. Light exposes the apparatus, removing the mystery through which many of life's questions were once asked. Science and reason began to gain a foothold over magic and spirituality. One light snuffs out another. "God is dead".³¹

Humanity continues to follow this technological light, and to this day remains transfixed by it. Humans are after light. In his book *Techgnosis*, Erik Davis describes how the technological innovations of writing and the printing press helped to spread the light of the gods to a much wider audience, helping to solidify the 'changeless light of God'. He goes on to describe the alchemical fire brought forth through the advent of electricity as the life force through which we all subscribe.³² Many eras have existed in different lights. I was born in the twilight of the incandescent era and now live in the time of LEDs. With technology changing as quickly as it does, we forget how to experience the old light of other days.³³ Junichiro Tanizaki writes of how lacquer tableware was meant to be experienced by candlelight, wherein one can become entranced by a simple miso soup swirling in the depths of the black lacquer bowl.³⁴ In darkness of the bowl, the

31 Nietzsche, Friedrich Wilhelm, et al. *The Joyful Wisdom = "La Gaya Scienza"*. University Press of the Pacific, 1924.

32 Davis, Erik. *TechGnosis: Myth, Magic Mysticism in the Age of Information*. Serpent's Tail, 2004, pp. 33, 45.

33 Bluhm, Andreas, and Louise Lippincott. *Light!: the Industrial Age*. Thames & Hudson, 2000, p. 14.

34 Tanizaki, Junichiro, et al. *In Praise of Shadows*. Leete's Island Books, 2008, pp. 14-15.

universe can reveal itself. As society hurdles forward, ever in search of the next shining symbol of salvation, I can't help but notice the light is becoming brighter. According to Christopher Kyba a scientific researcher with the International Dark-Sky Association, light pollution caused by artificial light disrupts the natural rhythms of nocturnal ecology and represents one of the most drastic changes human beings have made to their environment.³⁵ Perhaps there is a need to move beyond the bright ideals of Enlightenment-era thinking. Perhaps there is still a power hiding in the shadows of the Afterlight.

Dark Ecology is an ecological outlook put forth by Timothy Morton, which expands upon the premises of Deep Ecology, a concept first organized by Arne Næss in the Early 1970s. Næss, building upon some of the core concepts brought forth by Carson in *Silent Spring*, espoused the viewpoint that all living things had an inherent worth, regardless of their usefulness to humans. It also describes how the human species is deeply connected to these organisms and exists as a part of Earth, not removed from it.³⁶ This movement has been criticized in that it anthropomorphizes nature and presupposes that plants and animals are subject to the same moral codes enacted by humans. Still others are averse to the spiritual salvation that is implied through the enactment of its discourse. Dark ecology, by contrast, accepts that Earth has been placed at the verge of the sixth extinction, through the technological and commercial

³⁵ "Light Pollution Effects on Wildlife and Ecosystems." *International Dark-Sky Association*, 12 Sept. 2016, darksky.org/light-pollution/wildlife/.

³⁶ Sessions, George. *Deep Ecology for the Twenty-First Century*. Shambhala, 1995.

interests of humans, and posits that “The growing familiarity with this state of affairs is a manifestation of dark ecology. Dark ecology begins in darkness as depression. It traverses darkness as an ontological mystery. It ends as dark sweetness.”³⁷

In the current era of the Anthropocene, a crossroads has been reached. Earth is on the verge of extinction unless we can band together to save it. Humanity is on the verge of a new salvation brought forth in reaction to climate change; under the banner that together, we can save the world and make it a better place, for ourselves and all of nature. This anthropocentric viewpoint, while admirable on the surface, is quite problematic. It posits that humans are the most important beings on the planet and that it is up to our guiding hand to help save everything else; the plants, animals, insects and other living creatures of the world. To what end? So that we may continue to be stewards of the land, all the while tapping it of its resources for the social and financial interests of humans? This stewardship in effect becomes a colonization of the earth and all of its inhabitants. In geological time, *Homo sapiens* have been on the earth for 0.004% of Earth’s history,³⁸ and yet we assume a position of authority over all its inhabitants.

The word ‘nature’ then becomes suspect as it separates the human, from everything else. This is evidenced by my use of the terms observing nature, and controlled nature earlier in this text to describe my removal of myself from ‘nature’ in my work. If the

³⁷ Morton, Timothy. “What Is Dark Ecology?” *Changing Weathers*, www.changingweathers.net/en/episodes/48/what-is-dark-ecology.

³⁸ “History of Life on Earth.” *BBC*, BBC, www.bbc.co.uk/nature/history_of_the_earth.

human 'me' can observe the interactions and effects of nature through my experiments, it should be said that nature can be doing the same thing. Perhaps nature is observing us. I will describe the room once more.

In the twilight of the room, there is something else. There between the strings, a spider is spinning its web. The infrastructure is there, the bones are good. The web is spun in many directions upwards and downwards, forward and back, weaving in and out of the network. Look through the prisms, the web is there. A gnat drifts into the web, struggles for a moment and then surrenders, her wings causing the web to sway gently. In the darkness of a closed gallery, a mushroom pushes upwards between the grasses. At noon, when the lights come on, the mushroom will wilt for a time, only to be reanimated again on the next darkness cycle. The larvae of a crane fly nests in the moist soil, while a mature crane fly keeps watch along the gallery wall. A white cocoon peeks out from the soil line. A bee spends her last living moments lying at the center of the lens, surrounded by a familiar scent of wax. Nature has moved indoors. Nature is adapting.

What would the tomb of Smithsonian's museum, look like in the Afterlight of the sixth extinction? How would the flora and fauna that will inevitably survive or evolve, restructure the ruins of the previous era's cultural treasures? There will inevitably come a time when the cultural objects that we have worked so carefully to preserve for future generations, will no longer be subject to their intended audience. It is important to note however that they will still have value, albeit through a separate set of standards than originally intended. There must be a way of creating works of art that will appeal to an audience in the present, as well as the future; an audience both human and non-human.

This idea is only radical when viewed through the lens of an anthropocentric perspective. To everything else, a sculpture is simply an object with varying degrees of usefulness.

Beneath the wax which coats the lens in my exhibition, there is a layer of plastic, which serves as the substructure for the conveyance of the wax. The remnants that humans leave behind, are now a part of Earth moving forward. Humanity has left its mark.

Technology has left its mark. It is not unreasonable to consider that these remnants will be utilized in some beneficial way to a living thing in the future. I have observed glass bottles in the desert that contain within them the perfect environment in which a small plant can grow. The oil reserves that we so readily tap into today, are derived from once living, breathing creatures from a previous time. In death, bees retain the capacity to sting, as if a final jolt of electrical current remains within the corpse, like a discharging battery. Perhaps it is not for me to tell of the bee's disappearance, but rather the bees are telling us of ours.

What happens when the light goes out?

Afterlight does not exist in death any more than it does in life; nor does it exist in the past any more than the present or the future. It is somewhere in between. The universe can be described as existing in sidereal time: a time which is reckoned from the motion of the earth relative to the fixed positions of stars, as opposed to that of the sun.³⁹ This

³⁹ Kornreich, Dave. "What Is Sidereal Time?" *Curious About Astronomy?*, curious.astro.cornell.edu/about-us/122-observational-astronomy/timekeeping/general-questions/760-what-is-sidereal-time-beginner.

is the method by which astronomers locate celestial objects in the sky. A sidereal day is slightly shorter than that of a standard day. When I first learned of this, I began musing on how many eons have been gained or lost in the difference between sidereal time and civil, or earthly time. The answer is none. The extra sidereal 'day' simply enfolds itself into that of a solar year. To look at the stars is a way of looking at the past. The light swirling about in Tanizaki's bowl is ancient light. When a star goes dim, it will still take many light years for its last glowing tendrils to reach Earth. It is in this space between that afterlight can be found.

Figure 10: *Afterlight* (detail)



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