OBJECTS IN TRANSFORMATION

CAROLINE LIPPINCOTT

Objects in Transformation

Caroline Coxe Lippincott

Master of Architecture Thesis

Architecture Department

Rhode Island School of Design

June 2022

Primary Advisor: Amelyn Ng

Secondary Advisors: Carl Lostritto and Shou Jie Eng

Abstract

Traces and marks left behind tell the stories of buildings and their materials. Remnants of the past remain, while new construction is layered on top, creating a kind of palimpsest. Artifacts of material time - rust, erosion, growth - are inevitable, yet often feared. Typically in search of longevity, architects gravitate toward materials and finishes that promise durability. My work questions some of the assumptions we have about material quality as a function of time. Through experimental artifacts, this thesis reorients our perceptions of time's effects on the built and natural environments, and introduces a new and expanded time scale.

Content

Introduction *7-15*

I. Material Dissolution *16-35*

II. Drawing with Rust *36-55*

III. New Growth *56-73*

Conclusion *74-79*

Glossary

Supporting Works

Acknowledgements

Introduction

PERCEPTIONS OF DECAY

Traces and marks left behind tell the stories of buildings and their materials. Artifacts of material time - rust, erosion, growth - are inevitable, yet often feared. Through experimental artifacts, this thesis reorients our perceptions of time's effects on the built and natural environments and introduces a new and expanded time scale.

Prolonged exposure to both natural elements and human factors can accelerate a building's aging process. When the surface of a material erodes, a new version of that same material is revealed. My work questions some of the preconceptions we have about material quality, often delusions that are a function of time. Materials we think of as strong do in fact weather with age.

A building begins its aging process even before it is completed. As a building is lived in, it ages. It experiences constant wear and tear from humans and the environment. In the search for longevity, architects typically gravitate toward materials and finishes that promise durability. Instead of building something meant to last forever, what if we build something with components that are supposed to last for only a moment in time?

When a building crumbles due to the effects of time, remnants are left behind. New construction or growth is then layered on top of the existing, creating a kind of palimpsest. As certain material ages, it decays. Decay exists on two opposite sides of a spectrum: the picturesque ruin and a stamp of societal neglect. David Leatherbarrow states in his book, Building Time, that "from one point of view [...] the accumulation of dirt enriches; from another, it dissolves the building. The first, if uninterrupted, leads to the second." And while some have the privilege to seek out the weathered shingle look, many are forced to live with a kind of decay that is a threat to their health and safety.

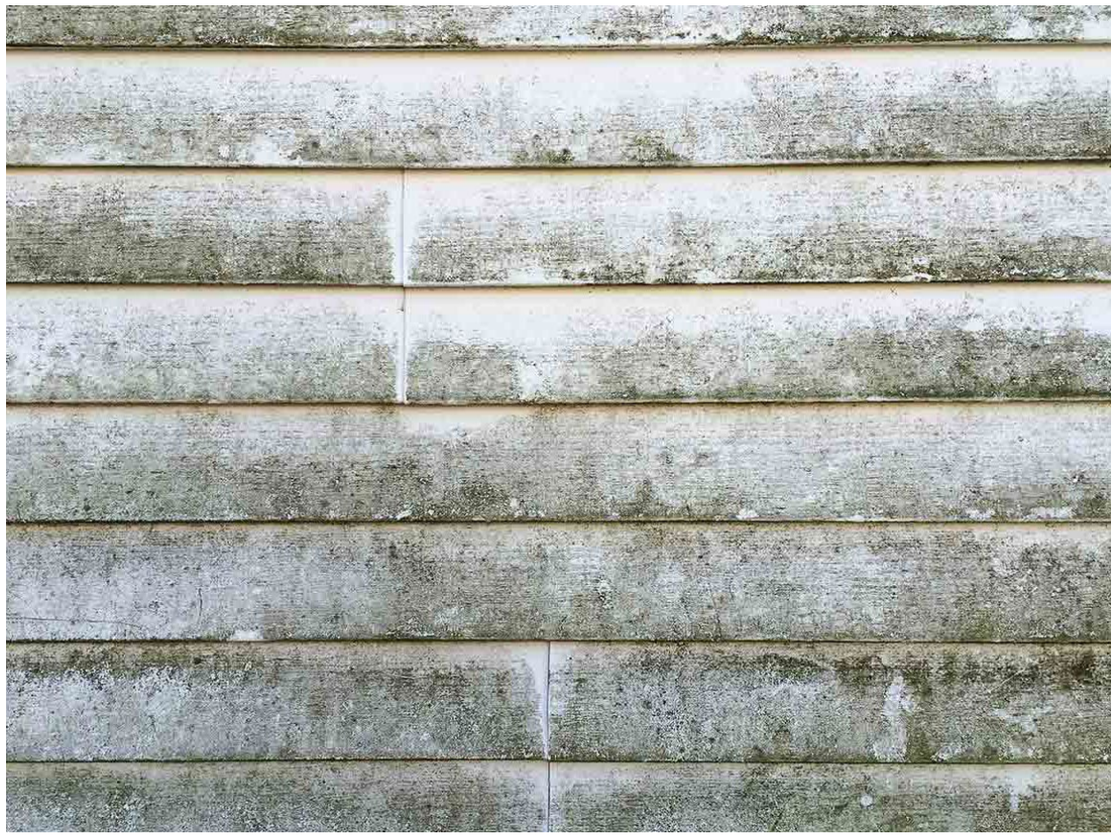
Society has fetishized ruins for centuries. Inspired by Grand Tours beginning around the 18th century, artists would paint picturesque ruins, both existing or projected. Seen above is Joseph Michael Gandy's 1798 depiction of the "Rotunda of the Bank of England." Image courtesy of the Web Gallery of Art and the Sir John Soane's Museum.

People today still obsess over ruins. Multiple Instagram profiles and hashtags are dedicated to phrases, such as "ruin porn." Image courtesy of James Kerwin.

The Ise Shrine is a Shinto shrine located in Japan. Every twenty years, the shrine is dismantled and an identical one is constructed adjacent to it. Seeing that this practice has been going on for over a thousand years, the Ise Shrine straddles the line between permanent and temporary. Image courtesy of the World History Encyclopedia.

How can one manifest time? Jorge Otero-Pailos's series, "The Ethics of Dust," does so by collecting dust and dirt accumulated over decades or even centuries from some of the world's oldest structures. Image courtesy of Otero-Pailos.

While weathered shingles are a result of age, they are generally viewed as an aesthetic trend.



Mold and mildew, also products of age, can harm a building's occupants. These substances are not only dangerous to inhale, but can also threaten the structural integrity of a building.

I. MATERIAL
DISSOLUTION

II. DRAWING
WITH RUST

III. NEW
GROWTH

Three series of experiments were conducted to help illustrate how materials transform. These abstracted series emphasize the ephemeral nature of certain materials and highlight their transformations into something new. The remaining fragments then exist as building blocks for the next thing to come.

I. Material Dissolution

This series plays with ideas pertaining to material durability and qualities of permanence. Blending materials thought of as permanent and impermanent, “Material Dissolution” helps illustrate what happens when one element disappears, and asks how the permanent can exist without its transient counterpart?

Over seventy-five small bioplastic cubes were made to help manifest these ideas. Each cube is made of a binding agent with some sort of rock, sand, or shell aggregate. The binding agent, which also acts as the base, is made of water, gelatin, and glycerin. The mixture was then poured into two-inch cubic molds. The aggregate was then added and the molds were placed in the refrigerator. After approximately an hour, the cubes solidified and were able to be removed from their molds.

Each cube differs from the other. There is a wide variety of base-to-aggregate ratios, combinations of aggregate, colors, and sizes. These differences are visually heightened when the bioplastic cubes interact with each other. Exercises involving arranging and stacking the cubes sparked ideas about their future assemblage in the wild.

In addition to experimenting with different configurations, some of the cubes were cut up to create new shapes and sizes.

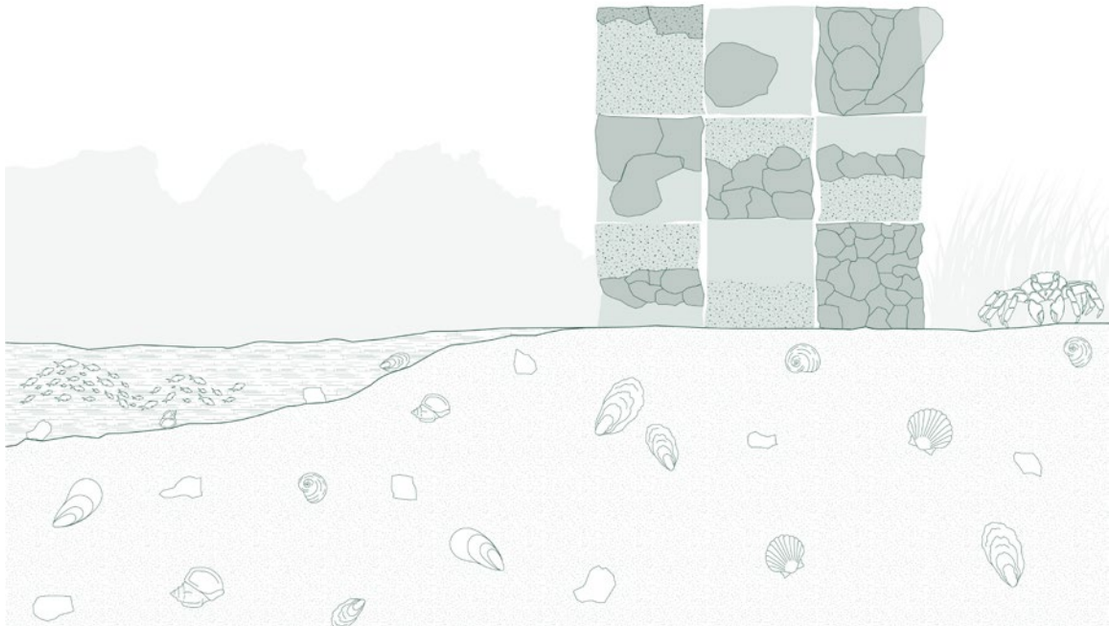
The cubes are thermoplastics, meaning that their properties change under certain temperature conditions. As shown above, when exposed to intense heat, the bioplastics melt. On the other hand, when exposed to colder temperatures, the bioplastics harden and become more brittle. This experiment was conducted in an oven set on broil. Within minutes, the forms melted, allowing the aggregate to flow out of its mold and disperse.

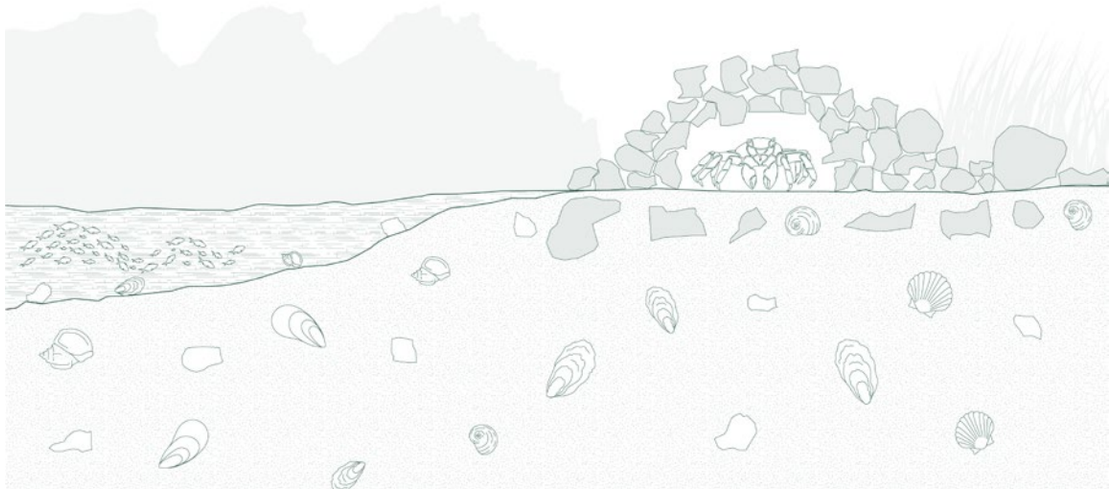
These objects are not meant to exist in their pristine states forever. They are susceptible to mold when left in hot sealed plastic containers.

They also change shape and eventually dissolve.

Seeing that most of the aggregate came from Jamestown, RI, it would only be fitting to assemble the cubes on the beach there.

Depending on the temperature and sun exposure, the cubes may melt, allowing the rocks and sand to return back to where they came from, embracing transience instead of stability.





II. Drawing with Rust

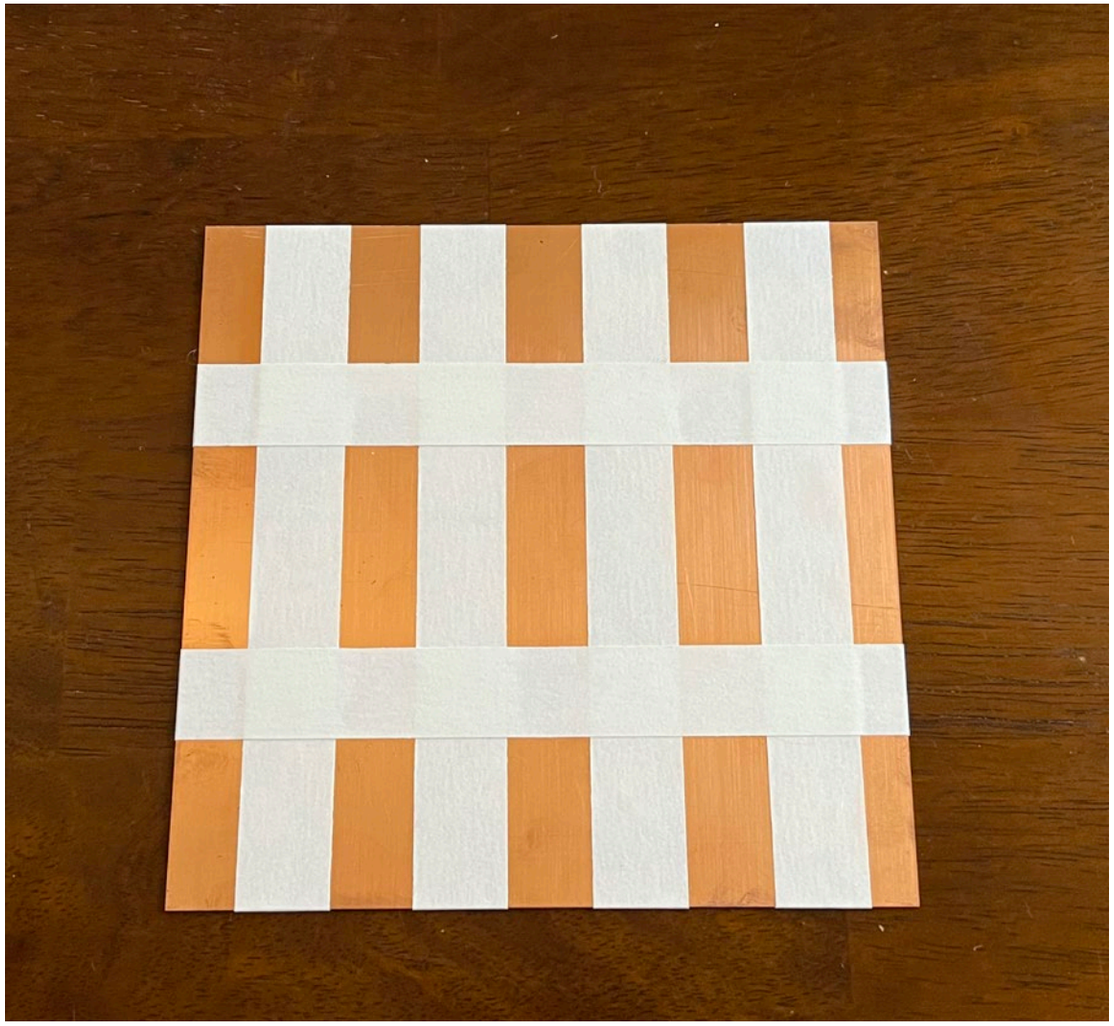
"Drawing with Rust" attempts to manifest what intentional decay can look like in regard to architectural representation. How can we manipulate material and the factors that lead to its degradation and turn it into a new way of seeing? How controllable are certain transformations?

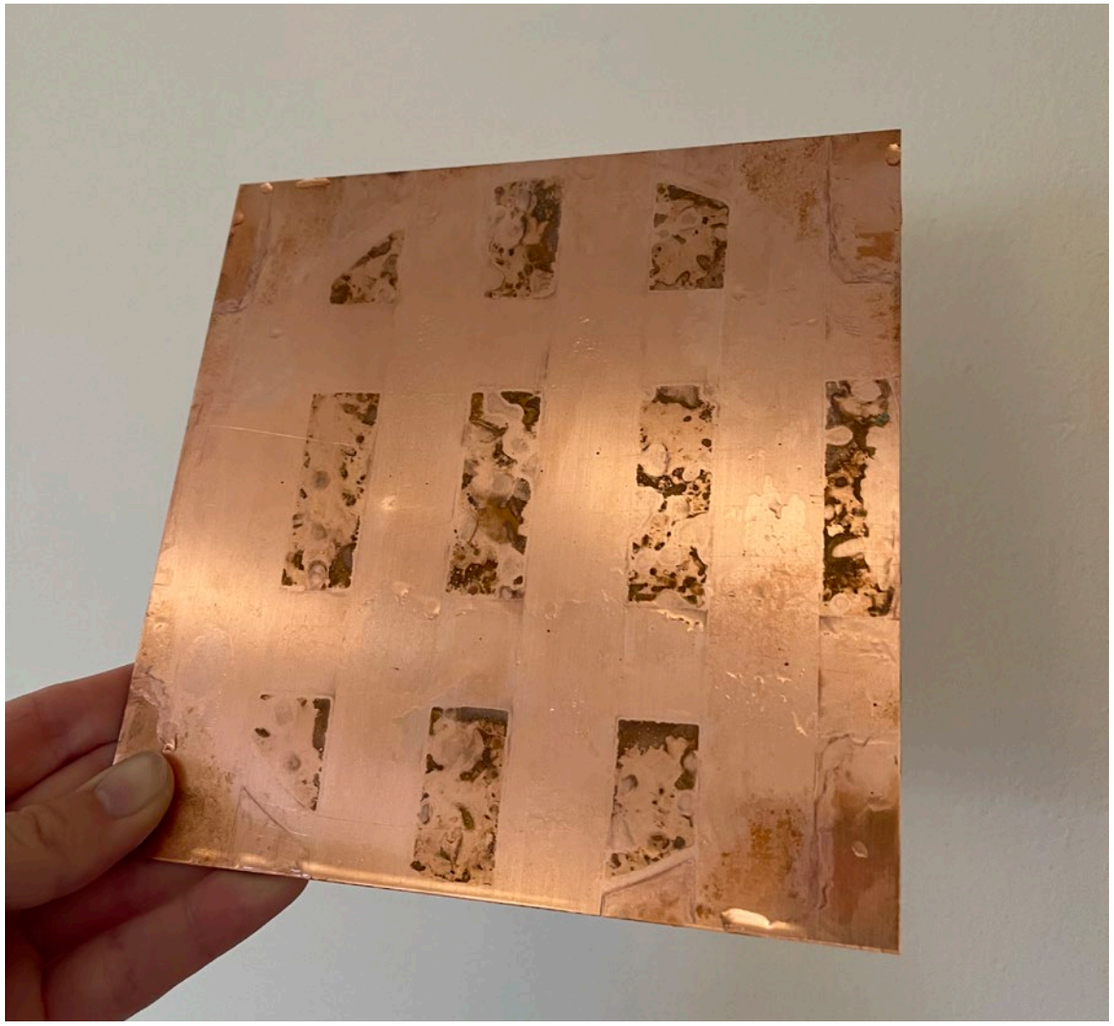
These questions were answered with the help of copper and weathering steel plates. Tape, crayons, and other materials were used to create drawings on the metal plates. The copper and steel were then exposed to accelerators, such as boiling water, vinegar, steam, and ocean water. Exposure time, type of material, and method of acceleration were carefully recorded.

The accelerators allowed the metals to patina and rust, giving them a weathered look. In certain instances, when tape was used, an almost pristine version of the drawing remained intact after the tape was removed. Layering drawing on top of drawing, this exercise also helped to illustrate the concept of palimpsest.

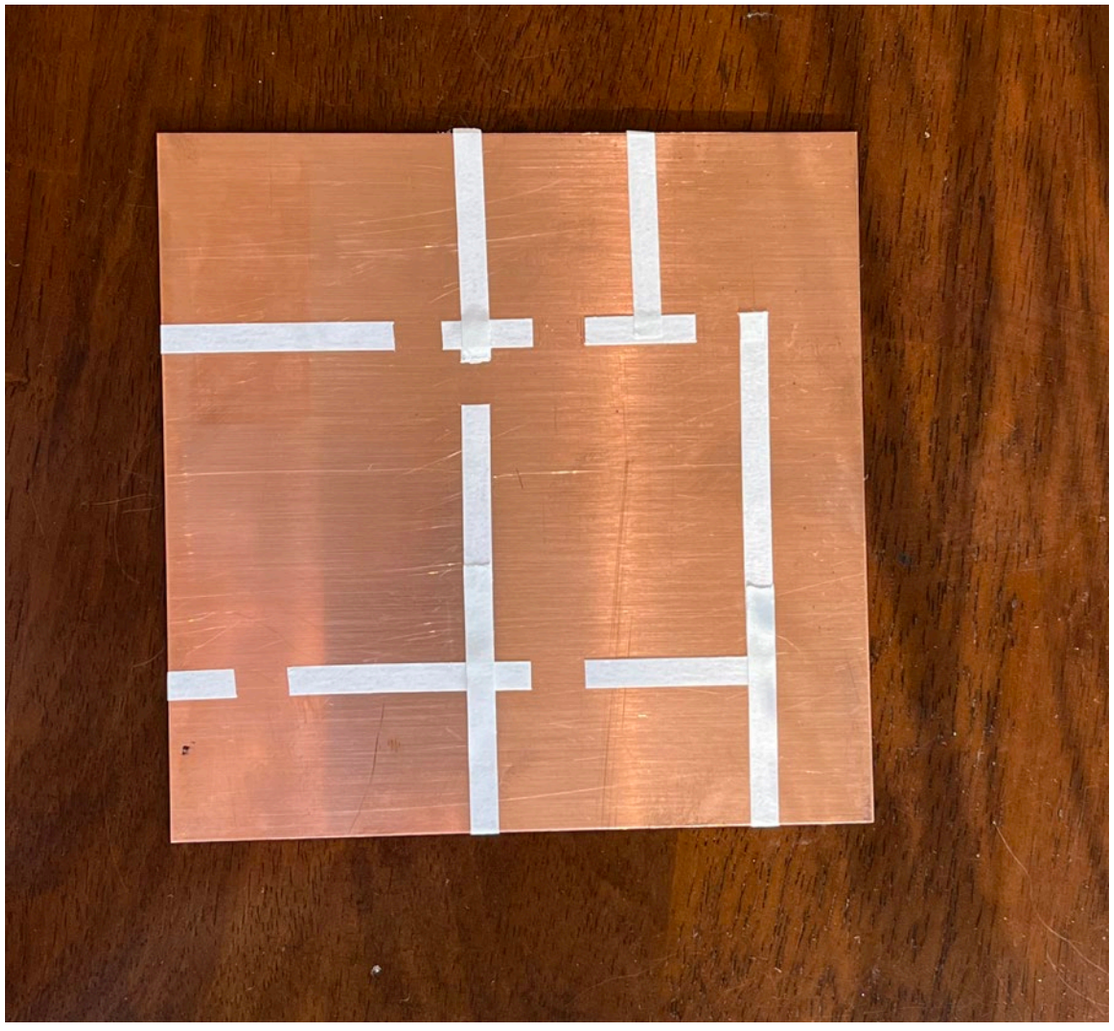

TRANSFO


TRANSFORM



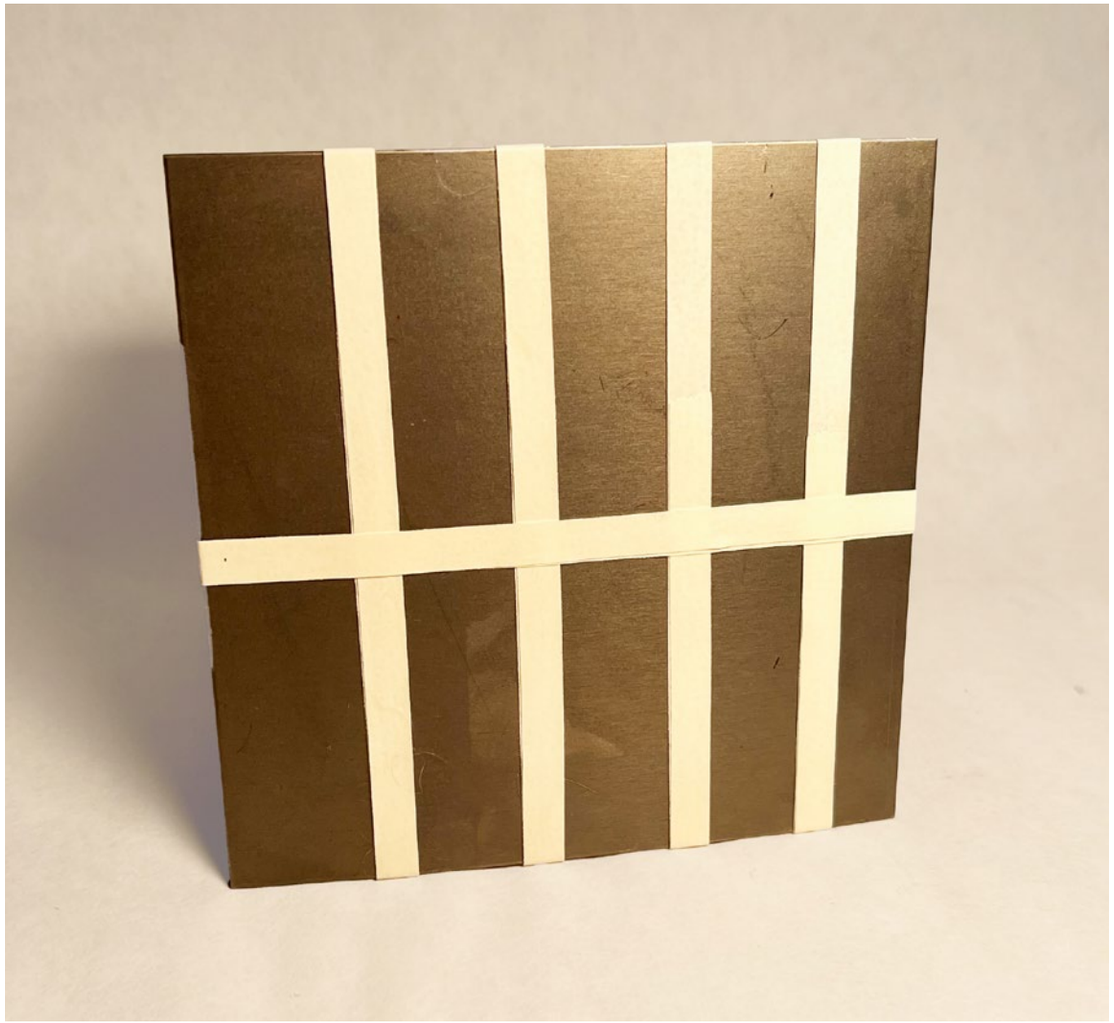


Base Material : Copper plate, smooth surface
Applied Material : Artist tape
Accelerator : Salt water (steam)
Temperature : Boiling point
Time : 15 minutes

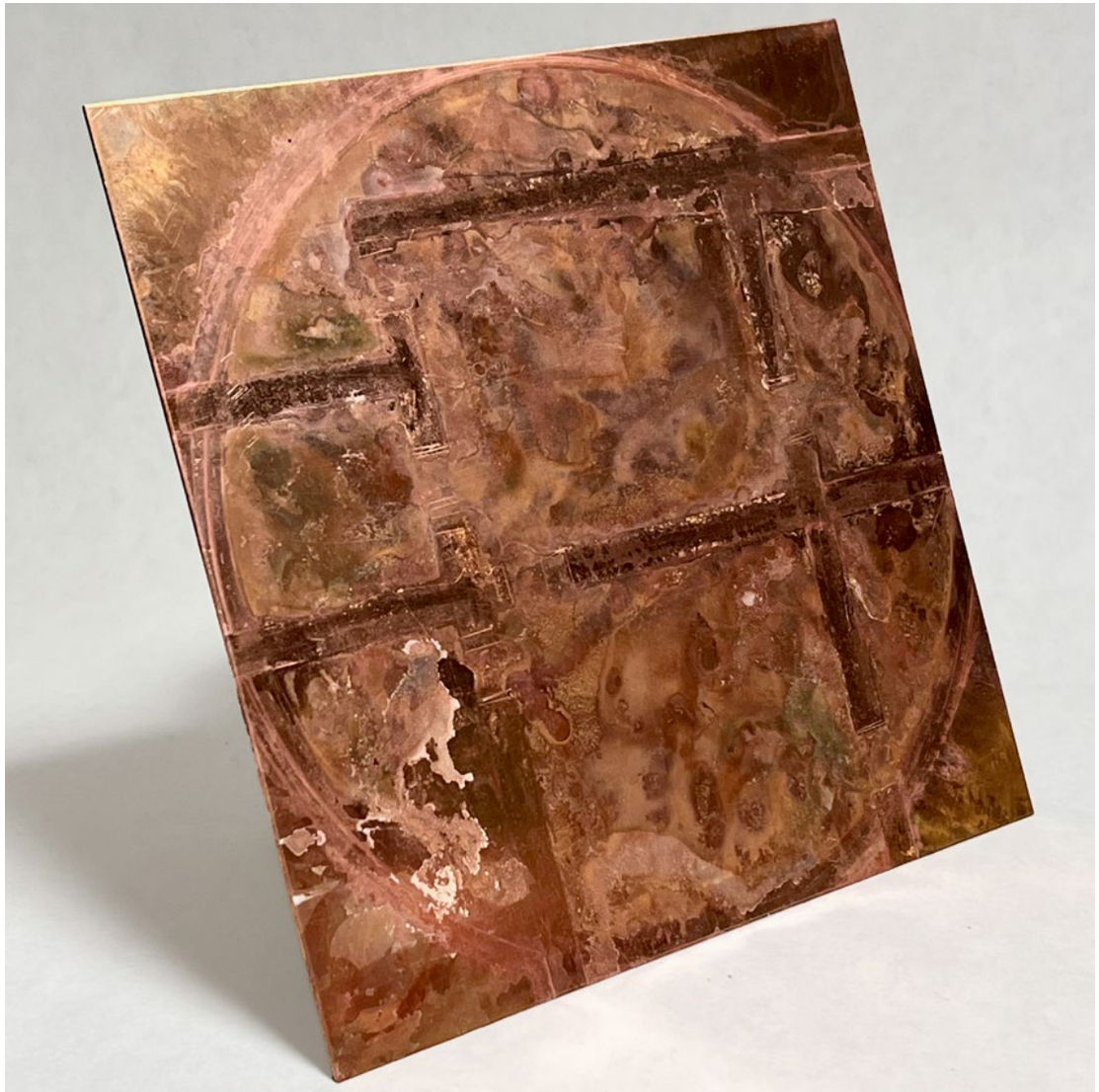


Base Material : Copper plate, smooth surface
Applied Material : Artist tape
Accelerator : Salt water (steam)
Temperature : Boiling point
Time : 15 minutes

Base Material : Weathering steel, smooth
Applied Material : N/A
Accelerator : Salt water (direct)
Temperature : Boiling point
Time : 15 minutes



Base Material : Weathering steel, smooth
Applied Material : Artist Tape
Accelerator : Hydrogen peroxide & vinegar
Temperature : Room temperature
Time : One minute



Finally, some of the plates were exposed to the ocean water. While this weathering process was slower than the ones done at home, it was perhaps more meaningful for it allows us to see materials as a litmus of atmospheric and ecological conditions.

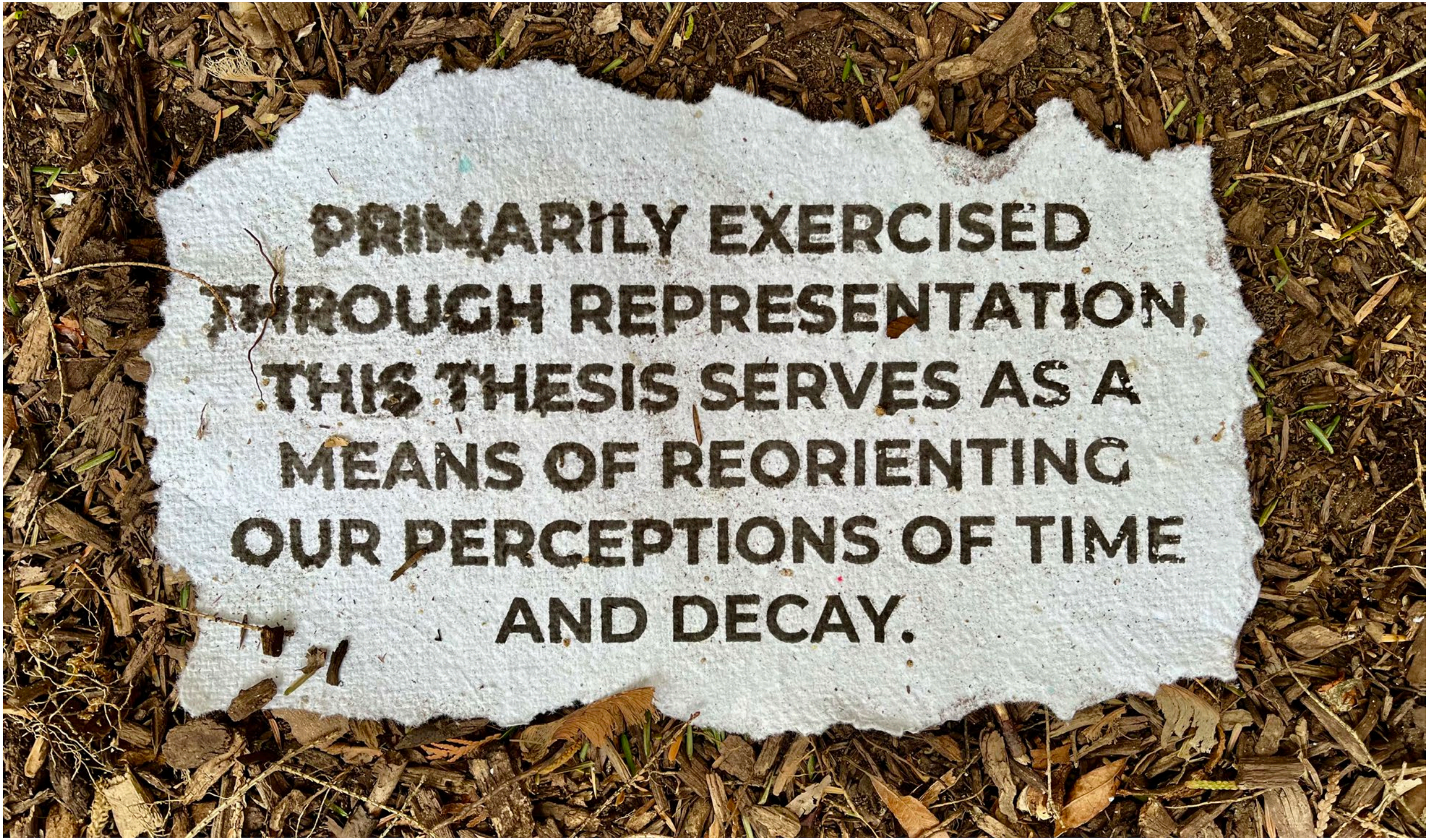
Base Material : Weathering steel, smooth
Applied Material : N/A
Accelerator : Narragansett Bay
Water Temperature : ~48 degrees
Time : 1 hour, but continued to rust after

III. New Growth

The final series, "New Growth," explores the idea of growth. Normally, undesirable substances grow on material surfaces as a consequence of neglect or environmental factors. This series tries to reframe that growth in a more positive light.

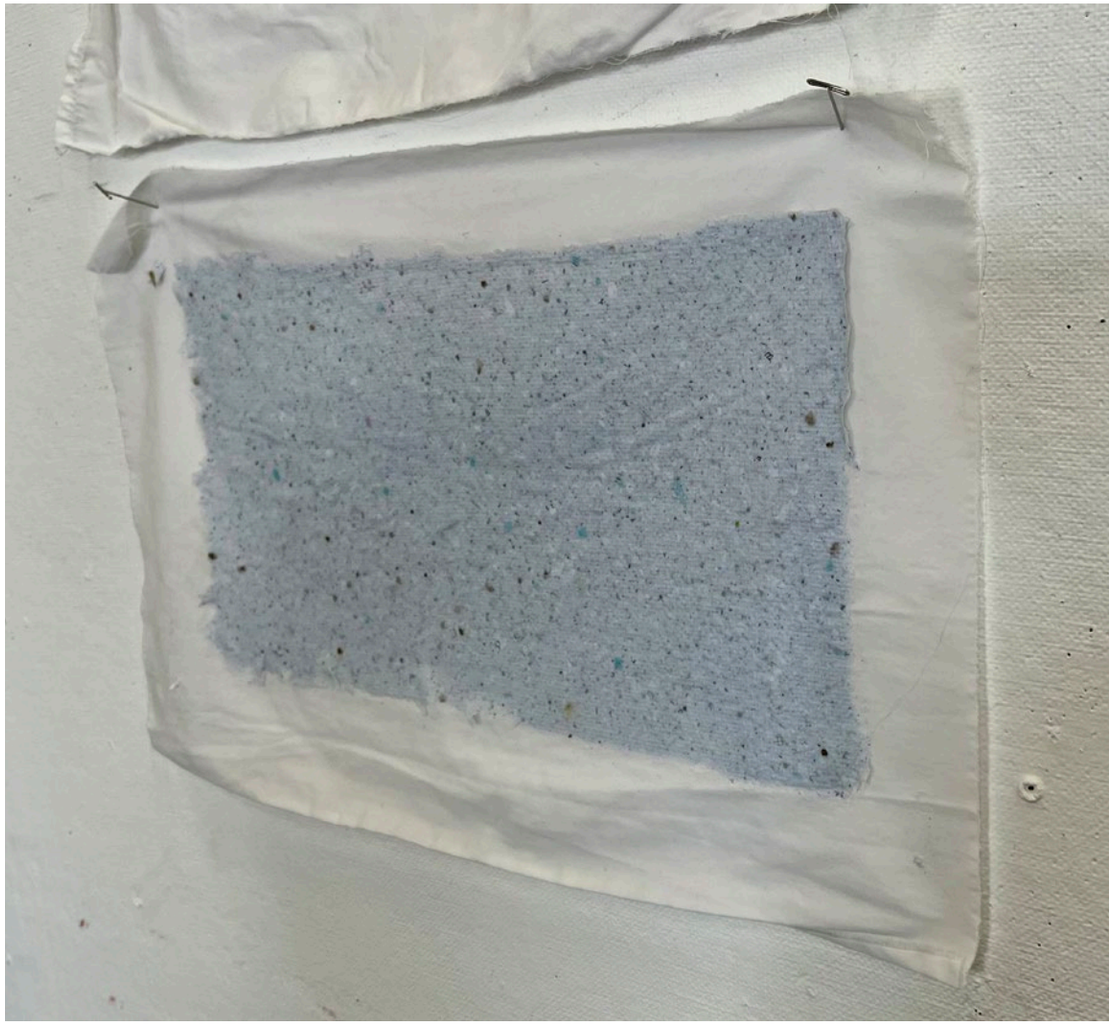
This series centers around the act of making and planting homemade seed paper. The seed paper was made from shredded recycled paper - primarily old tests, homework assignments, and notes. The paper was blended with water to create a thick pulp. The mixture was then poured into a large tub of water, and a rectangular strainer was used to collect the pulp. Next, wildflower seeds were added. The pulp was then transferred onto scraps of bedsheets where they dried. The sheets were either laid flat to dry or were draped over objects so that when they dried, they would keep the shape of their hosts.

Once the paper was dry, it was planted both outside and in indoor planters. Over time, the seeds sprout, and the paper dissolves. Once the wildflowers mature, they will assume their intended ecological roles, such as assisting with pollination, flood prevention, and water retention. The wildflowers act as reminders of the paper.


PRIMARILY EXERCISED
THROUGH REPRESENTATION,
THIS THESIS SERVES AS A
MEANS OF REORIENTING
OUR PERCEPTIONS OF TIME
AND DECAY.

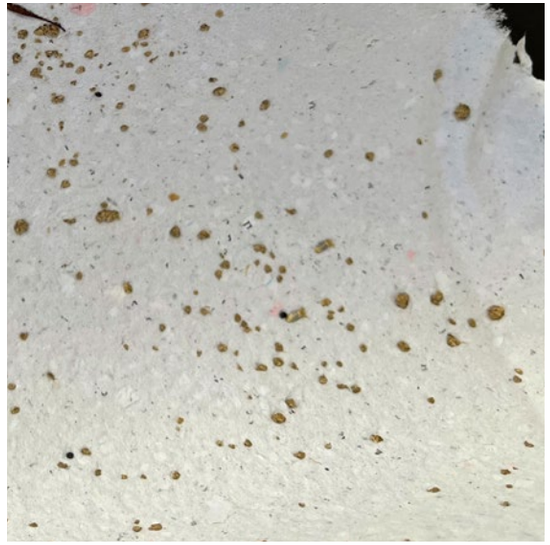
Process - Blending the shredded paper and water.

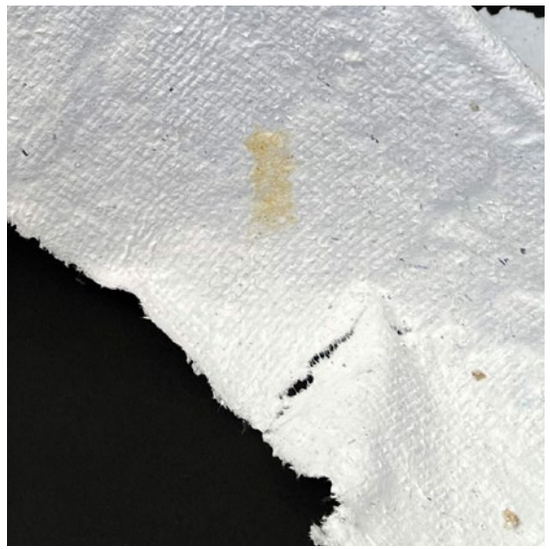
Process - Straining the pulp and mixing in the wildflower seeds.

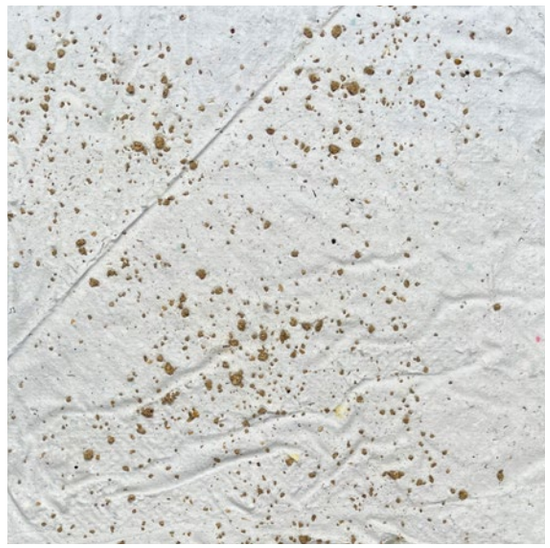


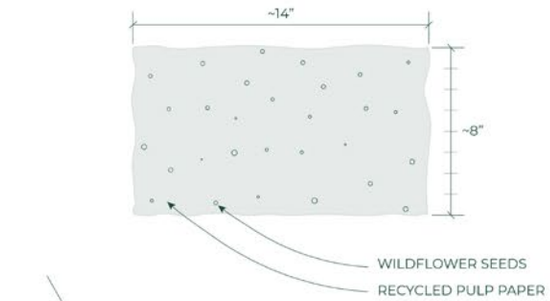
Process - Hanging the paper to dry.

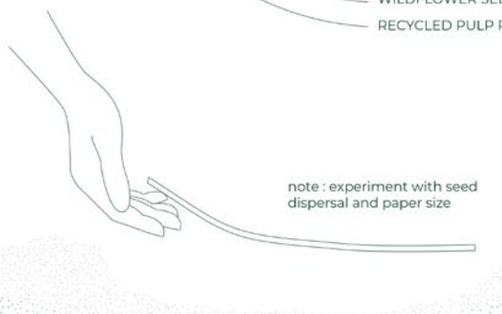
Process - Draping the paper over other objects.

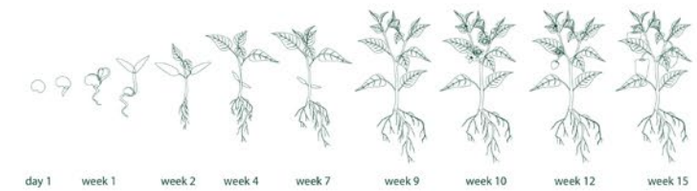




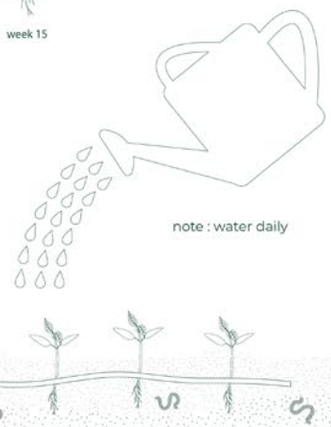


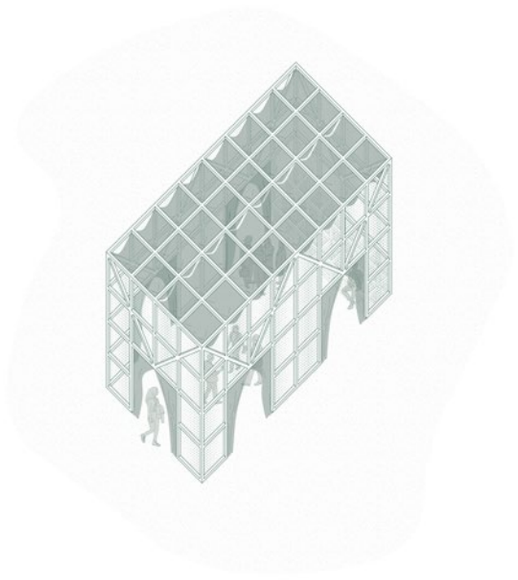






GROWTH STAGES
note : growth times may vary





Conclusion

Incorporating time's role in architecture uncovers different uses for materials and unlocks new options for design. Furthermore, it helps guide our perceptions of time. Perhaps permanence is found when we learn to expect the unexpected and work with - rather than against - time and its effects.

A structure built today with the intention of lasting for only a moment in time could be used for something else later on. By manifesting time through representation, we get a better understanding of not only what it means to be timeless, but also how we can better appreciate natural aging processes like erosion, rust, and growth. We can now see these effects as material transformations, rather than decay.

Glossary

DECAY

The Oxford English Dictionary defines decay as “the process of falling off from a prosperous or thriving condition; progressive decline; the condition of one who has thus fallen off or declined,” or in regard to material things “wasting or wearing away, disintegration; dilapidation, ruinous condition.”

DETERIORATE

Similar to the term “decay,” the OED defines deteriorate as “to grow worse in character; to become lowered or impaired in quality or value; to degenerate.”

EPHEMERAL

Can be used as a noun or adjective. Similar to “transient,” ephemeral means lasting a very short time. “Ephemerality” can be used to describe the ephemeral nature of something.

NEGLECT

As a noun, OED defines “neglect” as the disregard or indifference toward a thing.” In its verb form, “neglect” can mean “to disregard; to pay little or no respect or attention to.” Similarly to its other forms, “neglected” can be used to describe something that has been disregarded or ignored.

PALIMPSEST

Something that has been erased, yet there are still traces left behind.

PERMANENT

Merriam-Webster defines permanent as continuing or enduring without fundamental or marked change: stable.

TIME

In this case, time can be defined as a non-spatial measurement of existence through the past, present, and future.

TRANSIENT

Passing especially quickly into and out of existence

Supporting Works

Daniel Abramson, *Obsolescence: An Architectural History* (University of Chicago Press, 2017).

Caitlin DeSilvey, *Curated Decay: Heritage beyond Saving* (University of Minnesota Press, 2017).

David Leatherbarrow, *Building Time: Architecture, Event, and Experience* (Bloomsbury Visual Arts, 2020).

David Leatherbarrow and Mohsen Mostafavi, *On Weathering: The Life of Buildings in Time* (The MIT Press, 1993).

Daniela Sandler, *Counterpreservation: Architectural Decay in Berlin Since 1989* (Cornell University Press, 2016).

Ise Shrine, ongoing.

Bart Lunenburg, *A Building's Memory,* 2018-present.

Jorge Otero-Pailos, *The Ethics of Dust,* 2008-2016.

Acknowledgments

Many thanks to:

My incredibly knowledgeable and supportive advisors - Amelyn Ng, Carl Lostritto, and Shou Jie Eng - for helping me along the way.

My classmates for being there to talk through ideas, and for filling the studio with laughter no matter how tired and stressed we were.

And, of course, my family for always supporting me no matter what.

Caroline Coxe Lippincott
Master of Architecture Thesis
Architecture Department
Rhode Island School of Design
June 2022