

The Lichen Clock / Alternative Time and Surface Texture

by

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Abstract

The *Lichen Clock* thesis engages with the slow, cyclical rhythms of lichen growth as a counterpoint to capitalist time, inviting audiences to explore the concept of ‘lichen time.’ By bridging ecological, anthropological, and artistic perspectives, the research challenges human-centered notions of time and sensory experience. Lichens - symbiotic organisms characterized by slow growth and ecological resilience - inform studio-based experimentation and design approaches to making jewelry and installation. The *Lichen Clock*’s conceptual framework draws on interdisciplinary theories, including Anna Tsing’s *Anthropological Ecology* (2015), Robin Wall Kimmerer’s *Gathering Moss* (2003), Howard Risatti’s *Craft Theory* (2007), and Theodor Adorno’s *Free Time* (1977). Experiencing the time of another species is considered an “embrace of uncertainty”. (Tsing, p.21) The exploration of surface textures employs a hybrid-making process, synthesizing manual craftsmanship with digital fabrication, contributing to craft creation and product design. The research-creation methodology draws upon fieldwork including digital and analogue surface capture from lichen. The familiar surfaces of everyday objects are altered, and dialogues emerge between industrial production and organic forms, inviting viewers to engage with alternative perceptions of time and texture.

For Lichens

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1.0 Introduction

Lichen is one of the oldest species in the world; without deliberate destruction, it appears to be virtually immortal. (Pringle, p.162) This characteristic is based on its slow growth. The surface of lichens displays undulating and stacked folds, often dotted with shell-like ascospore discs (apothecia) and other complex structures such as columnar spore-forming parts. These structures reflect how lichens have adapted to the environment through the coexistence of algal and fungal.

In contrast to the complex, layered surfaces of lichens, the smooth surfaces of most design products in contemporary society convey a texture of clarity, speed, and simplicity. This textural contrast distinguishes ‘capitalist time’ and ‘lichen time’. In the *Lichen Clock* project, lichen will stand in as a measure of time, as a reminder of the slow, harmonious rhythms experienced by other species, existing beyond the busy human time. Its purpose is to inform viewers of an alternative temporal perspective that values patience and balance over efficiency.

The *Lichen Clock* consists of three parts: an installation, jewelry, and a written thesis. The installation includes projection mapping and sculptural forms; it aims to transpose the surface of lichen onto everyday household objects, creating a superposition of two contrasting visual and tactile attributes.

As objects that come into direct contact with the skin, jewelry embodies an intimate connection between tactile surfaces and the human body. It fits us with its proprietary scale and conveys the attitudes of the wearer and maker to the outside world. Apart from jewelry’s material value, it also provides a value of “handmadeness”. (Risatti, p.184)

The thesis serves as a record of my creative process in the studio and in field research, while also defining and explaining key terms central to the project. Together, these

components form an artistic response to the numbness caused by the fast pace and high efficiency of modern society.

1.1 Alternative Times

The research organizes the sensation of time into 'capitalist time' and 'lichen time'. Capitalist time represents the normative, efficiency-oriented time structure that characterizes industrial and economic systems, emphasizing productivity and linear development. In contrast, lichen time symbolizes a slow, cyclical, and interconnected rhythm of time that reflects the natural growth and symbiotic processes of lichens.

1.1.1 Capitalist Time:

Capitalist time is shaped by social norms and projected onto individuals in the form of various expectations. In a capitalist system, time is commodified and valued primarily for its utility, creating a framework where individuals are disciplined to conform to schedules, deadlines, and performance metrics. This widespread use of anxious time has permeated every aspect of society. Theodor Adorno's essay *Free Time* was among the first to distinguish free time in capitalist society. He argues that free time is inherently tied to the broader state of society and, as such, cannot be considered truly free. As Adorno states, "Organized freedom is compulsory... and you will fall prey to ridicule in a society which boasts upon you what your free time should be. Such compulsion is by no means merely external in character. It is linked to the inner needs of people in the functional system." (Adorno, p.190) This structured imposition of time resembles Foucault's concept of "discipline". A discipline is a technology deployed to make individuals behave, and be efficient and productive workers. (Foucault, p.116 -117) This discipline imposes time on individuals and affects self-assessment and self-force to meet the demands of capitalist progress. Building on these ideas, Bauman's notion of

“liquid times” (Bauman, 2006) illustrates how the relentless drive for novelty and efficiency fragments connections to time, matter, and community, fostering alienation in the process.

In *The Mushroom at the End of the World*, Anna Tsing raises the notion of progress and its impact on the experience of time. Most people grow up within the broad framework of progress, which generally leads to pursuing a kind of future stability. For this shared goal, everyone is swept along, rushing toward progress at a rapid pace. By contrast, instability outside this framework characterizes non-human species. Experiencing the time of another species is an embrace of uncertainty, reminding us to look around instead of only looking ahead. (Tsing, p.21)

1.1.2 Lichen Time:

In the interpretation of ‘lichen time’, multispecies temporality can serve as a supporting perspective. Time is often understood as an objective concept with fixed increments such as a second, a minute, or a day, that are unchanging. However, multispecies temporality extends this understanding by exploring how different species - humans, plants, animals, and even rocks - uniquely perceive and experience time. These different temporalities are also reflected in a variety of ethnographic perspectives, where cultural practices and beliefs shape unique ways of dealing with time. Lichen grows in a natural way that differs from human efficiency; it is subtle and complex to perceive or predict its rate and pattern of change. As described by A.Laurie Palmer in *The Lichen Museum*, observing lichen offers an opportunity to inhabit a certain kind of time that is not explicitly productive; a way to be in time, not to harvest it; to experience an immeasurable uncommon time that has not been transformed by capitalism into something to buy, sell, spend, or stuff full of projects. (p.62)

Botanist Anne Pringle, in *Establishing New Worlds: The Lichens of Petersham*, describes her method for observing and recording the reproduction and death of lichens by continuously tracing their outlines on the same surface (a gravestone). This captures the changes in the lichen's patterns over time, providing temporal data that reflects their growth and ecological dynamics. In archaeology and geology, a technique called lichenometry is used to measure the age of rocks. This method assumes that a lichen's coverage grows steadily over time, and that the area covered by a single lichen species also increases. By measuring the total percentage of lichen coverage, the minimum age of the rock can be inferred.

These temporal frames influence the project's conceptual basis and determine design choices, from material selection to viewer interaction with the artwork.

1.2 Research questions

1. In contemporary everyday life, we experience the passage of time in terms of efficiency, for example, what is accomplished in a fixed period. With this in mind, how does lichen visually express a contrast between slow growth and human efficiency?
2. What artistic approaches can be used to express the surface texture of lichen in the context of everyday life? What materials can creatively express the time of species other than human beings?
3. How can the *Lichen Clock* project prompt people to experience and explore alternative life rhythms to pursuing efficiency nowadays?

1.3 Research Objectives

The primary research goal of the *Lichen Clock* project is to explore the contrast between ‘capitalist time’ and ‘lichen time’ through artistic expression. Using lichen as a metaphor and a material, the project attempts to examine and disrupt modern perceptions of time and efficiency while fostering a reconnection with nature through art, design, and craft. By incorporating complex lichen textures into everyday objects, the project constructs an immersive space that engages the viewer through a visual and tactile multi-sensory experience. This interaction invites the viewer to enter into the temporal rhythms of the lichen - slow and cyclical - to reflect on the efficiency and speed-driven framework of capitalist time as the dominant model, and experience alternative ways of perceiving and organizing time exist within contemporary society.

1.4 Research background

1.4.1 Encountering Lichens

Lichens, with their understated charm, have an uncanny ability to capture attention and evoke curiosity. Once we are aware of lichens, they seem to appear everywhere like little hidden treasures. When I first encountered lichens, they didn’t capture my attention, in Palmer’s words they are “close to invisible” (p.115); only after time did their particular visual and textural qualities unfold. Japanese philosopher and founder of the folk art movement Soetsu Yanagi advocated that in craft, the experiences of “seeing” and “knowing” are separate. For me, lichens are ‘knowing’ after ‘seeing’. In Sweden, older trees are frequently adorned with patches of pale blue-green lichens, their subtle vibrancy standing out even in snowy landscapes. In the dense forests of central and western regions, the abundance of moss, lichens, and mushrooms transforms these areas into thriving ecosystems. In Yunnan,

China, lichens are affectionately referred to as ‘tree flowers’ and hold cultural significance as both objects of beauty and local delicacies. These observations reveal not only the aesthetic and ecological importance of lichens but also their capacity to offer a sense of calm, alleviating urban anxiety and fostering reflection amidst the fast pace of modern life. Their incredibly slow growth - approximately 0.5 cm per year - enhances their allure, serving as natural timekeepers and symbols of patience and resilience. This stands in stark contrast to the relentless, efficiency-driven rhythms of contemporary society.

1.4.2 Perception of Texture in Creative Practice

The visual perception of an object's surface can be as significant as its structure. In the symbiotic system of lichens, algae conducts photosynthesis while fungi provides structural support, with neither able to survive without the other. A lichen exemplifies a surface whose shape evolves in tandem with its growth structure. Lichen's integration of form and function inspires this exploration of surface effects and their potential in design, with special attention to household touch interfaces. My background as a jewelry designer, combining handmade techniques with computing technologies, provides a unique foundation for this investigation. By engaging with both manual craftsmanship and virtual fabrication, I analyze how objects are defined not only by their functional structures but also by their tactile and visual properties.

Household touch interfaces in our everyday lives are considered here as surfaces that are often overlooked yet play a crucial role in shaping daily interactions. Familiar items such as light switches or table edges are typically understood through touch rather than sight, seamlessly integrating into routines until their functionality is disrupted. By incorporating these objects into my research, I explore how touch surfaces can be reimagined to embody

the intricate textures and forms of lichens. I aim to build an immersive art installation that combines textures and visual projections that share lichen's slow pace, deliberate growth, and ecological harmony. These creations invite audiences to engage with the intersection of nature, time, and materiality in both personal and collective contexts.

2.0 Summary of the Literature Review and Case Studies

The literature review focuses on the biological and anthropological characteristics of lichens, interdisciplinary analyses of time, and the understanding of materials through craft-making theories, supporting the *Lichen Clock* project as a challenge to singular notions of time. *The Lichen Museum* (2023) adopts a composite cross-disciplinary approach, emulating the intertwined, symbiotic, and codependent characteristics of fungi and algae within lichens. Palmer proposes radical changes in human attitudes and behaviors using this relationship for reflection. Drawing on works such as *The Mushroom at the End of the World* by Anna Tsing (2015) and *Gathering Moss* by Robin Wall Kimmerer (2003), these studies position the exploration of plants as an alternative way of life beyond the capitalist framework and introduce an anthropological perspective that connects theories of time with nature. Tsing's discussion about capitalism disrupting the rhythm of nature and commodifying nature extends to humanity itself. Michelle Bastian's and Rowan Bayliss Hawitt's *Multi-species, Ecological, and Climate Change Temporalities* (2022), elaborates on how emotions and social environments shape human experiences of time. The concept of capitalist time is informed by Theodor Adorno's *Free Time* and Michel Foucault's ideas in *Discipline and Punish*, where time is regulated and commodified to enforce discipline and efficiency.

A Theory of Craft Function and Aesthetic Expression (Risatti, 2007) emphasizes the slow processes of handcrafting and questions the efficiency-driven priorities of contemporary society. This critique aligns with the research's challenge to the singularity of capitalist time, offering an alternative perspective that values patience, reflection, and the multiplicity of temporal experiences. Through this synthesis, the review frames lichens as both ecological entities and cultural artifacts, bridging ecological and anthropological discourses.

2.1 Observing Lichen

In *The Lichen Museum*, Palmer introduces the wonders of lichens and the joy of searching for them. She suggests that observing lichens allows humans to become aware of lives that exist beyond their own. (p.2) Palmer also highlights how this lichen museum breaks from the traditional Western art experience, which is often confined to buildings and observed from a distance. Instead, it encourages people to sit within nature and observe these tiny, marvelous organisms. Lichens have existed for millions of years, witnessing the birth of human civilization and perhaps even its eventual demise such long lifespans are abstract to humans. Palmer observes the growth of lichens, however their growth trajectories are so small that it is more like experiencing them over time than observing them with one's eyes.

“Because lichens tend to live so long, developing relations with them can project you out of the limits of your own lifetime, to imagine the world before and after. It does offer the opportunity to inhabit a certain kind of time that is explicitly not productive.” (p.60-62)

In addition to its anthropological research value, Palmer also highlights the use of lichens as a tool for measuring time, referencing the idea that lichen can be fruitful for a form of timekeeping in lichenometry. Lichenometry involves using the estimated growth rates of lichens to calculate the age of the rocks to which they are attached. This method examines the relationship between the growth rate, size, and lifespan of lichens, noting that the maximum lifespan of lichens in geological terms corresponds to the minimum lifespan of rocks. (p.56-57) The *Lichen Clock* project is influenced by the practice of lichenometry as long-form timekeeping.

Observing lichen growth is a lengthy process, ranging from as short as one year to as long as a decade. In addition to Palmer, other lichenologists have also employed edge

mapping and measurement techniques in various locations to document the growth rates of lichens. For example, Pringle captures changes in Petersham's lichen patterns over time, providing temporal data that reflects their growth and ecological dynamics. She embarked on this research because, from a human perspective, the lifespan of lichens appears virtually immortal, as it is difficult to determine their precise moments of birth and death. (p.162) Photography and drawing maps on transparent plastic sheets are her primary method of documentation. Pringle successfully uses this approach to record the aspects she was most interested in: growth, reproduction, and death. (p.164) In another earlier study, Mason E. Hale, a renowned American botanist, spent nine years observing the growth of specific lichens (*Parmelia isidiata* and *Rinodina oreina*) upon particular rocks to calculate their growth rate. Through continuous observation over a period of up to nine years, he found that most lichen species in temperate regions grow at a rate of between 0.5 and 8 millimeters per year. (Hale, 1973) These studies emphasize the need for long-term observation and documentation in lichen research and illustrate the need to study the ecology of an organism by adopting that organism's timeframe - a timeframe that transcends direct human experience.

2.2 Anthropological Perspectives on Ecology

Artists and researchers often rely on first-hand field research, learning about plants in forests, fields, and through stories passed down by elders, building a direct, personal engagement with the natural world. For example, Swedish biologist Carl Linnaeus' methodology was rooted in direct field observations, stating the importance of visual documentation as a core component of scientific research. His *Lapland Journey* (1732) details his travels across northern Sweden, where he recorded plant species through sketches and notes, making the role of drawing an active process of inquiry rather than a mere result of

research. This emphasis on documentation as a form of engagement with the environment rather than a retrospective exercise aligns with contemporary artistic and anthropological practices, where field sketches, photographs, and mapping techniques function as tools for understanding rather than just representation.

Lichen and moss are often compared to each other; though they are entirely different, they look like twins. This may stem from the fact that people don't know them well. When an artist or researcher documents lichens, passers-by are often confused about what exactly is being observed, asking questions like, 'What is she doing? Studying lichens? What's a lichen? Oh, she's photographing moss!' Kimmerer experiences similar misunderstandings. In *Gathering Moss*, she mentions more than once how much the neglect of moss has bothered her. In Indigenous cultures, moss is taken seriously, collected heartily, placed in baby mattresses by mothers, and made into napkins by women. (p.107) But the human inhabitants of the city don't see it that way, like lichen moss is an uninvited resident. In the 'City Moss' chapter, Kimmerer mentions people called and commissioned her, a moss expert, to remove moss. (p.95)



Figure 1, the difference between moss and lichen, created by author, 2024

Anna Tsing's *The Mushroom at the End of the World* (2015) documents her travel to matsutake-producing regions around the world, living and working alongside collectors. Through these shared experiences, conversations, and trade practices, she uncovered an alternative mode of exchange distinct from the traditional supply chain. The book uses the

matsutake mushroom to explore themes of collaboration, instability, and survival in ruined landscapes shaped by capitalism. Rhythm is a term Tsing frequently emphasizes, referring to a pure, undisturbed cycle of growth and harvest. Capitalism, however, creates destruction not only in the natural environment but also in the social context, disrupting the rhythms of human life. Tsing highlights that experiencing the time of other species requires embracing uncertainty, encouraging humans to observe the present and engage with their surroundings, rather than focusing solely on the future (p.21). Finding a good mushroom requires engaging all the senses. As Tsing describes, “Calm but fevered, impassioned but still: the picker’s rhythm condenses this tension in a poised alertness” (p.242).

Unlike matsutake mushrooms, lichens are odorless and are extroverted in color, shape and touch. Finding a unique lichen requires some unused intuition, some sensitiveness in eyes, akin to appreciating craft works as Yanagi mentioned in *The Unknown Craftman*. Often, it's the afterimage of an unusual lime green color that drives people closer to find out what's going on, the “knowing” and “seeing” are separated without noticing.

2.3 Sensations of Time

The objects we use to measure time - watches, clocks, and calendars - are not just practical tools but also cultural objects that reflect our changing relationship with time. While traditional mechanical watches still exist, their function has largely been eclipsed by digital devices. Their existence as objects' continued presence is often tied to craftsmanship and collector's value rather than necessity. Luxury watches, in particular, symbolize wealth and precision, reinforcing the idea that time itself is a commodity - something to be measured, optimized, and even 'spent' or 'wasted' (Zygmunt Bauman, 2007). This commodification of

time indicates broader capitalist structures in which efficiency and productivity take precedence over cyclical or alternative conceptions of time.

The perception of time is equally elusive and subjective. Despite the precision of clockmaking technology, human experience of time remains fluid—many people remark that the years seem to pass more quickly as they age, or that a decade feels condensed, with 2005 feeling just as recent as 2015. The acceleration of time in contemporary life is not only a cognitive phenomenon but also a cultural one, where the relentless pursuit of novelty leaves little space for reflection.

Sylvie Droit-Volet and Sandrine Gil's *The Time–Emotion Paradox* (2009) explores how an individual's perception of time is influenced by emotional states and social interactions. They note that an individual's experience of time is inflected by emotions. The essay proposes that a person's internal clock changes according to their environment and their ability to empathize. An internal clock can be affected by nearby objects; the connection between objects and our sense of time might be stronger than we imagine.

2.3.1 Feelings of Obsolescence

In contemporary life, products that cannot be upgraded are deemed obsolete. Are people who can't keep up with the accelerating pace of technological upgrades also obsolete? From an empathetic point of view, seeing a tech tool or appliance that has been used and cared for overtime be discarded due to enforced obsolescence and upgrade incompatibility often evokes sensations of anxiety, sadness and loss. There is a particular form of regret one feels when a long-used cell phone, computer, or software becomes obsolete—not necessarily because it no longer functions, but because it is incompatible with the upgrades.

Our family has a very old computer at home that is now covered in dust, but my parents still can't get rid of it. The computer has lost its original function and has become a

sentimental object. It may not even turn on anymore, but when my parents look at it, they say, "What if the disk still works and we can access its memories?" What used to be a high-tech product is now a dusty photo album. I remember when the computer first arrived home, probably around '99, when our family friends gathered to see this computer that my dad had won in a programming competition. My dad's computer skills, like that computer, are stuck at the beginning of the millennium.

Nowadays, my dad is amazed that I've uploaded his passport photo for him and thinks I'm a genius. I also keep my own first laptop, even though the current system no longer supports it—not because it's faulty, but because the company that made it has abandoned it. And I am amazed and sincerely impressed by the skillful use of Blender to render animations by high school students.

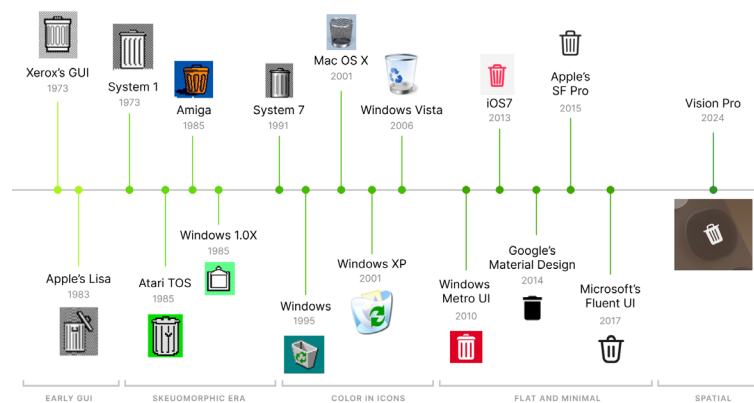


Figure 2 Evolution of a trash-can (delete) icon, by Streamlinehq, 2025

Our contact with old technology isn't totally abandoned; instead, it lingers as a part of everyday life in the form of icons and digital skeuomorphs. As defined by N. Katherine Hayles in *How We Became Posthuman*, "A skeuomorph is a design feature that is no longer functional in itself but that refers back to a feature that was functional at an earlier time." (Hayles, p.17) Visual interfaces including icons and dials are based on objects we touch everyday in order to control or display something in increments. Onscreen images such as

icons of clocks, knobs, dials, and garbage cans depict objects of everyday life that are familiar to our hands. They are translated into the virtual world to make it feel more familiar to us and ease our transition to the new technologies. These visual interfaces can provide a nostalgic second life for obsolete technology. The Lichen Clock project speculates about relationships between older and newer technologies of measurement and everyday life.

2.4 Time and its Variables

Whether or not we notice, sensations of time play important roles in everyday life. Researchers Bastian and Hawitt claim that multi-species time is evident in humans, plants, animals, and rocks as well as in different ethnographies. In their paper on multispecies temporalities, Bastian and Hawitt's reflections on Tsing's work offer artistic inspiration, enriching the discussion of how 'lichen time' can disrupt human-centered, efficiency-driven temporal frameworks and invite deeper engagement with ecological rhythms.

“Rethinking time is central to developing possibilities for more flourishing and ethical ways of life. In *The Mushroom at the End of the World* (2015) in particular, Tsing has focused attention on entangled forms of multi-species coordination across diverse temporal rhythms, framed as ‘polyphonic assemblages’. This focus is placed centrally to her efforts to cultivate ‘arts of noticing’.”(2023)

Theodor Adorno's essay *Free Time* delves into the paradoxical nature of free time in capitalist society, describing it as a construct that is inseparable from the constraints of the system. Adorno argues that truly free time, that of self-determination, self-direction, and self-planning, is an illusion within the capitalist structure. “Organized freedom is coercive,” he writes... “What they want is once again imposed on (people).” (p.190) This suggests that even activities that are seen as autonomous are shaped by the mechanisms of the culture industry and capitalist expectations.

In *Discipline and Punish*, Foucault suggests that “discipline” is a technique of shaping individuals through the control of time, space and behavior. Capitalism commodifies time through “discipline”. For example, mandatory work hours and consumption cycles allow people's time to be precisely divided to maximize productivity and consumption. This control of time applies not only to workers but also to consumers, forcing them to accept an ever-accelerating pace of consumption. The design and production process itself becomes an instrument of discipline. The extreme pursuit of ‘efficiency’ in industrial design reinforces the consumer's reliance on quick consumption rather than durability.

2.5 Craft Theory

In *A Theory of Craft - Implications of Craft and Design*, Howard Risatti explores the concept of “handmadeness”, arguing that it imbues crafted objects with practical and tactile qualities suited to human use. He states, “As we have already seen, this 'handmadeness' accounts for a host of properties that give them handiness in use. When the hand is abandoned to the design process and the machine, these properties are in danger of disappearing as design drifts away from the requirements of the hand.” (p.184) One of the features that distinguishes handmade creations from industrial manufacturing is their unique sense of “temperature.” Handmade objects are not perfect, but their imperfections express humanity and reflect their natural origins.

“When we engage in the social life of craft objects, we come to understand something about ourselves in relation to other things in the world in a way that is different from that of machine-made objects... These limits (size, strength, speed) not only establish the scale of craft objects, but because they are limits shared by all

humans, whether craftsmen or not, they also give us a sense of how to relate to other things in the world, man-made as well as natural.” (p.185-186)

This connection underscores how handmade objects foster a deeper, shared understanding of our relationship with the world around us. Handcrafting offers a design process rooted in adaptability and direct interaction between maker and material. Compared to industrial manufacturing, which often prioritizes efficiency over usability, handmade craft objects retain a level of flexibility and user-friendliness. Risatti illustrates this with the example of a cubic coffee pot - an industrial product designed to save space, showcasing modernity. However, its lack of user-friendliness highlights the absence of tactile interaction during the design process. Without the hands-on approach integral to crafting, designers may overlook practical and ergonomic considerations.

Risatti also critiques the overemphasis on efficiency in industrial production, particularly in the context of environmental degradation and global warming. He poses a question: “Just how efficient must we become and how convenient must life be to be enjoyable and fulfilling?”. He argues that handmade craft objects while serving the same functions as machine-made products, offer an alternative perspective. They emphasize the value of the process itself, counteracting the “timelessness” of machinery and fostering a deeper appreciation for materiality and craftsmanship. While Risatti acknowledges the material benefits of mechanization, he advocates for craft as a complementary approach that encourages attentiveness to the making process. Craft, therefore, provides a meaningful alternative to mechanization by reintroducing humanity, care, and intentionality into the design process. In *Art as Technique* Victor Shkolovsky describes how creative projects including art “impart the sensation of things as they are perceived and not as they are known. The technique of art is to make objects ‘unfamiliar,’ to make forms difficult to increase the

difficulty and length of perception because the process of perception is an aesthetic end in itself and must be prolonged.” (Shkolovsky circa, 1917)

2.6 Installation and Design Case Studies

Digital art software helps to bridge the gap between physical and virtual worlds, enabling artists and designers to capture, and re-imagine surfaces in ways that challenge traditional notions of touch and form. Among these technologies, projection mapping has emerged as a powerful way to transform surface impressions into dynamic, immersive experiences. By projecting an image of a texture onto a physical object, projection mapping creates an interplay between material and light that allows the surface to move, transform, and respond to its surroundings. This approach extends the physicality of the object into a multi-dimensional spatial experience, blurring the line between organic and artificial forms.

The video installation art *Bioluminescent Forest* by Tarek Mawad and Friedrich van Schoor immerses viewers in a shimmering forest environment through real-time projections. The two artists spent six weeks in the forest, closely observing its features and creating real-time animations that unveiled the hidden brilliance of the natural setting. Notably, the project involved no post-production; all content was developed on-site, requiring immediate responsiveness to the environment and its transient qualities. This creation serves as a reference for exploring the symbiosis between artistic research and nature, where non-human species are not only subjects but also participants and viewers in the process.



Figure 3, *Bioluminescent Forest*, by Tarek Mawad and Friedrich van Schoor, 2015

Steven Yu's *Symbiotic-space: LICHEN* (2022) is an installation that imagines a hybrid ecosystem where electronic lichen creeps across a 'data south bridge' in a simulated, post-digital reality. Through space perception technology and virtual simulation, the installation archives and reconstructs spatial information, presenting a walk on the data bridge as a three-dimensional point cloud. This parametric data sculpture mimics the visual dynamics of specific spaces, creating a layered representation that bridges the digital and physical. Yu explores the ecological gap between these realms, questioning how point clouds of lichen, as a speculative symbiotic species, might mediate time, space, and ecology in post-digital architecture.



Figure 4, *Symbiotic-space: LICHEN*, by Steven Yu, 2022

Saralee Sittigaroon creates modular clocks that operate at varying speeds, offering customizable temporal systems for individual routines and activities. These clocks serve as tools to explore alternative perspectives. They also facilitate innovative approaches to understanding natural phenomena by incorporating non-human-centric time measurement. “Time is a culturally constructed concept that is influenced by political and contextual factors. Although the global time system is widely used, it is important to recognize its limitations and the fact that it is not an absolute truth.”(Sittigaroon, 2023) This realization questions and redefines established norms about how time is measured and experienced. By introducing new clocks that measure alternative rhythms, the project emphasizes the relational and reflective potential of time, whether in connecting with others or understanding the natural world.



Figure 5, *Alternative Clock*, by Saralee Sittigaroon, 2023

These case studies provide significant insights for The *Lichen Clock* project. *Bioluminescent Forest* demonstrates the power of immersive, responsive art to connect audiences with ecological processes, inspiring the integration of projection installation in my exhibition. Yu’s *Symbiotic-space: LICHEN* highlights the potential of speculative ecosystems to challenge conventional boundaries between virtual and physical realms, which could inform the hybridization of organic and industrial forms for the installation. Finally,

Alternative Clock emphasizes the malleability of temporal systems, aligning with my project's critique of 'capitalist time' and its advocacy for alternative temporalities rooted in ecological harmony. Together, these works underscore the importance of using art and design to reshape perceptions of time and foster deeper connections with the natural world.

3.0 Research-Creation Methodology: What Happens in the Studio?

Using a research-creation methodology, I combine field studies of lichens, observations of everyday household objects, and Anne Pringle's methods for tracing lichen growth. This approach involves visually and structurally integrating the forms, shapes, and structural characteristics of lichens with everyday objects, resulting in a series of experimental creations in jewelry and product design. This section outlines the processes and techniques involved in studying, mapping, and creating with lichens, indicating how the “handmadeness” of the jewelry evolves alongside the use of virtual capture and fabrication.

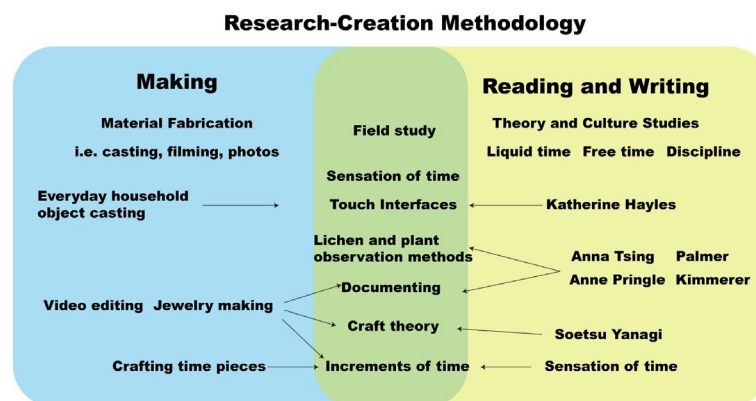


Figure 6, Venn diagram of research-creation methodology, created by author, 2025

3.1 Documenting Lichen Surfaces

Researching lichen requires getting out of the library and going into the street, looking at the trees on the sidewalk, and observing the rocks in the park. This approach not only deepens engagement with lichen but also invites unexpected interactions with passers-by, whose lack of understanding is an integral part of the real experience of ‘lichen time’.

The surface folds of lichen are determined by their natural structures; its tactile feel is significantly different from that of moss. Moss is wet and fuzzy to the touch, like dampened velvet; whereas lichen has a much harder surface, and this hardness is often at odds with its

visual expectations. The first time a lichen is touched, one thinks, ‘It’s surprisingly hard!’ This contradiction between ‘visual softness’ and ‘tactile hardness’ encouraged me to continue choosing hard materials such as silver for my productions, because of its ability to reproduce the tactile memory of lichen.

As mentioned earlier in Section 2.2: Anthropological Perspectives on Ecology, lichens and moss are often mistaken for one another, though they merely happen to grow in similar environments. Moss is a plant, with roots, stems, and leaves, and it carries out photosynthesis, some types of moss can bloom like flowers. In major Chinese cities like Beijing and Shanghai, moss is more commonly seen than lichen. Lichens, on the other hand, take on a wide range of forms, some look like crumpled leaves pressed against tree bark, others resemble tiny cups sprouting from stumps, and some hang from branches like beards. Lichens are more selective about their living conditions and are highly sensitive to air quality. In my fieldwork in Beijing, the lichens I encountered were growing on a mountain in the outskirts called Fenghuangling. Based on my personal observation, lichens tend to thrive in higher altitudes or colder climates. In Toronto, they are easier to find than in Beijing. Further north in Sweden, lichens are so abundant that hardly need to look for them, they’re everywhere.

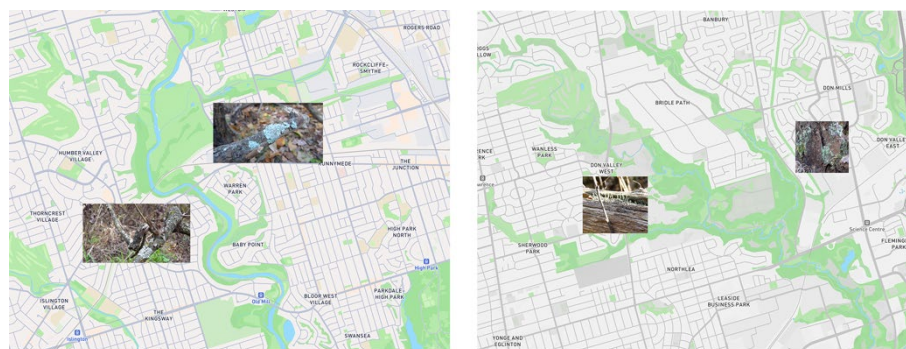


Figure 7, locations of lichen observation in Toronto, left: Old Mill, right: Wicket Creek Recreational Trail, created by author, 2024

While Kimmerer compared the experience of looking at mosses in nature to shopping in an upscale fabric store, the search for lichens is more akin to shopping at an ore show. Lichens come in a wide range of colors and sizes and change with the passage of time and exposure to sunlight. One part of the same lichen may be a light bluish gray, while another part is a turquoise-like blue-green. “The color of anything can be understood as not an essence of that thing but an action it performs in reflection with light.” (Palmer, p.119)

In addition to photography and filming, alternative documentation methods such as AB Epoxy Sculpt Clay were employed. This material, with its quick-drying and detail-preserving properties, was ideal for replicating lichen textures. Additionally, photogrammetry of tree trunk surfaces revealed the complex undulations and structures of lichen-covered bark, offering a technologically-mediated perspective of their form. These two techniques are used to harvest the lichens without destroying them, by hand and through technology.

The four main lichen species being observed are *Physcia Millegrana* known as Mealy Rosette, Common Greenshield lichen, *Cladonia Pixie Cup* lichen, and Maritime Sunburst. (Toronto Wildlife, 2021) Among them, Mealy Rosette and Maritime are the most common that can be found on the trees even in central Toronto.

These observations highlight the resilience and adaptability of lichens, forming the foundation for further exploration in design and creative applications. Documenting the surface of the lichen is the first step, and these diverse recording methods provide natural material for subsequent image design, video editing and jewelry creation.

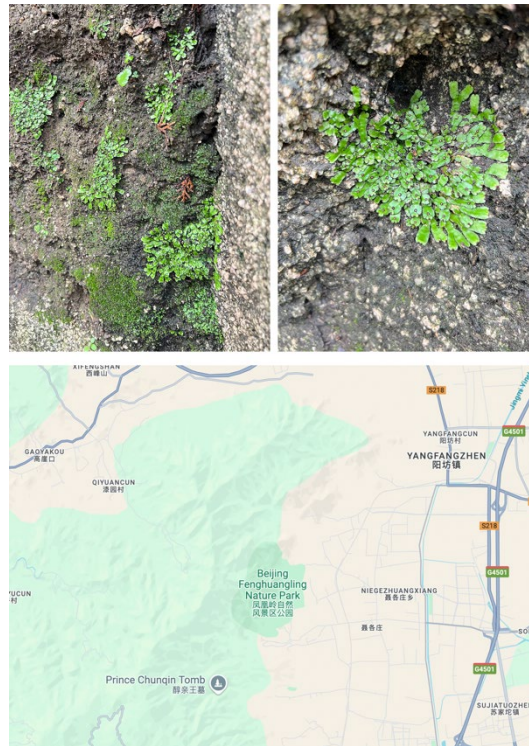


Figure 8 lichens documented in the mountain areas of Beijing, created by author, 2024



Figure 9, a 3D scan of the mesh surface of a tree trunk with lichen, which is seen to have complex undulations and structures, created by author, 2024



Figure 10, the casting process using AB Epoxy Sculpt Clay, created by author, 2024



Figure 11, common lichens in Toronto, top left: Common Greenshield lichen, top right: Cladonia Pixie Cup lichen, bottom left: Maritime Sunburst, bottom right: Mealy Rosette, by Toronto-wildlife, 2023

3.2 Everyday Objects as Touch Interfaces

Manufacturing everyday household items was once the work of skilled craftsmen. Today, however, at least in most urban homes, these items have been replaced by mass-produced industrial products. Craftsmanship is no longer synonymous with high quality;

instead, it has become a marketing gimmick used by some companies to justify higher prices. In traditional craft contexts, surface texture is deeply intertwined with aesthetics and user experience. In Chinese, there is a term, 'shougan' (手感) - literally translated as 'hand feel' - which describes the tactile perception of an object when held and used. It's a very subtle adjective, akin to how a blind person might assess an object's quality purely by touch. For example, a very rough and heavy mug with a handle that can only be passed through one finger, can be regarded by the Chinese as 'The hand feel is bad, but at least it's cheap.' Contemporary industry, on the other hand, is less concerned with the feel of the cup and more with its functionality.

The engagement with the surface of everyday objects is usually clear and straightforward, frequently forming a kind of muscle memory that allows us to understand their purpose and function just by touching them. My bedside lamp switch is a good example of this. I can't fully describe what it looks like, I don't remember whether it's black or white or if it has rounded edges, but I distinctly remember how it feels. The switch is soft, as if made of two layers of plastic film, one of which has worn out and feels rough from turning it on and off countless times. From a usability perspective, this kind of simple and intuitive structure is the most practical. It's exactly what we need. If it becomes more complex, it would feel impractical. Yet, precisely because of their familiarity and convenience, objects like a switch often go unnoticed, we may even forget they exist. They blend seamlessly into daily life, becoming an assumed part of it, only to be noticed again when something unusual happens or they stop working.



Figure 12, samples of paper casting process, created by author, 2025

Based on the widespread familiarity with the function and touch of everyday objects, skeuomorphs are able to serve as symbols. The original functional object is replaced by its new function as a symbol. This simplification and omission of objects is an “abstraction” according to Hayles, which seems to me to be an expression of efficiency. What is lost in skeuomorphism? Is this abstraction a cause of obsolescence? These questions are evoked by Hayles in a very poetic way, “... when we make moves that erase the world's multiplicity, we risk losing sight of the variegated leaves, fractal branchings, and particular bark textures that make up the forest.” (Hayles, p.12) These questions may not have answers, but from a craftsman's perspective, they allow me to think about the relationship between objects, materials, and daily life when I create.

Swedish silversmith Anders Ljungberg's work employs silver coverings to explore and imagine the invisible connections between objects. His practice is an investigation of functional objects and our relationship to them, peeling back layers of habitual use to reveal something hidden beneath daily routines. He claims that it is sometimes more efficient to show those emotional aspects by removing the practical dimension and, instead, allowing the use to take place in a dream or idea of functionality. (Ljungberg, 2015)

Inspired by his practice, I disrupted the familiarity of everyday objects and extended a sense of “handmadeness”, by coating household objects with paper clay (a mix of tissue paper and glue) and allowing them to dry. The resulting forms appear as ghostly echoes of the original items, stripped of functionality and transformed into fragile, enigmatic surfaces. Surface casting captures and transforms the texture of objects, emphasizing their structural features. After the paper clay dries, its ‘hand feeling’ is rough, hard and at the same time with fragile quality, which has some similarities with touch surface of lichen. Together, these approaches explore the intersection of organic growth and industrial design, creating a space where the natural and the artificial coexist and challenge traditional boundaries. Some objects crumbled as the mold was removed, while others remained intact, capturing traces of their transformation.

3.3 Video Processing and Projection

I recorded about 50 videos during my fieldwork, some of which were edited to be used as projection displays in the project. These videos show the different types of lichen, the differences in growth locations, and the effects of light and shadow movement, making them even more representative. In addition, there are two photogrammetry 3D models based on lichen-covered tree trunks. This combination strengthens the visual narrative, and highlights the contrast between flat and spatial, the slow and the fast. To enhance this sensorial shift, particle effects were introduced to create transitions between textures and compositions. This technique allows viewers to experience lichens at different scales, moving fluidly between minute surface details and larger environmental contexts. By applying this tactile vision to projection-mapped lichens, the installation invites viewers to “touch with their eyes,” a concept explored in Marks’ analysis of multisensory media. (Laura U Marks, 2002)

Looking at the videos, in addition to the lichen itself as an important visual subject, the changes in light and shadow, the slight tremors triggered by the wind, and the occasional passing insects all work together to present a state of the slow passage of time - a leisurely rhythm that can only be revealed in environments that lack any apparent human intervention. It's a scene reminiscent of the pure experience of childhood, of spending an entire afternoon quietly watching ants carry food.



Figure 13, a ladybug crawling over a tree trunk with lichen, created by author, 2024

3.3.1 Photogrammetry and Point Clouds

The photogrammetry models I created originate from two trees richly covered in lichen, represented in a point cloud format. The tangled and complicated texture of lichen-covered tree trunks does not translate easily into direct 3D printing. A solid-color mesh reveals numerous sharp edges and fragmented surfaces, which pose significant challenges for printing. Whenever working with image capture, either with LIDAR or photogrammetry, there are the blind spots and wrecked data, as discussed by Hito Steyerl in *Ripping reality: Blind spots and wrecked data in 3D*. (2017) However, the point cloud display method compensates for these limitations, transforming the lichen-covered bark into a more fluid and

dynamic visual language. Integrated with TouchDesigner, the point cloud rotates at a pace that feels excruciatingly slow to human perception yet remains unnaturally fast within the temporal of lichen growth.

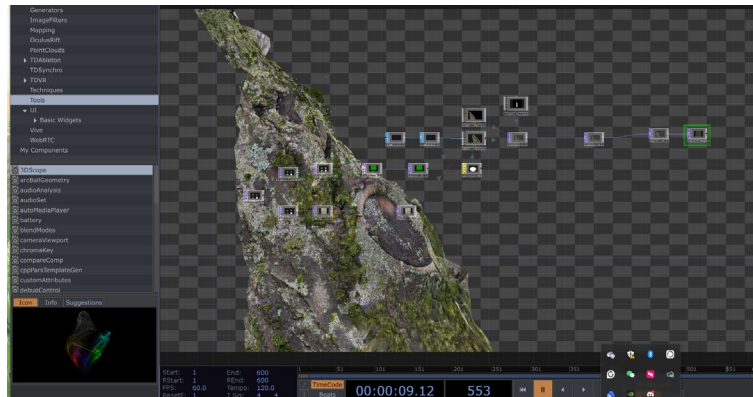


Figure 14, the creative process of including point cloud visualization in TouchDesigner, created by author, 2025

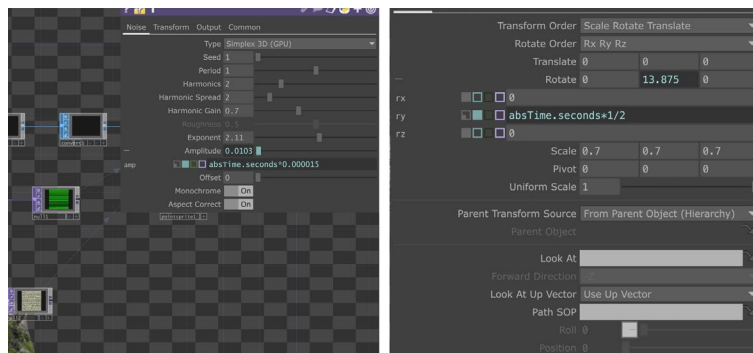


Figure 15, expressions related to speedrate: `absTime.seconds` in TouchDesigner, created by author, 2025

3.4 Jewelry Making

The time spent crafting jewelry - through meticulous shaping, setting, and finishing - encourages reflection on the timeless value of objects. Unlike mass-produced accessories, handcrafted jewelry carries traces of the maker's touch, embedding a sense of duration and

labor into its form. This contrasts with the efficiency-driven cycles of contemporary production, inviting wearers to reconsider their relationship with time and materiality.

The cycle of creating jewelry is long and involves a lot of contact between the crafter's hands and the material. On this basis, the maker establishes a deeper understanding of different materials, textures, surfaces, and sizes. The process of creating jewelry with lichen surfaces transformations from lichen surface to model clay, to wax, and to metal, becoming the subject value that the designer adds to the lichen. This process is also worthwhile as a recipe for how people could spend their time and things they could do - collecting interesting and meaningful materials and ultimately transforming them into jewelry without destroying the environment. It can be a way for participants to record moments and even preserve fond memories with nature. In the process easily overlooked but important details of everyday life are discovered and recorded.

Products such as jewelry, watches, and outfits contain the information the wearer wants to communicate without words. For instance, commercial jewelry and collectible timepieces convey their value attributes and even promote the distinctive 'brand identity' shaping how wearers present themselves. Lichen-inspired jewelry functions as a quiet statement - an organic timepiece that resists the aesthetic of permanence. The design metaphorically suggests lichens growing on the skin, encouraging a heightened awareness of one's surroundings. It acts as a reminder: to slow down, to observe, and to appreciate the intricate beauty of nature within an accelerated world.



Figure 16, surface impression of lichen in jewelry making, from clay model to soft wax, created by author, 2024

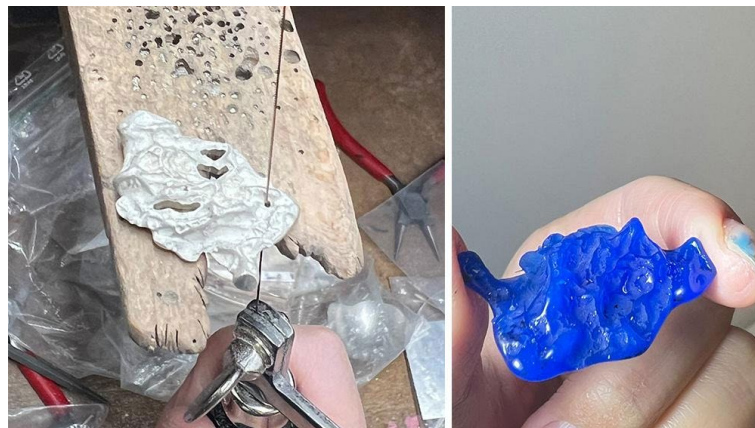


Figure 17, Silver pieces cast from wax restore the folds of the lichen, created by author, 2024

3.4.1 Materiality and Temporal Contrasts

The pigment of lichen is related to the light color required for photosynthesis; a biological trait that makes lichen colors highly variable. Even the same lichen growing in different locations can have different colors. (Palmer, p.121) Lichens evoke the natural irregularities found in crystals, where colour bands, crystalline growths, and inclusions bear

the marks of deep geological time. The cloudy striations in garnets, the angular formations of zircon - each of these mineral characteristics resemble a miniature topography, sculpted over billions of years by chemical transformations. Inspired by this, the gemstones selected for this project are intentionally cut in a way that defies conventional faceting techniques.

Unlike traditional commercial gemstones, which prioritize a smooth, flat table (the uppermost surface of a gem), these stones are cut without a dominant table, emphasizing the raw, unpolished essence of their crystalline structure. The cut itself becomes the main focus, exposing the grain, irregularities, and growth patterns, much like how lichen formations highlight the underlying contours of stone surfaces in nature. This visual and tactile echo between lichen's slow biological growth and the deep time embedded in gemstones intertwine with nature, time, and craftsmanship in a way that embraces geological and biological histories.

In addition to crystals and gems, I associated the images of everyday household objects with the outlines of lichens. I processed photos of household objects, using halftones to transform them into surface patterns that could be recognized by laser cutting while retaining their basic features. The objects turn into skeuomorphic designs that can still be touched by hand. The resulting patterned acrylic is used as part of the jewelry.

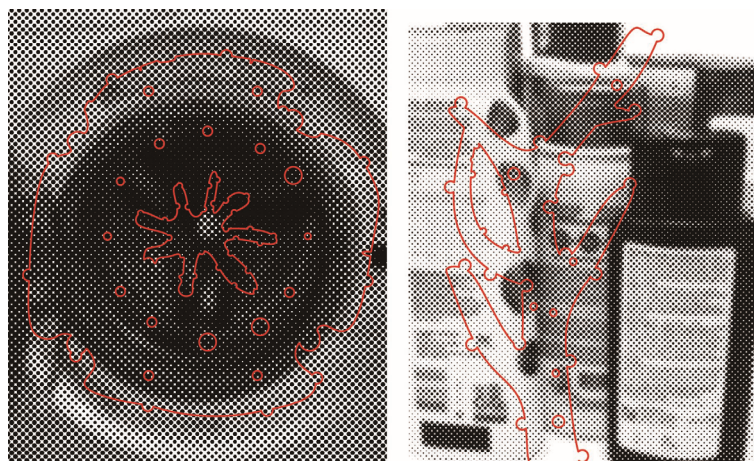


Figure 18, samples of halftone and black-and-white photography,

created by author, 2024

Lichens can be almost invisible in sunlight, and since my jewelry is relatively large in volume with gemstones added as color elements, I chose half transparent acrylic and burnished white silver as the primary materials to soften the impression of being overly conspicuous. The burnished silver will gradually develop a polished surface through constant friction from wearing, creating a personal imprint that metaphorically reflects the lichen becoming seen. The juxtaposition of different materials in the jewelry pieces reflects the relationship between time, material and craftsmanship. Acrylics cut by laser are shaped in minutes while silver, formed through lost wax casting, molding and finishing, takes weeks to complete. These two material components express a time differential between machining and handcrafting. In this way, lichen time and capitalist time appear together in the jewelry.

4.0 the *Lichen Clock*: Project and Exhibition

This project transforms time into a tangible, embodied experience. The visual and tactile textures of the objects reinforce sensory perceptions of time, where slowness is embedded in the handmade process. Each piece is carefully crafted, emphasizing the contrast between mass production and customization - whether through the use of inexpensive, everyday materials or high-value, labor-intensive ones. One of the paper casts is a set of stovetop knobs, a seemingly mundane yet essential household controller and touch interface. As the mold dried, I found myself increasingly careful when using the only remaining knob to light the stove, fearing damage to the fragile cast. This experience led to an unintended consequence of the making process - the temporary suspension of function. While waiting for the mold to dry, I was 'forced' into a state of lichen time.

The exhibition invites viewers into a layered temporal experience, where strange tactile qualities of everyday objects, video projections, and jewelry are presented together. By disrupting expectations of form and function, the installation challenges perceptions of time and materiality, offering an alternative sensory engagement with the passage of time.

4.1 Matching Paper Casts with Lichen Film Clips

I assembled videos together with selected paper clay masks, pairing them based on their shapes and areas of interest. This hybrid-making process explores how visual experimentation can result in an immersive experience that blurs the boundary between tangible surfaces and projected imagery. Rather than relying on rational criteria, the pairing process was guided entirely by experimentalism, relying on intuition and sensory perception. Yanagi advocates for abandoning intellectual judgment in both creating and appreciating art. He suggests three principles: first, put aside the urge to judge immediately and simply look;

second, do not approach an object purely through the intellect; third, be ready to receive passively, without inserting oneself into the process. (p.112) This phase of the project embraces this philosophy, allowing instinct and emotion to dictate the connections between forms and moving images, creating a more organic and immersive engagement with time, texture, and materiality.

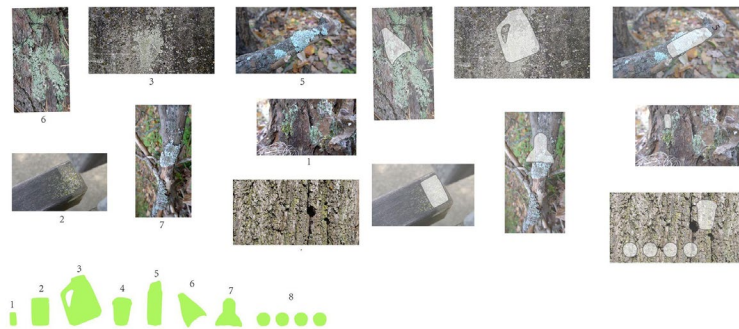


Figure 19, a simulation of films of lichen projected onto paper clay casts, created by author, 2025



Figure 20, projection mapping experiment, created by author, 2025

4.2 Project Outcomes

Jewelry: I incorporated small movable joints into the jewelry-making process to enhance playfulness and prevent large-scale pieces from feeling too rigid. Additionally, elements related to time increments were integrated, such as movable clock hands with traces of measurements and necklaces with fixed-length connections. These designs evoke temporal sensations through their scale and structural characteristics.



Figure 21, Lichen Ring: 925 silver, orange garnet, zircon,
photographed by Aman Deshmukh, 2025

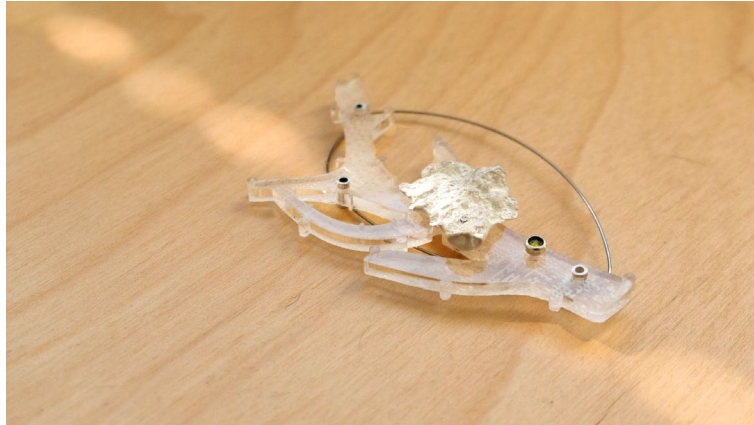


Figure 22, Brooch1: Lichen growing on acrylic branch, 925 silver, stainless steel, acrylic, peridot, photographed by Aman Deshmukh, 2025



Figure 23, Brooch 2: Lichen growing on acrylic washing machine, 925 silver, stainless steel, acrylic, peridot, zircon, photographed by Aman Deshmukh, 2025



Figure 24, Necklace 1: Lichen Clock Hand necklace with pin in the back, 925 silver, stainless steel, peridot, zircon, photographed by Aman Deshmukh, 2025



Figure 25, Necklace 2: Bark with lichen, 925 silver, zircon, amethyst, photographed by Aman Deshmukh, 2025

Installation: For the final video processing, I applied several different techniques, each tailored to the specific content I wanted to present. For the videos projected onto physical objects, I simulated effects such as fingerprints on household objects, flowing light, and the expansion of lichen. Using experimental effects, the focus is placed on the relationship between the projection and the object, rather than simply conveying a straightforward message, such as a simple contrast between ‘nature’ and ‘artifice’. In addition to adding a sense of calm and serenity to the exhibition, discovering the moving light spots also became a reward for being patient.

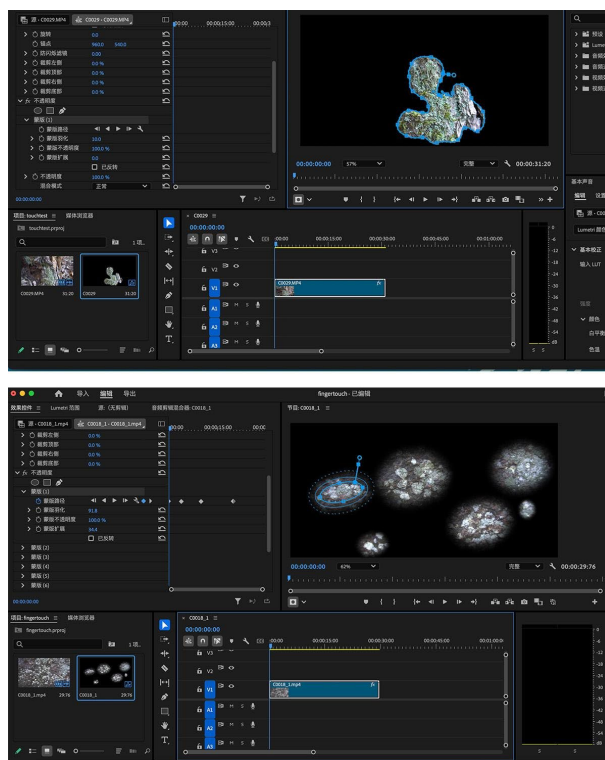


Figure 26, films edit process using experimental effects, including masking, feathering, and adjusting transparency, created by author, 2025

5.0 Conclusions and Future Directions

Research indicates that lichens expand outward at a slow rate, growing only a little bit each year. Lichen grows without urgency, existing in a temporality detached from capitalist demands. When we see a tree or a rock covered with lichen, we know it has been there for a long time. Lichens don't have indicators of what needs to be accomplished at a particular time. The sense of time passing is reflected in all aspects of lichen searching and crafting. Going to nearly the same places every week, from leafy to faded, is not a sentimental process, because being able to be natural will always happen unexpectedly. In embracing lichen time, I am invited to reconsider my relationship with time - moving beyond efficiency and productivity toward an alternative temporal experience rooted in patience, observation, and an appreciation of natural rhythms.

The story of lichen is narrated from multiple perspectives through diverse documenting methods, including handcrafted and 3D technology. Rather than merely replicating lichens, I created an artwork that unfolds reflections and thoughts inspired by them. Casting serves as the primary method of translation, transferring lichen's textures from natural surfaces onto jewelry and everyday objects. Additionally, household objects are stripped of their functionality, leaving only their cast imprints - hollow shells that act as visual and tactile remnants. This absence of function creates an open space for viewers, encouraging them to engage with objects beyond their usual utilitarian roles.

The exhibition space feels both familiar and unfamiliar - a place where everyday objects and lichens, often overlooked, coexist in unexpected ways. This strangeness shifts perception, prompting visitors to slow down, observe, and reflect. By momentarily suspending efficiency-driven thinking, the exhibition encourages a different engagement with time, one that aligns with the organic, unhurried rhythms of lichen growth. Inspired by Yanagi's philosophy of "separating seeing from knowing", the space fosters an experience

where judgment is set aside, and instead, audiences are invited to feel, sense, and explore alternative temporalities through intuition rather than logic.

5.1 Future Directions

Given the limited duration of this research, observing the true growth and transformation of lichen remains a long-term challenge. Lichen growth unfolds over years, far beyond the timeframe of this project. What I have been able to capture is merely a glimpse into its intricate and fascinating existence. The concept of lichen time - its slow, organic rhythm - will continue to be a key component of my future work. I am particularly interested in exploring how the presence of lichen time might function within the context of busy urban spaces, where the contrast between natural slowness and human efficiency-driven environments could lead to thought-provoking interventions.

From a making perspective, the integration of craft and computing processes remains an area worth further exploration. Techniques such as paper casting and clay casting have proven to be both engaging and methodologically rich. Throughout my two years of study, I have noticed the curiosity and enthusiasm of my peers when experimenting with these techniques, demonstrating the continued relevance of hands-on material engagement. In the realm of virtual media, particularly in material and formal documentation, photogrammetry offers a promising avenue for further research. Whether in jewelry-making or digital fabrication, I believe that fostering a deeper dialogue between these disciplines can yield highly innovative outcomes. As Yanagi states: The machine, of course, came into being for people's use and advantage; therefore, we need not avoid it but should find a way of using it ... The problem is not a matter of either hand or machine, but to utilize both. (p.108) The exhibition not only showcases the outcomes of this research but also serves as a space for

dialogue, bringing together individuals interested in craft, technology, and art to foster conversation and open new possibilities. The *Lichen Clock* acts as an inclusive starting point, encouraging practitioners in art and design to transcend disciplinary boundaries. Just like the symbiotic system of lichens, where different organisms support and sustain each other.

5.2 Conclusion

Objects left behind by capitalist time sometimes carry emotional weight. One can imagine a future ruin where human artifacts are overtaken by lichen - no longer abandoned but embraced by the slow beauty of nature. This vision of decay is not of loneliness but of quiet transformation, where time's passage brings new forms of life rather than mere loss. Artists are drawn to nature not only for its surreal, almost magical qualities but also for the respite it offers from the relentless pace of modern life. "Why study plants that can't be eaten, don't generate profit, and serve no practical function?" This question, posed in the realm of botany and art, was met with a profound response by a Chinese flower researcher Li Han:

"On a spiritual level, I think the biggest usage is useless. We need to have some 'useless' spirit in our lives. From the perspective of nature, the more diverse the organisms are, the stronger the ability of the environment to self-regulate and resist. The human heart is similar; the diversity of spiritual support makes it stronger and more indomitable. I hope there will be more useless pursuits in everyone's life, and I also hope that the flowers and plants we cultivate will make you feel the splendor and beauty of life."

This sentiment resonates deeply within the design field, where the question, 'What value do you bring to the consumer?' is often asked. Li Han's words offer a compelling response. Especially in an era where 'efficiency departments' are dismantling 'meaningless

projects' (Blackburn et al. 2024) the role of the designer can extend beyond mere functionality. To be a designer who observes the moon, who tells audiences and consumers that their emotions and sensations are meaningful, is an act of quiet resistance. The small, beautiful lives surrounding us - the surfaces and textures of lichens thriving in overlooked spaces - stand in defiance against the ugliness of the world. Perhaps creating space and alternative forms of time for beauty, contemplation, and the 'useless' will be more valuable than the relentless, anxious pursuit of efficiency.

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Appendix

Appendix A: Installation process

Upon entering the exhibition, visitors are first introduced to the research context. By presenting the characteristics of lichens and outlining the research questions, the audience is guided into the thematic framework of the exhibition. The following area features suspended fabric panels with a brooch and the pin necklace, complemented by two display stands showcasing rings. The spacing between these elements creates a clear pathway for movement. In the corner near the entrance, an old television displays a video of lichen point clouds created through photogrammetry. This section leans towards themes of nature and the outdoors.

A transitional area follows, marked by a necklace displayed on the wall and paper casts of kitchenware, gradually leading visitors into a more intimate and familiar space. This is followed by the projection area, consisting of two sets of projections and installations. Different lichens generate slow yet beautiful visual transformations, mapped onto the surfaces of the paper clay casts. These shifting visuals alter the perception of everyday objects. In moments of quiet, ambient sounds can be heard recordings I made while searching for lichens, capturing the chirping of birds and cicadas in summer to the crunch of footsteps in winter snow. The four seasons are condensed into a 15-minute audio loop, creating a contrast with the slow passage of lichen time.

Branches covered in lichen serve as connectors throughout the exhibition, offering visitors a tactile comparison of materials and showcasing how lichen textures are applied in nature, jewelry, and household objects. The exhibition space intentionally includes areas of blankness, balancing aesthetic considerations with moments of visual rest for the viewer. Together, these elements embody a sense of slow, enduring temporality.



Figure 27, exhibition view: entrance, photographed by author, 2025

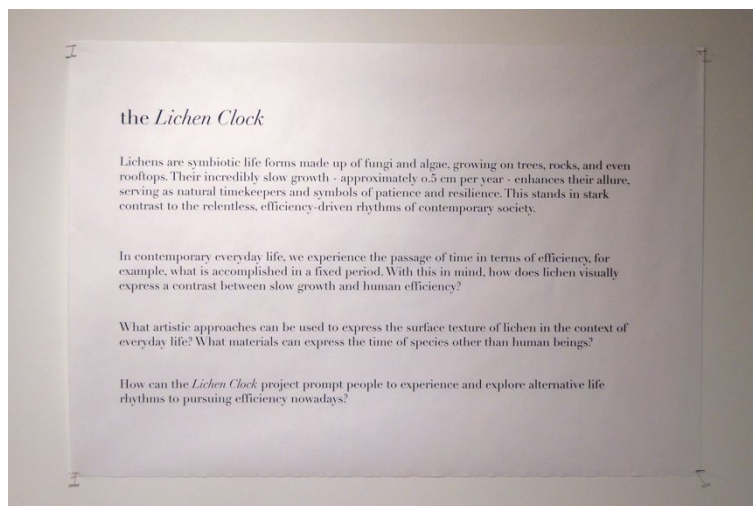


Figure 28, exhibition introduction, photographed by Laiken Breau, 2025



Figure 29, the *Lichen Clock* exhibition scenes, first and third row: photographed by author, second row: photographed by Laiken Breau, 2025

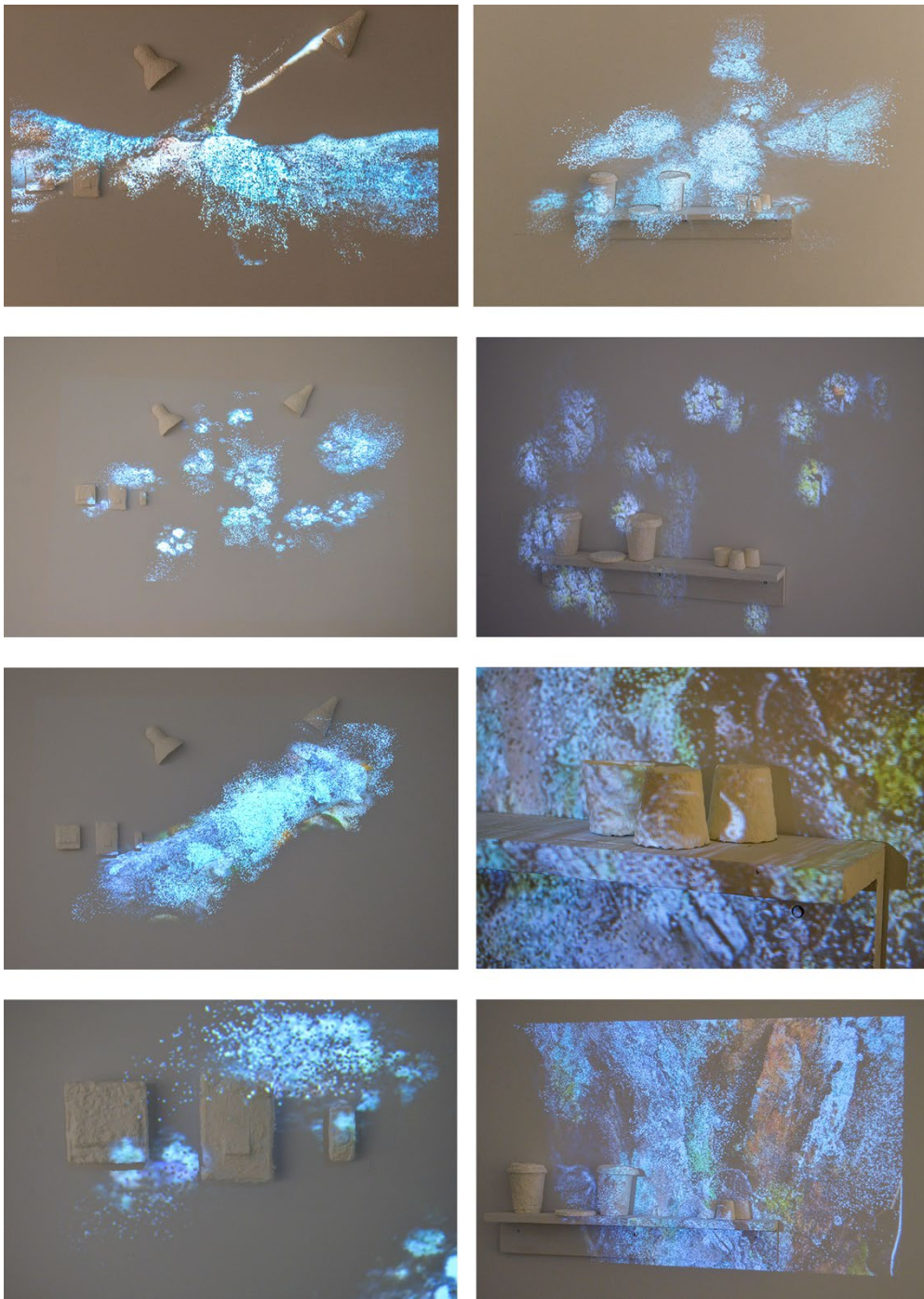


Figure 30, projection installation, photographed by Laiken Breau, 2025

Appendix B: Defense presentation



Research background: Lichen and Time

An alternative temporality through the slow growth and textural beauty of lichen. It is a call to pause, to feel, and to reconnect.

Lichens are symbiotic organism, part fungi part algae, growing on trees, rocks, and even rooftops. Their incredibly slow growth serving as natural timekeepers and symbols of resilience. This stands in stark contrast to the relentless, efficiency-driven rhythms of contemporary society.

Reindeer moss, actually a type of lichen.

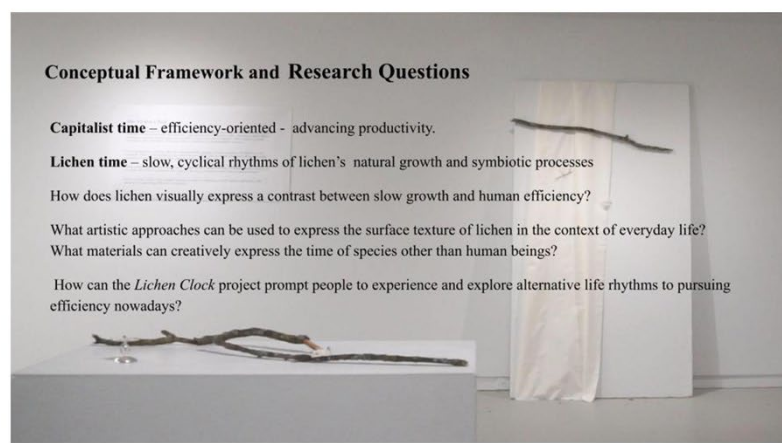
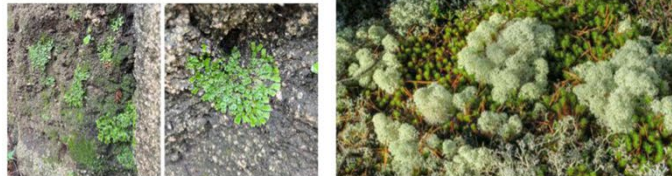
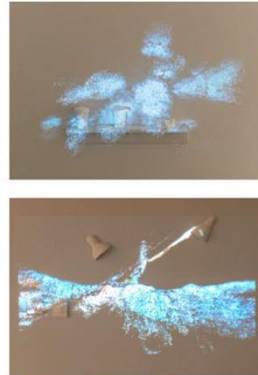
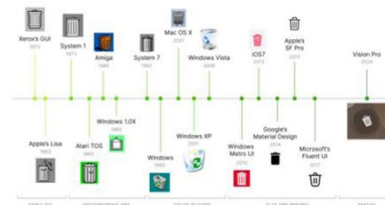


Figure 31, defense presentation page 1 – 3, created by author, 2025

Lichen, Everyday Objects, Feelings of Obsolescence

In contemporary life, products that cannot be upgraded are deemed obsolete.

Are people who can't keep up with the accelerating pace of technological upgrades also obsolete?



Theoretical Anchors

Anna Tsing *The Mushroom at the End of the world*: capitalism disrupting the rhythm of nature and commodifying nature extends to humanity itself.

Anne Pringle *Establishing a New World: The Lichens of Petersham*: lichen feature as virtually immortal.

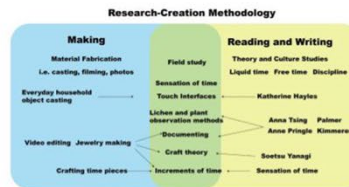
Robin Wall Kimmerer *Gathering Moss*: respectful lichen observation.

Howard Risatti *Theory of Craft*: handmadeness

Soetsu Yanagi *The Unknown Craftsman*: "seeing" and "knowing."

Adorno and Foucault: human time as a disciplined by systems of productivity.

N. Katherine Hayes: skeuomorphs interface design symbolic residue of time in everyday objects.



Fieldwork: Observation and Capturing Texture

Epoxy Sculpt Clay for texture capture

Photogrammetry for 3D surface mapping

The research requires going out, touching, seeing, hearing, and talking...

It wasn't just about observing lichens, it was about learning to spend time with them.

The collage consists of several images: a close-up of a textured surface made from epoxy sculpt clay; a 3D surface map of a textured object; a photograph of a person in a field using a camera or similar equipment; and a close-up of a tree trunk with lichen growing on it.

Figure 32, defense presentation page 4 – 6, created by author, 2025

Casting Everyday Household Objects

"As we have already seen, this 'handmadeness' accounts for a host of properties that give them handiness in use. When the hand is abandoned to the design process and the machine, these properties are in danger of disappearing as design drifts away from the requirements of the hand."

--Howard Risatti



Video Processing and Projection

Photogrammetry is a 3D scanning method for focused objects. It creates a model that consists of many meshes and is more suitable for 2D representation than conversion to 3D printing when the file has blind spots and wrecked data.

By reusing an old television to show 3D lichen models, I reconnect past technologies with new rhythms.



Jewelry - the Body as Timekeeper

Jewelry offered another layer of intimacy of surfaces and body.

The process of creating jewelry with lichen surfaces transformations from lichen surface to model clay, to wax, and to metal, becoming the subject value that the designer adds to the lichen.

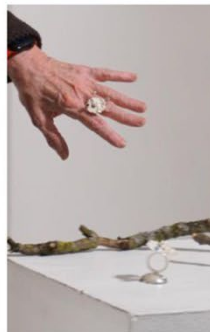


Figure 33, defense presentation page 7 – 9, created by author, 2025

Jewelry - the Body as Timekeeper

Materials & Techniques:

- Use of laser-cut acrylic and hand-cast silver

I associated the images of everyday household objects with the outlines of lichens.

The objects turn into skeuomorphic designs that can still be touched by hand.

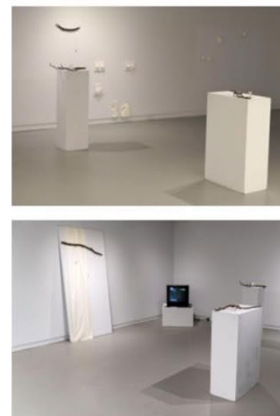


Exhibition install - Design Space

The final exhibition included:

- A video projection installation
- Jewelry collection
- Cast everyday objects

Together, they create a multi-sensory environment for audiences to encounter lichen time.



Exhibition Scenes and Future Directions

Slowness can be a strategy in design and in life.



Figure 34, defense presentation page 10 – 12, created by author, 2025