

Brand Sustainability: A Biomimicry Approach to Regenerative Design Inspired by Mycelium

By Ana C. Aguilar

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Abstract

Within capitalism, many commercial brands grow at the expense of the environment, contributing to degenerative systems, and leading to the irreversible damage of the Earth. Knowing this, how might we develop a method for brands to interact with its environment in a sustainable way? This research aims to find a lens for designers to rethink their current methods and bring about positive change through the interactions of brands with and within their environments. The outcome of this research is a regenerative model inspired by fungal mycelium, The Mycelial Framework, which is meant to guide brands towards sustainability by collaborating through symbiotic interactions.

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Chapter I: Background

Introduction

In today's interconnected world, brands behave as living systems, interacting and influencing the ecosystems they inhabit. This paper looks into the purpose, values and behaviors that brands can create, operate and perform within our current capitalistic systems, so that they can contribute to regenerative and sustainable systems and processes. This research takes a life-centered approach looking at fungal mycelium as a teacher that connects the whole ecosystem, inviting designers to see from a mycological lens, so that we can learn how to build regenerative systems for humanity and for the wellbeing of the Earth.

Through an exploration of case studies, including Patagonia and H&M, this research paper contrasts the different paths that brands can take; one rooted in ecocentrism and symbiotic relationships, and the other motivated by consumerism, separation, and short- and long-term profit. By practicing Biomimicry (the study of nature for design inspiration) and learning from natural systems, my goal is to introduce the Mycelial Framework, a result from my research, as a model for brand interactions that prioritize sustainability, connection, and the love and care for our planet.

Methodology

This journey will start by presenting the context of today's commercial brands followed by the case studies of retail clothing companies, Patagonia and H&M, which have already been analyzed by using the Causal Layered Analysis (CLA) method during the discovery phase. Then, my research question will be presented as an open invitation to explore non-capitalistic and non-colonial ways of being in relationship with our ecosystem. In this chapter, I will share my understanding of some lessons that come from the perspective of Indigenous knowledge, as well as an introduction to Biomimicry and fungal systems. Next, the Golden Circle will be shared as a tool that is currently used by brands and corporations to build resilient brands and strong partnerships.

As a result of linking the commercial ecosystem of a brand with fungal systems found in Nature, the Mycelial Framework will be presented. This framework is inspired by mycelium's way of connecting and interacting with its environment with the purpose of bringing health and harmony to its ecosystem. By emulating the structures and values involved in mycelial collaborations, a brand can benefit from new ways of profit for itself, while designing a more harmonious world.

Last, I will demonstrate the pillars and values of the Mycelial Framework in a visual structure called the Seed of Life. The purpose of this last step is to present the lessons of mycelium in a form that honors life and sacred creation, while offering a practical tool for designers to tap into these teachings.

Problem space

Brands are connected to their environments, and they are connectors as well, since they are directly or indirectly involved in life cycle stages such as material extraction, manufacturing, packaging and transportation, use and disposal (Acaroglu, 2018). Represented by a set of principles that define its purpose and its relationships within bigger systems, a brand is not an inert object, but it is an adaptive living system that interacts within other living systems (Kathleen E. Allen, 2019). This means that throughout its interactions, a brand has the capacity to thrive, die or evolve in order to meet its needs and build a harmonious relationship with its environment.

Brands operate within the system of capitalism, which is a social and economic system designed by humans, and it is relatively new in comparison to natural systems (Leyla Acaroglu, 2016). Led by their need to survive, commercial brand's motivation tends to be the pursuit of only one type of profit: money.

In her Sustainability Literacy classes at Open Edu, Celine Semaan explains how capitalism is a system that benefits from separation, domination and extraction within a hierarchical culture that sustains a small portion of the human population. She also teaches how this system is supported by pillars like racism, classism, sexism, exploitation, individuality and control, while leading to inequality and the destruction of the Earth.

In addition, in her Waste-led design class, she gives a lesson on how most brands that operate within capitalism support a linear cycle that involves material extraction, manufacturing, product assembly, packaging, distribution, use and disposal; leading to

waste which most of the time ends up accumulated in landfills. By prioritizing short-term gains over long-term sustainability, capitalism feeds degenerative systems that result in deforestation, habitat destruction, soil erosion and exploitation of natural resources. Most of the time, the value of a product fails to consider the full environmental cost that involves pollution and carbon emissions. In other words, overproduction and overconsumption impede ecosystems from regenerating because non-recyclable waste is massively generated contributing to landfill pollution and marine debris. Ranked as the most polluting industries, sectors that involve fossil fuels, agriculture, fashion, food retail, transportation and construction hold a prominent position in terms of contributing significantly to the global carbon footprint (Climate Trade, 2023).

Within this capitalistic system, brands rely on a culture of consumerism to create demand. This is where advertising comes into play by creating the illusion of a problem, a need and/or a standard, while offering the solution through a product and/or service. Value offered by a brand, shapes and is shaped by its environment. Last, the narratives of consumerism within the capitalistic system are supported by an anthropocentric perspective, which comes from the belief that humans are separated and superior to Nature. Operating from this place of separation, capitalistic narratives are embedded in society and algorithms. This causes brands to act in ways that reproduce disconnection, and obstruct interconnectedness found in symbiotic relationships that could lead to new definitions of profit. Brands that focus on rapid production can lead to environmental degradation and labor exploitation. This short-term profit focus disconnects the brand from sustainable practices, hindering long-term symbiotic relationships with workers, communities, and the environment. For example, the 2013 Rana Plaza factory collapse in Bangladesh was one of the deadliest industrial disasters in history, and it brought global attention to the poor working conditions in the garment industry. Rana Plaza was a commercial building that housed several garment factories producing clothing for major global brands including Primark, Bonmarché and Canada's Loblaw. The day before the collapse, large cracks appeared in the structure, and local authorities ordered an evacuation. However, garment factory managers insisted that workers return to work the next day, fearing production delays and financial losses. On the morning of April 24, the building collapsed during work hours as 1,134 people were killed and at least another 2,000 people were injured. Many of these workers were women employed under poor and unsafe conditions for low wages (The Guardian, 2023).

Case Studies of two retail brands

The following case studies provide a comparison between Patagonia and H&M, two retail clothing companies that have shown sustainability efforts and environmental initiatives in the fashion industry.

Case Study I: Patagonia

Journey

In the 1950's, Yvon Chouinard, an 18 year old climber, started his company selling climbing pitons made at his parents' backyard. Pitons for rock-climbing were five-inch long, blade-like pieces of iron, bent up into a hook. These metal spikes were meant to be inserted into cracks in the rock and secured by hammering them into place with a piton hammer. Once inserted in the rock, a piton helped the climber descend in a rope that was attached to it. During this time, Yvon used to advertise his products on a single sheet of paper which was shared as a mail-order catalog. Years later, in 1972, he launched the first catalog mainly focused on editorial content showing wild places, sports and travels which reflected his personal philosophy on life and Nature. Only a small portion of the catalog was dedicated to show his products. During those years, most American climbers used to get their climbing gear from Europe. Yvon noticed a difference in the perspective of Americans and Europeans towards Nature reflected in their products; Europeans wanted to conquer mountains, so they produced one-time-use pitons, which were meant to be left in the mountains.

Yvon and his friends were brought up by the philosophy of John Muir and Henry David, which is based on the idea that "Nature is not to be conquered but to immerse oneself in." They were convinced that Nature should be left alone; which meant that after climbing, nothing should be left behind. Although most of Yvon's sales were pitons, he still decided to advocate for "clean climbing" by promoting the use of climbing chocks rather than his own pitons. A climbing chock is a metal wedge threaded on a wire that climbers use for protection by wedging it into a crack in the rock. This tool is more environmentally friendly, easier to use, lighter, and more versatile than a piton.

In the 1980's, Patagonia was already the official name of Yvon's business, and unconventional catalogs continued to be the main marketing tool. They were focused on real people doing real things rather than on models posing or performing. Until today, Patagonia's approach for print and digital has combined intimate stories of travel, Nature, activism and outdoor sports. Years ago it started engaging with their audience by inviting them to "capture a patagonia," which motivated thousands of

photographers a year to start joining Patagonia's community. Today, Patagonia receives about 60,000 photographs a year.

Then, in 1991, the company's first mission statement was formed: "to build the best product, cause no unnecessary harm, utilize business to inspire and implement solutions to the environmental issues of our time." However, after understanding that producing any type of supply is damaging, Patagonia's team realized that they were taking more from the planet than repaying. What started with a positive intention was fundamentally damaging, so Yvon decided to make changes. He founded Patagonia for people to explore wild places, so now he wanted Patagonia to focus on protecting these spaces.

Later, in 2000, Yvon writes down his brand's philosophy, which ends up becoming a book where he outlines his business, human resource, product design, and environmental philosophies in a way that is accessible to everyone. This book has not only inspired many entrepreneurs, but it has also given Yvon a better understanding of what systems the company could change. This includes Patagonia not ignoring social issues that could be considered political.

Next, Patagonia decided to bring stores to New York City. Patagonia's team was motivated to give Nature some rest, and interested in reimagining what it could be like to live in a city. Although most of the urban consumers did not engage in outdoor sports, they identified with Patagonia's environmental and social stance. This is when the brand decided that their stores should offer the opportunity for people to organize and talk about the going-ons of their neighborhoods. Today, each Patagonia store adapts to the local community it serves; some stores are focused on climbers, others on surfers, and other stores are focused on community events, product repairs and rewear.

Patagonia has never referred to itself as a sustainable company. Instead it has committed to be responsible because this option seems more realistic. In the 2010's Patagonia's team saw a big opportunity with regenerative organics for clothing and food. This is when regenerative practices became Patagonia's new north star. Then, with the climate crisis increasing, more people started recognizing the value of environmentally responsible practices; meaning that Patagonia's reach and product demand grew even more. This shift became an opportunity to build a movement around the brand, creating awareness of what can be done to lessen the impact that clothes have on the environment, and making bold statements through big donations to local environmental programs.

In 2022 Yvon and the entire Chouinard family transferred the ownership of the company to a nonprofit organization called The Holdfast Collective. It also designed Patagonia Purpose Trust to run the company going forward, and use its profits to address climate change.

Patagonia offers a lesson in leadership and vision. Yvon Chouinard had an intention and vision, so he created a team around a set of beliefs and values. In Patagonia's journey, instead of convincing people of the reason behind its decisions and perspectives, the team has focused on its purpose of protecting the Earth as the main motivation for its actions and interactions.

Analysis

The 50-year journey of Patagonia has been led by a purpose that has become deeper throughout time. It has become an ecosystem itself, inspired and led by a strong sense of responsibility towards the Earth and humanity. Interacting with the systems that are connected to Patagonia's practices, beliefs and industries, has guided this brand into becoming part of solutions that challenge the norm and contribute to the reduction of carbon emissions by transforming how they make their products.

vision/purpose/values

First, Patagonia envisioned a brand that achieves to "build the best product, cause no unnecessary harm, and use business to inspire and implement solutions to the environmental crisis." This brand acknowledges that life on Earth is under threat of extinction, and it is committed to do something about it. At the core of its vision, there is a purpose sustained by a set of values. Patagonia's purpose is to protect our planet, and this desired future is supported by love for Nature, which includes enjoying and protecting it. Other values like integrity, authenticity, simplicity, and collaboration also play a role in the pursuit of this purpose. Recently, on the eve of its 50-year anniversary, Patagonia updated its core values to reflect the company that they want to become in the next 50 years.

what/who/how

Patagonia's products such as apparel, climbing gear and food are the medium to achieve the company's purpose. Simultaneously, its customers chose this brand because their beliefs align with the brand's purpose. According to Forbes, 62% of consumers want companies to stand up for the issues they are passionate about. As social consciousness elevates, consumers care just as much about the impact of brands, as they do about their actual product. Patagonia's community include outdoor

enthusiasts, urban athleisure style seekers, fashion enthusiasts, conscious consumers looking for more sustainable fashion choices, people who work in the outdoor apparel industry and grassroots conservation organizations. This brand fosters connection with its audience to achieve its purpose. The following are some examples of the ways in which Patagonia interacts with its environment.

Brand interactions

Product + Services:

- Patagonia offers durable outdoor clothing, as well as outdoor gear for climbing, surfing, hiking, camping, and experiencing life on the road.
- Patagonia Provisions produces organic and regenerative foods.
- Worn Wear Patagonia allows people to trade in and buy used Patagonia clothes and gear, so that the life cycle of a product can be extended.
- Patagonia sells wetsuits made of natural rubber called Yulex that could grow 100% in a renewable way. It took ten years to create this material.

Places + Events:

- Patagonia stores adapt to the local environment and community they serve (this includes climbers, surfers and concerned urban consumers). Stores offer their own events, such as repair happy hours, crafts workshops and community conversations.
- Through the Tools for Grassroots Activists Conference, Patagonia teaches about marketing, campaign and publicity skills to grassroots environmental action groups.

Communication + Channels:

- Patagonia creates connections through social media engagement by talking about environmental conservation, and the climate crisis.
- The Patagonia website combines e-commerce, education and activism.
- Paper catalogs focus mainly on stories reflecting the beauty of the outdoors.

Partnerships + Collaborations:

- Patagonia uses online platforms to connect with grassroots activists and provide opportunities to take action on pressing issues facing the world. These online spaces offer opportunities to volunteer, sign petitions, create awareness or donate to different causes.

- Patagonia's Yulex material innovation for more sustainable wetsuits is shared with other surf brands.
- Patagonia invests in product partnerships. For example, it collaborated with Danner boots to create a wading boot made for fly fishing.
- Patagonia offers donations to progressive social causes like Planned Parenthood.

People, Talent, Behavior:

- Patagonians are regular people who love the brand and get immersed in the outdoors. They are the most visible ambassadors of the brand.
- Patagonia connects with activists and people creating change for their communities.
- There are brand ambassadors in each sports category.
- Patagonia's team welcomes change-makers like marine biologist and climate activist, Dr Ayana Johnson, who is a recent addition to the Patagonia Board of Directors.

Conclusions

Patagonia is led by its purpose to enjoy and protect Nature. This purpose is rooted in values that inspire intentional interactions within its ecosystem. Most actions and beliefs shared by Patagonia aim to address the climate crisis. Throughout time, purpose-driven interactions have helped Patagonia grow its customer engagement, build customer loyalty and stand out from possible competitors. At the same time, this brand has and continues to contribute to different communities and the well being of our planet.

Greenwashing

Greenwashing is a term that refers to companies presenting information in a way that makes consumers believe it is sustainable for the planet. Buzzwords like 'ecological', 'environmentally-friendly', 'natural', 'green', and 'sustainable' have no clear definition, so many brands can use these terms to portray a false image, while their actions continue to threaten life on this planet.

The number of people who care about social and environmental issues keeps increasing. The climate crisis has led people to value sustainability and transparency, so

people want to support brands that are committed to protect the Earth through their visions and actions. The rise in demand for sustainability is the reason why many brands are approaching sustainability as a trend rather than approaching it as a desired vision for the future of the planet and humanity. Through greenwashing, companies may increase sales or boost their reputations without taking genuine responsibility for the systems that they actually support.

Case Study II: H&M

Journey

In 1947, inspired by his trip to New York City, Erling Persson, a Swedish entrepreneur, opened a new womenswear store in Västerås, Sweden. He calls it Hennes, Swedish for "Hers". A few years later, a second store was brought to Stockholm, and the brand came up with its first full-page color ad in Sweden's largest daily.

In 1968, the brand acquired retailer Mauritz Widforss to start selling men's and children's clothing with the intention of expanding its target to entire families. This changed the brand's name to H&M (Hennes and Mauritz). One year later, there were a total of 42 H&M stores in Sweden. During these years, international growth of H&M begins. Stores opened in Norway, followed by Denmark, the UK, and Switzerland. The growth pace quickly increased with five or six new stores opening every year.

In 1970's, H&M started selling underwear, and it also introduced cosmetics into its products. During this decade, this brand was listed on the Stockholm Stock Exchange. Throughout the 1990s, the expansion of this brand continued with four new markets in Europe. This is when H&M started to offer online shopping in Sweden. Furthermore, in 2000, a major H&M store opened on Fifth Avenue in New York, turning the founder's dream into a reality. This event marked the start of H&M's expansion outside of Europe.

Then, in 2002, H&M published the first Corporate Social Responsibility Report with the intention to start a journey in sustainability. In 2010, the brand launched its first collection partially made out of sustainable materials. Three years later, H&M stores worldwide introduced garment collecting, so that customers' old textiles can be collected for reuse and recycling. Simultaneously, H&M's rapid expansion continued, and today, there are stores in Europe, North America, the Middle East, Asia, Africa, South America and Australia.

In 2015, H&M Foundation launched The Global Change Award. This initiative was brought to promote innovations that can accelerate the shift from a linear to a circular fashion industry. In addition, in 2021, H&M Innovation Stories was launched to create a series of themed collections of more sustainable materials, technologies, and production processes. A year later, H&M set its climate goals to reduce greenhouse gas emissions across the value chain by 56% by 2030, and by 90% by 2040. Its vision is to achieve net-zero.

In 2023, H&M Group and Remondis created Looper Textile Co., a joint venture to collect, sort and sell used and unwanted garments and textiles. Remondis is a German multinational company for recycling, water resource management and industrial and communal services, which ranks among the biggest recycling firms. The same year, an inaugural EUR 500 million green bond was issued, to support the financing of H&M Group's circularity and climate roadmap. A green bond is a financial credit which is meant to be used to fund projects that have a positive environmental impact.

To the date, H&M is present in more than 75 markets worldwide. H&M is currently focusing on investing in new materials, technology and business models to achieve change, remake products, and transform the fashion and design experience.

Analysis

vision/purpose/values

Since its beginnings, H&M's vision has been to make fashion available and affordable to everyone. Since 1947, this vision has been the north star of H&M, which has practiced strategies to maximize its expansion through rapid design, production, distribution, and marketing of clothing at a low price. This business model is known as fast fashion, and by definition, it is not sustainable for the planet. The values sustaining fast fashion are mainly (and not limited to) affordability, trendiness and mass production to maximize the brand's profitability. Although H&M's vision for its future is to lead the change towards circular and renewable fashion, its purpose is founded in a consumerist view, as well as in a hierarchical worldview. An example that makes this misalignment evident is the way H&M treats people who work at their supply factories. In 2013, H&M promised to pay 850,000 workers a living wage by 2018. Unfortunately, this promise failed. Also, in 2018, factories that supply H&M were named in reports by Global Labour Justice detailing abuse of female garment workers. Furthermore, in 2023, abuse on workers' rights came to light in Myanmar (Good on you, 2024).

What/who/how

H&M engages in the sale of clothing including underwear, sportswear and footwear for women, men and kids, as well as cosmetics, and home textiles. Their products are meant to be budget-friendly, trendy and inclusive, targeting the youth (16-25 years old). This customer section is highly influential in shaping fashion trends and it has a significant impact on fashion brands' demand and likability. According to Vogue Business, fifty-one percent of Gen Zs believe that social media influencers create new trends. Due to the algorithm of platforms like TikTok and Instagram Reels, fashion content spreads fast. This allows fashion brands to receive a new level of exposure to culture, which is inspiring consumers and leading to more micro-trends. To earn Gen Z's loyalty, brands need to keep consumers engaged through community building, which means creating a whole universe of touchpoints for consumers to explore beyond meaningless transactions. H&M understands Gen Z's very well, so it also relies on a solid marketing team that can quickly determine what the target demographic desires and get it into the supply chain fast. With the rise in demand for sustainability, H&M promises to reduce its ecological footprint and contribute to a more sustainable fashion industry.

Brand interactions

Product + Services:

- The H&M group sells an estimated three billion articles of clothing per year. Its revenue makes it among the top three fashion retailers in the world.
- H&M's Circular Innovation Lab is dedicated to investigating innovative and more sustainable materials. Their aim is to upscale in higher quantities and use these new materials in large-scale production.
- H&M Group launched the AI Tool Movebox, an algorithm that enables redistribution of products to specific locations where there is demand. Using this algorithm helps the brand react faster to changes in customer preferences, which attempts to decrease over production.
- H&M delved into its internal innovation lab to create an avatar designed to help customers try on clothes virtually. The goal behind this initiative is to improve accessibility and reduction of product returns.

Places + Events:

- H&M Elements Festival Zone was launched to promote sustainability and recycling among the youth.

Communication + Channels:

- The H&M sustainability report covers the group's fundamental sustainability efforts, practices and its approach to circularity, climate, and nature. It also focuses on H&M's social responsibility and supply chain management.
- H&M's advertising campaigns, look-books and communications material are produced in cooperation with top-ranked creatives from all over the world. It works with models and talents of diverse looks, ages, and cultural backgrounds to stay relevant to all customers.

Partnerships + Collaborations:

- H&M Group invested about USD 9.3 million and expanded its partnership with Renewcell, a groundbreaking innovative Swedish textile recycling company.
- Circular Innovation Lab
- H&M Group has joined partnerships, memberships and collaborations with about 60 global companies.

People, Talent, Behavior:

- Throughout the 1990s, models such as Cindy Crawford, Christy Turlington, Claudia Schiffer, Elle Macpherson, Linda Evangelista and Naomi Campbell were featured in H&M's campaigns.
- Contemporary collaborations include working with Karl Lagerfeld, Stella McCartney, Roberto Cavalli, Versace and Alexander Wang.

Conclusions

H&M is motivated by the vision of making its concept of style accessible to everyone. This makes accessibility to fashion the main purpose of H&M. To generate supply frequently, quickly and in large quantities, this brand is built from a foundation which does not consider the well being of the ecosystem as a whole. During the past decades, H&M has made efforts and promises to reduce its negative impact on the environment. Although this intention creates awareness around sustainability in fashion, it forgets to recognize the systems that the brand has been reinforcing since its beginnings.

Method comparison

Patagonia and H&M share a similar vision. Both want to move towards circular systems and more regenerative interactions. However, when exploring these brands through the Causal Layered Analysis (CLA) method during an earlier stage of this research, it is evident that they emerge from different and almost opposing beliefs.

Although both brands show sustainable initiatives and promote environmental activism at the top of the iceberg model, Patagonia's deep myth reinforces the belief that the Earth is sacred, and that all humans belong to Nature as much as other species. This means that humans can find connection and kin in their relationship with Nature and each other. This belief has pushed Patagonia to create an ecosystem inspired by interconnected symbiotic interactions that benefit regenerative systems.

On the other hand, H&M arises from the consumerist belief that human happiness and connection is achieved through material acquisitions. The myth at the bottom of an iceberg is a subconscious belief that maintains the system or leads it to change. Looking at these brand's visions can inform the types of unconscious beliefs operating at the bottom of each iceberg model.

Patagonia's and H&M's case studies highlight the nature of two different viewpoints: an ecocentric perspective and an anthropocentric one. Ecocentrism sees intrinsic value in nature as a whole. It takes a much wider view of the world than anthropocentrism, which sees individual humans and the human species as more valuable than all other organisms. Ecocentrism is the ethical belief that both individuals and whole ecosystems, watersheds, species, and the biotic community have inherent value as well as they have purpose in themselves. This means that demonstrations of respect and care are extended to all life forms. Many scientists and environmental activists are convinced that it is the path to true sustainability because it approaches the climate crisis through the recognition of humanity's duties towards nature.

Research questions

Like living systems, brands impact and are impacted by other systems. They play a major role in our capitalistic ecosystem because their interactions can either damage or contribute to the healing of our planet. At the same time, brands continue to understand the importance of sustainability, and customers are becoming more interested in the environmental impact they make through their purchases.

Considering that most brands in our capitalistic ecosystem have not been created from the intentionality of love for Nature and the desire to protect our planet, this project aims to offer a lens for designers and brands to explore ways to cause positive change through their symbiotic interactions with their environments.

Main

How might we develop a method for a brand to interact with its environment in a sustainable way?

Secondary

How might we find inspiration in natural systems to guide brand interactions?

How might we approach consumerism to create more harmonious ecosystems?

What regenerative systems in nature help sustain life?

Chapter II: Searching for a method in Nature

Indigenous Knowledge

Understanding ecocentrism and its relevance in sustainability led me to wonder about the possibilities that take place within indigenous practices. These practices are motivated by a call to protect and be in relationship with the Earth. Learning from Indigenous knowledge has taught me that there are other value alternatives that go beyond money, which drives today's global economy. Author John Perkins calls today's economy a "Death Economy," which is supported by a social-governmental-economic system that is consuming itself into extinction. He defines this type of economy as one which succeeds from the maximization of short-term profits for corporations and short-term accumulation of possessions for individuals without considering environmental and social costs. On the contrary, he describes a "Life Economy" as one that cleans up pollution, regenerates destroyed environments, and creates technologies that do not destroy the environment. In addition, Co-founder and President of Global Indigenous Development Trust (Toronto), Sonia Molodecky, describes this type of economy as an economy in which we strive to support a natural balance of life systems throughout development. To do so, she emphasizes the need to operate from the "heart-center," which is based on the belief that natural law dictates abundance instead of scarcity, love instead of fear, and unity instead of separation. She also emphasizes the need of acknowledging and valuing the oneness of all of creation in order to foster a Life Economy, because we can only create this vision when our perception and values are changed. The movement to a Life Economy emerges from the knowledge that there is no separation between us and the natural world (Sonia Molodecky, 2021). From this perspective, all organisms are valued and interconnected through relationships. As a result, the values that lead prioritize an ethos of care over coercion, as well as kinship, generosity, responsibility, reciprocity and sharing.

During the initial phase of my process, the intention was to learn from natural systems. This intention made me consider involving Indigenous people in my research, so that I could bridge ways of knowledge. However, this is when I learned that in order to work with indigenous leaders, a long term commitment to a relationship and/or a community needs to be prioritized. Knowing this has shown me a path for my future, and it also motivated me to complete a leadership

program for community re-building offered by Global Indigenous Development Trust, Toronto. This 12-week training showed me what is possible when humans choose to work together with and for Nature.

This training has also taught me the importance of connecting with the Earth and turning into my own spirit. Through this course I understood that leading a heart-centered path requires recognizing identity and honoring it. Heart-centered approaches involve a reconnection to ourselves and our emotions, as well as to non-human life and the land (Youth Climate Lab, 2022). A heart-centered path also invites us to be aware of the values that lead the way, and align them to the vision. Next, another important lesson was the importance of relying on community because more abundance is achieved when all resources and efforts are interconnected for a bigger purpose. Furthermore, this course taught me skills negotiations and strategies to build strong partnerships. It also taught me about Biomimicry, an approach to innovation that finds design solutions in traditional ecological knowledge. This learning experience gifted me a strong foundation for my vision and values as a designer. I'm grateful for these lessons and the opportunity to connect and be inspired by change makers who feel called to love and heal our planet.

Biomimicry

The need for finding answers in Nature guided my research process towards Biomimicry. Biomimicry is a practice that learns from and mimics strategies found in nature to solve human design challenges (Biomimicry Institute). This practice is all about creating conditions conducive to life. Its goal is to bring about products, processes, and systems that solve the challenges of sustainability. By doing so, it creates new ways of living. Biomimicry values Nature for what humans can learn, as opposed to for what we can extract or domesticate. In addition, this practice offers designers the opportunity to dive into identity, purpose and the connection that humans have to each other and to the Earth.

The three essential elements to find solutions in Nature's wisdom are: (re)connect, emulate and ethos. The first one accepts that humans are part of nature, and not separate from it. This connection honors the reciprocal relationships between all living organisms. Then, to emulate refers to the practice of learning from Nature, so that we can mimic forms, processes and ecosystems to arrive at more regenerative outcomes. Third, ethos is the sense of

responsibility to protect our teacher, Nature, as well as to embrace nature-inspired innovation.

Thriving ecosystem: Type III Ecology

An ecosystem is a community of plants, animals, and other organisms, as well as weather and landscape, interacting directly or indirectly to sustain life. Ecology is the study of the relationships between all these living organisms and systems.

Through billions of years of evolution, Nature has created 3 types of ecologies. Type III Ecology is complex and diverse such as an old forest. In this ecology, the diverse plant and animal life develop mutually beneficial relationships that provide nutrients to each other, and give nutrients back to the soil. Plants and animals give more to the ecosystem than what they take, so life thrives. In Type III Ecology, living organisms are interdependent, adaptive, highly resilient and motivated by generosity and abundance.

Belowground ecosystem: The wood-wide web

The wood-wide-web is a belowground complex collaborative system of shared mycorrhizal networks between plants at a forest. This network is formed by mycelium, which is a group of microscopic white threads (hyphae) that are linked to each other.

The purpose of mycorrhizal network is to facilitate mutual support within an ecosystem, and it does it by transferring nutrients, water, and information between plants. Ecologist, Suzanne Simard, explains that mycorrhizal network links trees because this is how it secures its own source of carbon and the harmony of its environment. Through connections, plants share resources and information. Mycorrhizal networks help maintain forest health and resilience by supporting young or weaker plants. For example, a tree that has more access to sunlight can send excess sugars from photosynthesis to a shaded tree, which can reciprocate by sending water or nutrients from the soil. In addition, plants can also send distress signals through the network if they are under attack by pests or diseases, so that defensive responses in neighboring plants are activated. It is through these types of interactions among plants that the mycorrhizal network

grows as it develops long-term symbiotic relationships that sustain the health of the forest.

Mycelium as a connector

Nature is an event that never stops changing. A mycelium network reminds us that all life forms are processes, not things. 600 million years ago, green algae moved from water to land, creating conditions for life. The first algae had no roots and no experience foraging for nutrients and water from the ground. They needed to develop relationships with fungi in order to survive in this environment. With time, these partnerships have evolved into mycorrhizal relationships (Merlin Sheldrake, 2020).

Mycorrhizal fungi make up between one-third and half of the living mass of soils. It is a living seam that holds soil together. More than 90% of plants depend on mycorrhizal networks. It sustains us and all that we depend on to be alive. Mycorrhizal networks are dynamic systems in unceasing change. They are so adaptive that different mycorrhizal networks can fuse with each other, and they are so resilient that a fragment of mycelium can regenerate an entire network.

Mycelium can be described as ecological connective tissue, by which much of the world is woven into relation. In fact, life on our planet depends on the ability of plants and mycelium to form healthy relationships. For a relationship to thrive, plants and fungus must make a good match. This means that plants stay recognizable as plants, and mycorrhizal fungi stay as a fungi.

In their relationship, plants and mycorrhizal fungi experience a collaboration: shoots engage with light and air, while fungi and plant roots engage with solid ground. Plants harvest carbon from the atmosphere, and transform it into energy-rich carbon compounds, sugars and lipids. In addition, plants and fungi also need water and minerals, which are scavenged from the ground by mycelium; by hosting fungi within plant roots, plants gain access to this source of nutrients. Plants and fungi help each other extend their reach and meet their needs.

Instead of putting food in their stomachs like animals do, fungi digest their environment and absorb it into their body. In other words, mycelium immerses itself within their source of food. Its capacity to prosper in diverse habitats depends on its metabolic abilities. To adapt to their food supply, each species of mycelium is unique and behaves differently.

Hyphae are tubular cells which branch and fuse to form a mycorrhizal network. These networks ceaselessly remodel themselves, so that they can navigate mazes, solve complex routing problems and explore their surroundings. Hyphae can constantly branch and take different routes. When obstructed, hyphae branch while remaining connected in one mycorrhizal network. This intelligence inspires researchers to use network-based organisms like fungi to solve human problems.

Next, mycelium coordination has no center of control. Mycelium finds solutions in an exploratory mode, by proliferating in all directions. They can explore many different routes at once. Although mycelium sprawls, it is able to stay in touch with itself because all parts of the network are aware of what's happening in a distant part of the network.

Connection as profit

What is the value of connection in an interconnected world? According to researcher Brene Brown, "connection is the energy that exists between people when they feel seen, heard and valued; when they can give and receive without judgment; and when they derive sustenance and strength from the relationship."

Brown also points out a crisis of disconnection in society which prevents people from experiencing trust, safety and a sense of belonging in supporting relationships. When humans feel connected to their purpose, other humans and the Earth, we are more willing to take care of our bodies, each other and the environment. In a way, connection has the capacity to help us cultivate a sense of responsibility and cooperation which can lead to more sustainable practices.

Chapter III: Brand Analysis

Golden Circle Theory

Golden Circle is an alternative perspective offered by Simon Sinek in his book *Find Your Why*, to support existing assumptions about why some leaders and organizations have achieved such a high level of influence. The Golden Circle explains how leaders and brands can motivate action instead of trying to convince people to act in certain ways. This perspective is a tool that can be used to inspire cooperation, trust, and change while developing customer loyalty and social drive.

The Golden Circle Theory aims to help brands foster authenticity and influence within the organization's team, as well as in its relationships with customers and other organizations. It is a tool for brands to find alignment through purpose, while building resilient relationships that help sustain the brand's ecosystem.

Why/ vision

The Golden Circle theory encourages brands to start their growing path from a strong sense of purpose. In this theory, purpose goes beyond just making economic profit since money would be an additional result. Purpose would be a cause or a belief that explains the motivation for an organization to exist.

The neuroscience behind this theory is that humans connect with a message when it taps into a part of the brain that controls emotions, behavior, and decision-making. This part of the brain is called the Limbic brain and it is where trust takes place. Therefore, communicating the purpose of a brand through different interactions may influence customer's loyalty and decisions coming from a "gut feeling."

How

The Limbic brain is also highly influenced by the How of a brand. The How refers to the process and the specific actions that are performed to achieve and communicate the purpose. It involves the interactions of a brand with its environment, which includes the systems that the brand is connected to. The How is also focused on the brand's strengths and values that differentiates it from its competition.

What

The Golden Circle refers to the What as the specific products and services that a brand offers. The What is the result or proof of the Why. Sinek explains that the 'What' messaging only engages with the neocortex, which is the rational part of the brain. This part is in charge of controlling our senses, spatial reasoning, analytical thinking and language. Market Researcher, Grant C. Gooding, affirms that the neocortex has little to no decision-making authority because its job is to process complexity. This part of the brain is a weaker driver of decision making than the limbic brain, meaning that rather than sparking a gut feeling and loyalty, the neocortex causes rationalization and doubt. According to Gooding, activating our thinking brain is not strategic if a brand is trying to get someone to buy something.

Chapter IV: Mycelial Framework

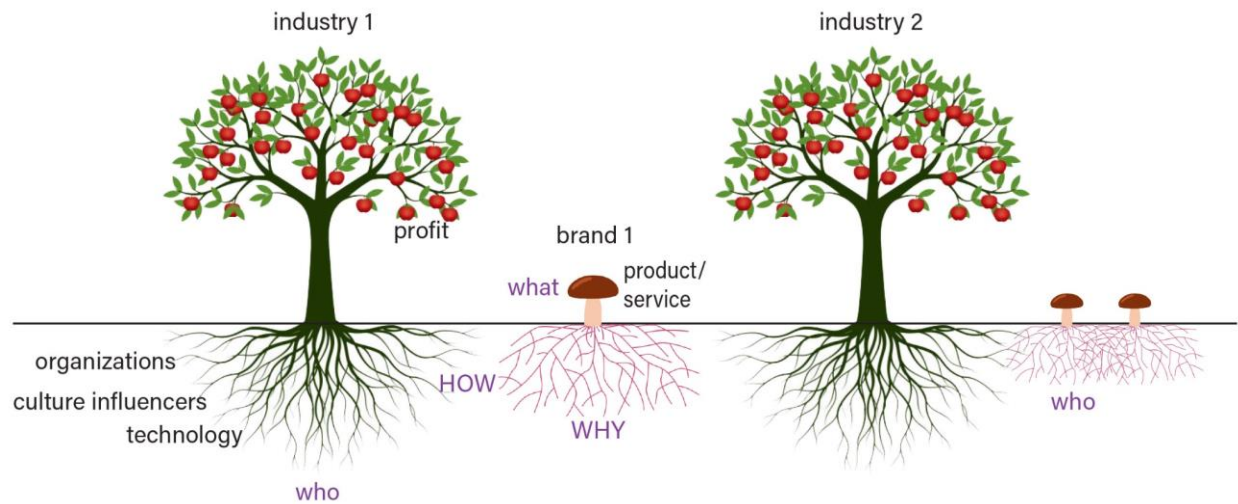
Linking ecosystems: natural & capitalistic

The Mycelial Framework is born from a desire to support the purpose of a brand in its ecosystem. It requires some imagination to look at fungal mycelium as a teacher that demonstrates how a brand can interact within an ecosystem in a sustainable way. First, we begin by looking at hyphae, the unity of the mycelial network, which represents a brand's purpose or reason to exist. As hyphae propagates, it shares information and resources, while weaving an underground web called mycorrhizal network. The mycorrhizal network represents a supply of brand interactions aiming to support the environment that it is part of. Then, as a result of interactions led by a purpose, we can see the What of a brand which is the product or service represented by the mushroom above the soil.

As we keep envisioning a healthy ecosystem, we can look at a tree (shoots and roots) as an industry supported by different connected subsystems. As an example, industry X will represent the fashion industry which is supported by subsystems such as manufacturing and production, retail, fashion events, and consumer influence, to name a few. The following chart shows how subsystems represented by the underground roots are connected by the mycelial network through symbiotic partnerships which support one another through the intentional weaving of a brand's interactions. In addition, the mycelial network represented by a web of brand interactions can not only connect the roots of one tree, but it can also connect the different trees (or industries) within an ecosystem. In other words, the Mycelial Framework provides a perspective that looks at a brand's purpose as the connector among subsystems within an industry, and in relation to other industries (e.g. textile, cosmetic, luxury goods - industries).

Moreover, the fruit of a tree is a metaphor for profit that emerges as a result of different interconnected processes and systems. A fruit can represent financial profit as well as connection, circularity, health, happiness and community for an industry and for the ecosystem as a whole. This is the sweetness that can be born out of collaborations built upon shared information and resources with the purpose of cooperating towards the wellbeing of an interconnected whole.

Figure 1: *Linking natural and capitalistic ecosystems*



Note: Brand is represented by a fungal structure that is connected and in relationship with trees for the benefit of the entire forest. Trees represent the industries that are impacted by a brand, and their fruits represent profit created as a collaboration.

Figure 2: *Linking forest and brand processes*

Ecosystem in nature	Natural processes	Brand	Ecosystems in capitalism
Mushroom (cap)	It is the result of underground efforts.	What	Brand A
Mycorrhizal network	It supports the vitality of the ecosystem that it is part of. It must be strong for mushrooms to flourish.	How	Brand interactions
Hyphae	It proliferates to	Why	Brand's purpose

	share information and resources.		
Tree (shoots+roots)	It is compounded by many subsystems.	Supporting systems	X industry
Tree roots	They are connected with mycelium	Partnerships	Organizations, culture influencers, subsystems
Fruit	It is the result of different processes. It feeds animals in the forest.	Profit	Profit: money, connection, circularity, health, happiness, community,

Note: Table helps compare and link brand's components such as what, how, why and who with symbiotic processes that take place between fungi and trees.

Mycelium structure

Why/vision

Mycelium's purpose is to develop symbiotic relationships within its ecosystem, so that it can help sustain and regenerate life.

Its vision would be a forest that represents a Type III Ecology.

What/who

The top part of the fungi is the result of belowground efforts. It offers sustenance to animals and plants that are part of its ecosystem.

Mycorrhizal networks interact with subsystems of other living organisms such as tree roots and other mycorrhizal networks.

How

Mycelium interacts with its environment by:

- Delivering nutrients to feed other organisms. Mycelium extends the root system of plants, helping them absorb water and nutrients more efficiently.
- Decomposing organic matter, returning nutrients to the soil and breaking down potential toxins. This decomposition process helps maintain soil health.
- Strengthening communications; mycelium can sense changes in the environment, such as soil pH, moisture levels, and the presence of pollutants. This information can be communicated to plants, helping them adapt to changing conditions.
- Creating symbiosis; Through relationship mycelium enhances the flow of information and resources between plants and fungi, strengthening the resilience of the ecosystem.
- Protecting against harm; when there is a pest or other threat attacking a tree, mycelium transfers this information across the forest so that other plants can protect themselves.
- Detoxifying; mycelium can form dense networks that act as natural filters, trapping particulate matter and pollutants in water and soil. This physical filtration helps remove contaminants from the environment.
- Exploring many different routes at once to find the best solution.

Framework for interactions

How could brands mimic these mycelial interactions?

- Interdependence: Brand-x can support other brands and organizations in meeting the needs that sustain them, as well as other brands/organizations can help brand-x meet the needs that support its growth.
- Circularity: Brand-x can embrace the end of the life cycle of a product by facilitating its reuse, or by recycling materials and using them again in the manufacturing of its products.
- Adaptability: Brand-x can identify social movements and changes in its ecosystem, so that it can adapt and support changing conditions.

- Reciprocity: Brand-x can develop strong relationships with other brands/organizations from different industries by facilitating the exchange of knowledge and resources.
- Harm-prevention: Brand-x can protect the wellbeing of its audience and the subsystems that it works with, by identifying, calling out and spreading awareness when there is a threat of harm in the environment.
- Abundance-mindset: Brand-x can identify the harmful beliefs related to the industries that it works with, so that it can promote views that support life in its ecosystem.
- Innovation: Brand-x can work with feedback loops to explore different solutions simultaneously, and then, commit to the most suitable strategy.

Values for cooperation

How does mycelium achieve this commitment to cooperation?

Creating conditions to foster cooperation is necessary in any system that wants to thrive. At the same time, the more a living system evolves, the more cooperative it becomes (Kathleen E. Allen, 2019). In her book, *Leading from the Roots*, Allen demonstrates seven values inspired by mycelium. By looking at this organism as an example of a living system, brands can learn how to create conditions that bring about cooperation in their interactions and lead to a more abundant ecosystem.

Connectivity: Recognizing the interconnectedness of different parts within a system is a precondition for cooperation. Once interconnectedness is acknowledged, capacity is built to accept and support cooperative intentions such as being open or sharing ideas and resources.

Shared purpose: Once connectivity is evident, a shared purpose comes into view to support a predisposition to collaborate. Conditions that are conducive to cooperation are given when a system understands what it is that connects all its parts.

Transparency: Hidden agendas are obstacles to achieve cooperation. They bring distrust, conflict, and ineffective outcomes. Transparency facilitates open and honest communication, and it also gives all parts access to the same information, which is essential for coordinated efforts. It minimizes misunderstandings and motivates accountability.

Enlightened self-interest: Replacing a narrow self-interest with an enlightened self-interest means that by serving the whole system, all parts create a more abundant system, which is beneficial to all parts. This shift in perspective helps move from scarcity to abundance.

Integrative power: This type of power goes beyond the traditional “power over” dynamic. It is “power with,” which is built on trust and transparency, and it is fostered in systems where people are willing to collaborate. Seeing power as a building capacity helps create integrative power.

Intrinsic responsibility: It’s practiced when the system is designed to send feedback about the consequences of decisions directly, quickly and compellingly to all decision-makers. Quickly adapting behavior to feedback allows the system to collaborate and achieve goals as a team.

Collaboration-reinforcement: Shifting from separation and individualism to interdependence and connection requires focusing on where collaboration is already occurring. Rewarding collaboration may help create a strong network of systems by appreciating efforts, contributions and people taking action in an ecosystem.

Chapter V: Outcome: Brands can plant seeds

Intention

The intention for the outcome of this exploration is to offer a perspective that may allow designers to find inspiration in mycelium’s behavior and values. This approach recognizes the significance of relationships within an ecosystem to support and

regenerate life; therefore, it can be used as an informal guide to come up with sustainable brand interactions. Focusing on building symbiotic connections through strategic interactions may help generate alternative ways of profit such as more connection, health, harmony, a sense of belonging and environmental stewardship.

The intention of this outcome is not to operate outside or against the capitalistic system. Although part of the process has focused on pointing out the harm that is reproduced in this system, the mycelium model can be used to inspire interactions that are motivated by a desire to create conditions conducive to life within the current world that we live in.

On a personal level, I've pursued a career as a designer because I wanted to bring positive change through innovation and storytelling. However, it has been hard to know how to move in a space of infinite possibilities. The mycelium model can serve as a simplified guide to incorporate a view that supports the development and expansion of a brand in a way that it also contributes to the flow of life in its environment and our Earth as a holistic system.

The Framework as The Seed of Life

Seed of life

In Sacred Geometry, The Seed of Life consists of seven circles that represent creation, connection and unity. Environmentalist and founder of Uniguide, Kristen M. Stanton, refers to the Seed of Life as a two-dimensional illustration which holds the recipe of life and all its potential. It implies that all life on Earth is interconnected and that creation is a divine force that starts with consciousness (Stanton, 2023).

By combining the Mycelial Framework with the shape of the Seed of Life, a guide for brands emerges. This guide may help a brand grow by reproducing symbiotic processes and a set of values that may inspire sustainable solutions and a sense of responsibility with the ecosystem as a whole.

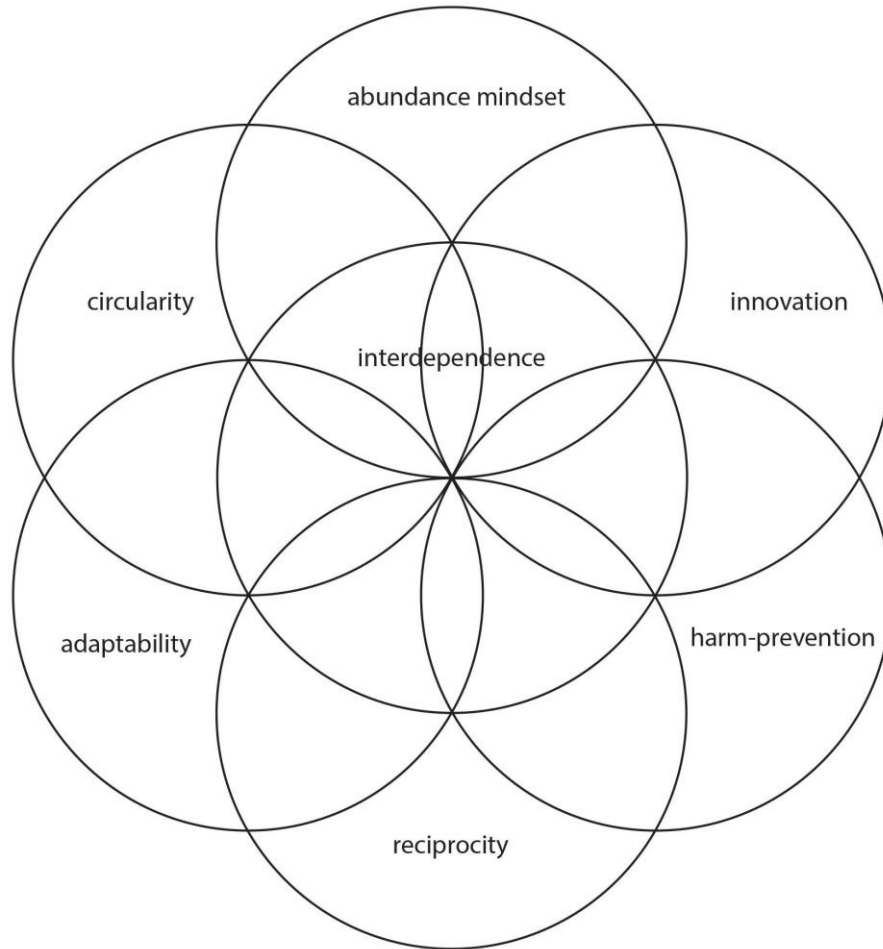
By acknowledging the complexity of the climate crisis and the limitations of our human efforts, we can also get in touch with a space to foster new possibilities. By shaping our world through brand interactions we can plant seeds of connection among humans, with ourselves, and with Nature. By planting these seeds of life we can inspire

a culture that embraces other types of profit that goes beyond only money. This is how we can sell products and services, as well as conditions conducive to life.

Mycelium Framework as The Seed of Life

As the Mycelium Framework offers a perspective that links capitalistic systems with natural ecosystems, this seed of life aims to guide a brand in the process of weaving their interactions. These circles aim to serve as a guideline for brands to work for creating conditions conducive to life. Incorporating them as pillars to support a brand's way of interacting with its environment may result in more intentional exchanges of information and resources that contribute to a brand's expansion and profit for the Earth as a whole.

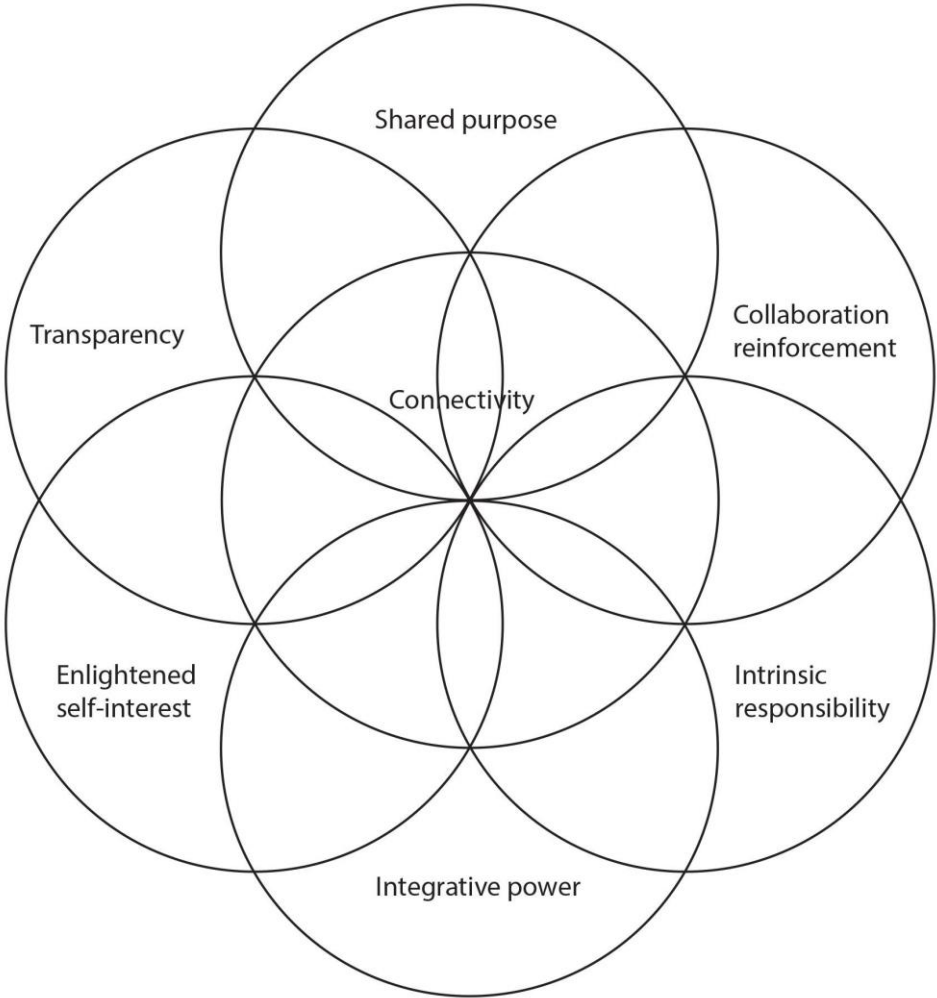
Figure 3: *Mycelium Framework as The Seed of Life*



Note: The Seed of Life formed by seven circles, each reflecting one component of the Mycelium Framework: Interdependence, abundance mindset, circularity, adaptability, reciprocity, harm-prevention, innovation.

Furthermore, these are brand's values that facilitate conditions conducive to life. By following these values, a brand can be guided into the Mycelium Framework with the intention of allowing new processes and relationships with its environment to take shape.

Figure 4: Mycelium values as *The Seed of Life*



Note: The Seed of Life formed by seven circles, each reflecting a value of the Mycelium Framework: connectivity, shared purpose, transparency, enlightened self-interest, integrative power, intrinsic responsibility, collaboration reinforcement.

Future of this outcome

As the world keeps changing, designers need tools to create a more harmonious future. Willow Defebaugh, editor in chief of Atmos Magazine, explains that protecting the Earth comes along with recognizing our love for Nature; where we come from. This path requires our caring for each other because we were designed to thrive in community. Defebaugh describes reverence for Nature as a philosophy that invites us to look at the world with a sense of awe and wonder, seeing all as sacred and part of an interconnected web of life (2024). The Mycelium Framework aims to guide designers back to a sense of reverence for the Earth as a way to inspire new ways for brands to behave and interact with their environments. Through this framework we can change the way we see brands within their ecosystems, resulting in the emergence of new solutions.

Throughout this journey, the biggest lesson that Mycelium has taught me is that information and resources are meant to be shared. For now, my research question has been answered, leading me to a framework that can help me make more sustainable decisions related to my work with brands and my personal habits as a consumer. In the near future, I plan to offer this perspective to other creatives who feel called to protect the Earth through innovation inspired by natural systems. The Mycelial Framework will be shared as a toolkit, which design embraces play, curiosity, reflection and the feeling of falling in love with Nature.

Conclusion

In conclusion, this research paper presents a lens to reimagine the role of brands in our ecosystem as we try to move away from practices that prioritize profit at the expense of environmental and social well-being. The case studies of Patagonia and H&M demonstrate the contrast between brands that grow from ecocentric views and values, and those that emerge from anthropocentric views and sustain degenerative systems.

By learning from principles found in natural systems, such as fungal networks, brands have the potential to create regenerative ecosystems that support life. The proposed Mycelial Framework offers a practical guide for brands to bring about sustainable interactions that contribute to a healthier planet and a more connected environment.

As we keep being challenged by the climate crisis, it is important that brands not only acknowledge their impact, but also actively participate in healing and sustaining the ecosystem in which they exist.

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