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THE DIGITAL AND THE SOUTH: QUESTIONINGS VOL. 2

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CONJUNTO ECOLÓGICO

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Abstract

The arrival of the Internet in Atlixco, Puebla, frames a reflection on the complexities of communication in the Global South. Unlike urban contexts in the Global North, where Internet access and technological infrastructure expanded rapidly and almost universally, the Global South faces unique challenges. In places like Atlixco, digital communication has been a gradual and fragmented process, marked by significant gaps in access and adoption of technology. "Ecological Ensemble" is an installation that explores the symbiotic communication between fungi and plants, specifically through the underground network known as the Wood Wide Web. This network, where fungi and trees exchange nutrients, symbolizes alternative communication connections among non-human species. The work unveils what is usually hidden, transforming fungal spores into cotton threads to visually represent this interaction. It draws on empirical methodologies and grounded theory. Inspired by the late arrival of the Internet in my hometown, Atlixco, it links this natural communication network to human digital technologies, addressing the complex effects of digital media on everyday life in the Global South, from Internet infrastructure and communication methods to techno-political challenges. Exploring "Ecological Ensemble" invites a critical perspective on communication in a world that must recognize biological and digital networks to achieve a more harmonious and sustainable coexistence.

Keywords: Wood Wide Web, Communication, Global South, Ecology

1 Introduction

Communication between human and non-human species reveals the vast diversity of communication forms. The connection between fungi and plants explored in this work highlights non-hegemonic communications. Despite human advancements in digital networks, it is vital to learn from other forms of non-human communication, understanding that these are equally legitimate, natural, and essential for the environment and our future. Communication, in its complexity, challenges the technological human-centric perspective. Inspired by limited digital connectivity and barriers to technology in the Global South, stemming from economic disparities and lack of infrastructure, they highlight that human communication should not be the sole valid model and indicate the existence of connection methods that respond to a more complex and resilient ecology (Gobierno de Mexico, n.d.; TecScience, 2023). Thus, the research delves into different forms of non-human communication. In the world of plants, communication occurs thanks to fungi, assembling a network called “The Wood Wide Web”. This network consists of fungi that provide nutrients difficult for trees to obtain and vice versa (Popkin, 2019), fostering a mutually beneficial, symbiotic relationship. Using grounded theory as an artistic methodology, I concluded that making the invisible visible was essential. The goal is to offer viewers a new way of perceiving communication between fungi and plants, inspired by the interdependence principles found in resilient communities in the Global South (Joneja et al., n. d.).

2 Methodology

In the following work entitled “Ecological Ensemble”, threads stretch from one pillar to another, as shown in Figure 1. These threads contain the fungus *Rhizopus stolonifer* spores, commonly known as bread mold. The piece reveals the symbiotic interaction between fungi and trees, an interaction that often goes unnoticed beneath our feet. To create this installation, I delved into my past and memories. In 1986, the Internet arrived in Nuevo León, Mexico, through a project led by the technology department of the Monterrey Institute of Technology and Higher Education (TecScience, 2023). A few years later, on November 26, 1991, I was born in Atlixco, Puebla, a town 30 minutes from the city of Puebla. At the time, Atlixco did not yet have Internet access, and telephone lines had only been introduced a few years prior. Interestingly, as early as 1914, Atlixco’s political leader and the Puebla city council sought to establish telephone services in the region (Reyes Zamorano, 1999).

According to data from the International Telecommunication Union (ITU), Internet penetration in Latin America and the Caribbean is around 77%, compared to 87% in Europe and 96% in North America (ITU, n.d.). Today, only 46.3% of Atlixco’s population has access to the Internet. In rural areas of the Global South, Internet connectivity is still far from universal, meaning that communication methods are often rooted in practices other than digital connectivity (Atlixco…, n.d.). When I was a child, my father told me there were no telephone lines when he first moved to Atlixco. Along with others, he worked to bring telephone connectivity to different parts of the town. In many areas of the Global

South, such as rural communities in Mexico, communication networks are organized around families and communities. In Atlixco, for instance, families have built support structures and communication networks that rely more on direct interaction than technology. From markets to community festivals, local networks serve as hubs for exchanging information. Face-to-face communication remains highly valued, and physical gatherings often replace digital tools, which resist digital hegemony (Reyes Zamorano, 1999).

These quantitative disparities contrast sharply with the levels of connectivity in the Global North, where high-speed Internet and 5G mobile networks are standard. Such disparities have fostered the emergence of innovative, creative forms of communication in the Global South that do not depend exclusively on advanced technology. For instance, when I was 13 in 2004, my family still had no Internet connection at home, even though it was already common in households in other parts of the Global North. This is why fungi have inspired me to explore alternative forms of communication. Community radio is another notable example of alternative communication methods, particularly in rural areas of Mexico, Bolivia, and Brazil. These radio stations act as communication platforms, enabling communities to access local news, services, and education, providing connectivity for those without Internet access. In Puebla, for example, the community radio station *La Voz de Atlixco* has become a space where rural communities actively participate in information dissemination, functioning as an accessible forum for all (Municipios Puebla, 2015). In a context where only 46.3% of Atlixco's population has Internet access, these tools serve as essential and efficient alternatives for those living beyond the reach of digital connectivity.

Grounded theory was pivotal in guiding this research and creative process. I asked questions such as: How did we communicate in the 1990s? At what age did I first access the Internet? How do other species communicate? How do trees communicate? How do fungi communicate? As I searched for answers, more questions arose, leading to the idea of understanding how fungi help other species communicate.

I refined my research approach by investigating and exploring diverse communication methods. Collecting and organizing data in specific ways was crucial for realizing the *Ecological Ensemble* installation. This data helped me develop categories that prompted additional questions, such as: How can I present these underground connections in an artistic space? How can I visually represent the symbiosis between fungi, plants, and trees? What materials can I use to create this installation? Empirical observation also played a vital role in the development of the piece. Through this process, I studied the symbiotic interaction between fungi and trees. Ultimately, grounded theory was the most significant aspect of mymethodology, which provided the creative flexibility needed to experiment.

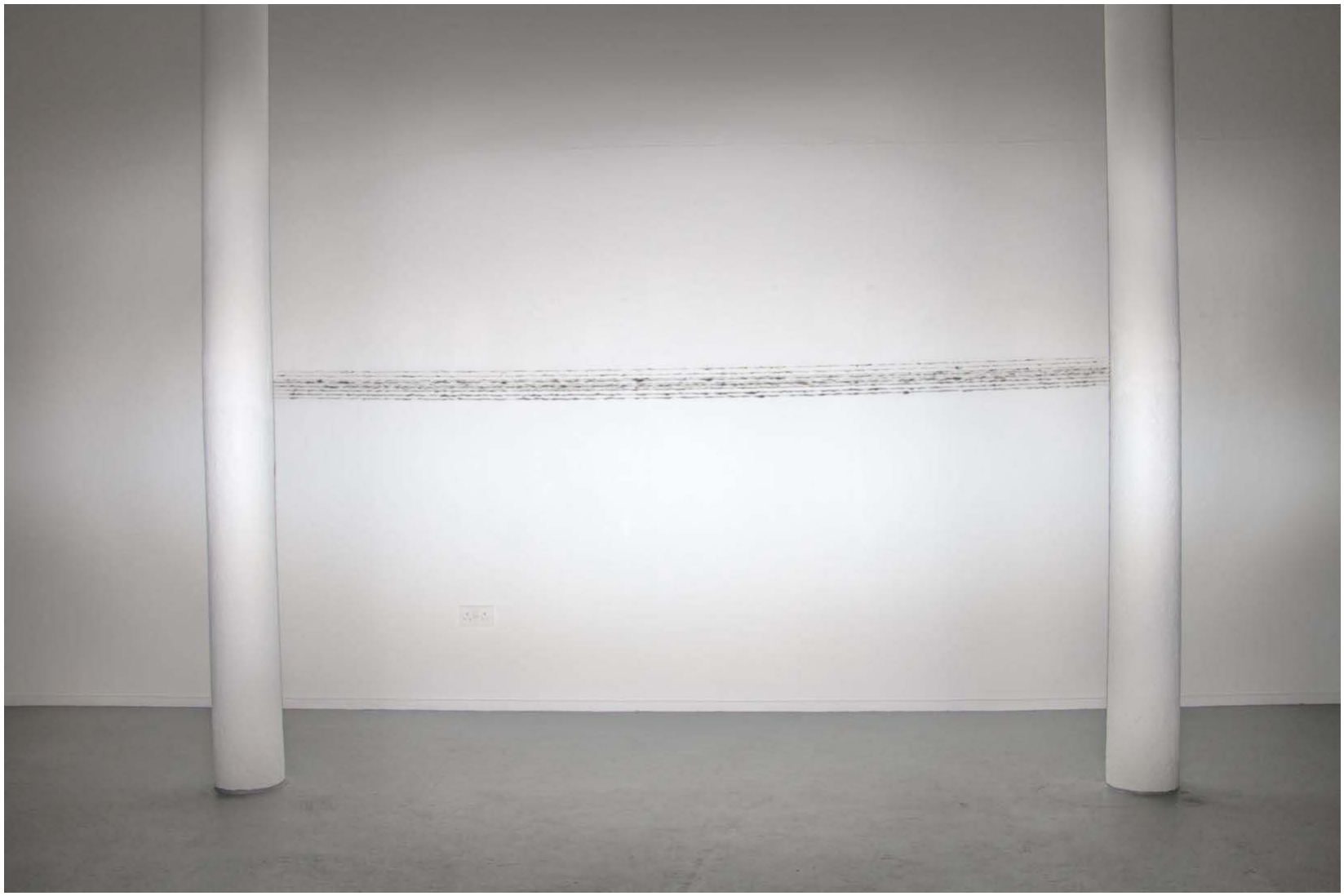

Fig. 1: Ecological Ensemble Installation. Source: Author, 2019.

3 Experimentation

The experimentation phase to inoculate fungi into cotton thread lasted twenty-seven days. The first step was to grow fungi on bread, as I knew that bread tends to develop fungi quickly, especially in humid and dark environments. I placed a piece of moist bread inside a plastic bag, leaving it slightly open to allow air and, thus, the fungus to enter. The fungus began growing within a week. When I observed that the fungus was rapidly colonizing the bread and that spores had spread throughout the bag, I placed the cotton thread inside the same bag so the spores could gradually colonize the thread, as shown in Figure 2. A week later, I removed the thread from the bag and observed the various colors of the fungus: yellow, green, and a small amount of blue, as shown in Figure 3. Over time, the fungus became increasingly dark as it reached the final life cycle stage. When it came time to set up the installation, the fungus no longer had access to its food source (the bread), humidity, or darkness. I fed it with agar to sustain it, as shown in Figure 4. Agar is a gelatinous solid medium that grows various microorganisms, providing the fungus with nutrients outside the bread bag. The fungus was fed with agar twice daily, once in the morning and once in the afternoon. Similarly, the thread had to be moistened twice daily to maintain the fungus.

4 Results

As seen in the video[1], this process culminated in the installation, part of the REMNANTS exhibition at Patriothall Gallery in Edinburgh in 2019. The purpose of the artwork was to highlight the diverse forms of connection between different organisms. This goal was achieved through the installation, where fungi inoculated into five one-meter threads grew visibly to the audience, referencing the “Wood Wide Web” and the various communication methods used by other organisms. The audience was encouraged to reflect on the idea that other life forms have unique ways of communicating. Being able to physically observe other organisms' growth in real time was fundamental for the audience to witness an aesthetic piece and a living, dynamic process of symbiotic communication. Ecological Ensemble suggests that the Global South could develop its models of communication and technology inspired by collaborative communication systems, not only digital and human but also non-human communication. In this type of communication, we learn from and understand other organisms. Just as the internet and telephony arrived in Atlixco, one day, we may comprehend other forms of communication with other life forms.

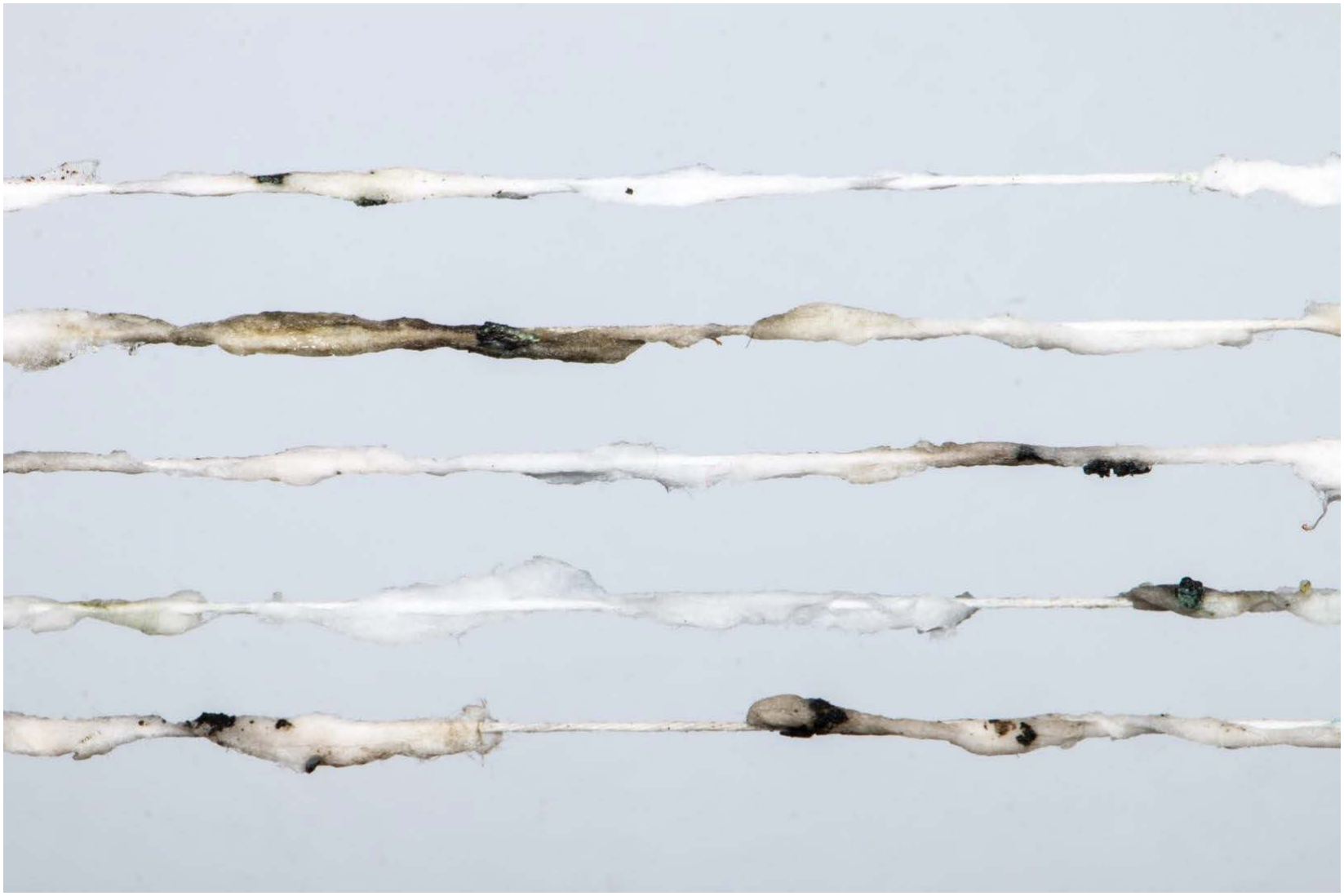

Fig. 2: Close-up of the installation showing the fungi in detail. Source: Author, 2019.

1 Video of the installation “Ecological Ensemble” at *Patriothall Gallery.* Source: Ana Parrodi, 2019. Available at: https://vimeo.com/426203339?share=copy#t=0.

Fig. 3: Macro close-up of the installation, highlighting the colors of the fungi. Source: Author, 2019.

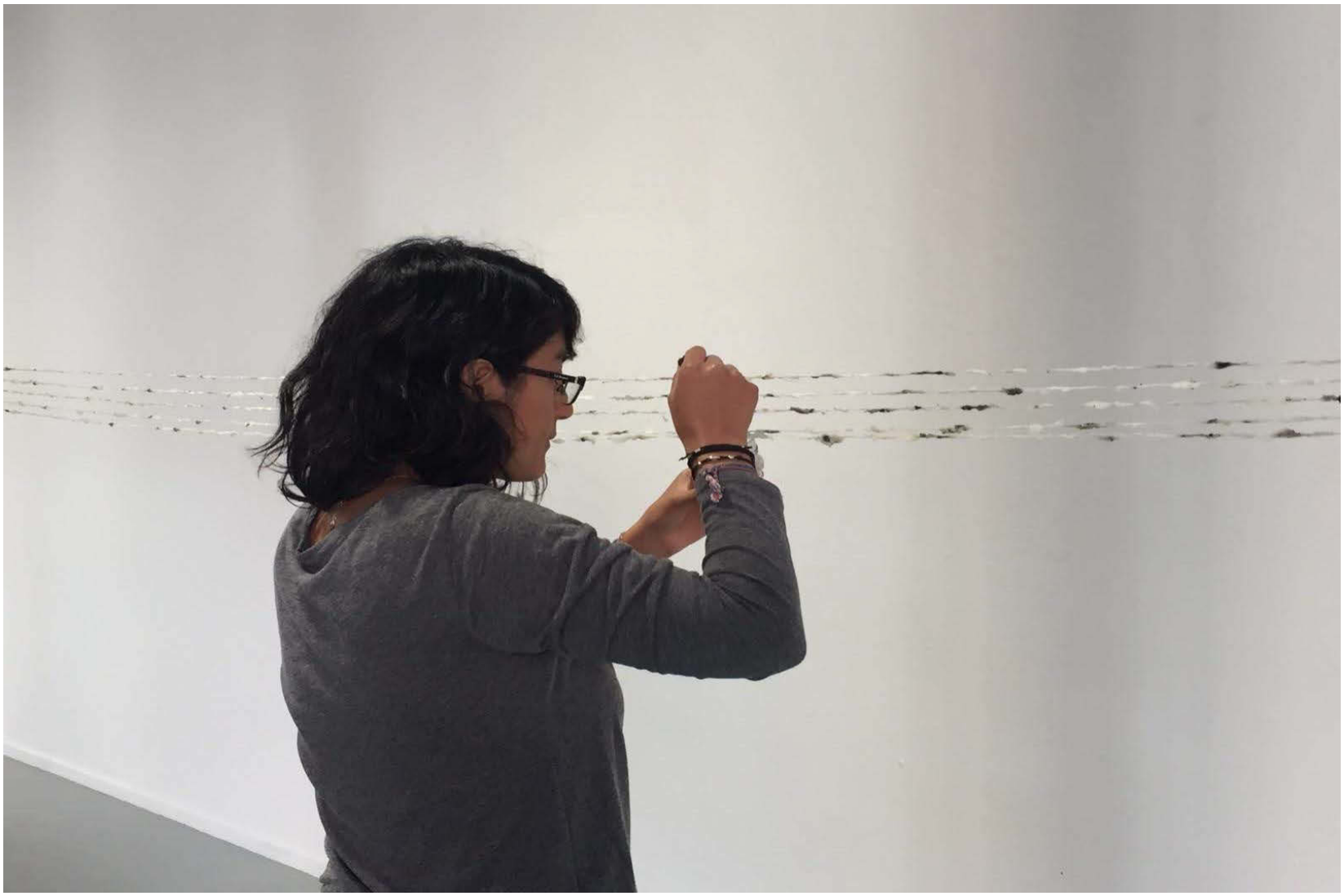

Fig. 4: Feeding the fungi growing on the threads of the installation. Source: Author, 2019.

My piece, *Ecological Ensemble*, is part of a broader work inspired by the "Wood Wide Web" and the symbiotic relationships between different organisms. *The Wood Wide Web* installation is another hybrid and interactive artwork showcasing endangered trees from India and the UK. Through Artificial Intelligence, these trees are brought to life, personified, and given voices to share their stories (*Wood Wide Web…*, n.d.), encouraging the audience to empathize. Similarly, Wood Wide Web's handmade book blends scientific information with ancient folklore (Chedburn, 2019). Its pages feature scans of various trees and fungi combined with texts and images, creating the impression of a glitch on every page. All these works address current global issues, such as the climate crisis and the ecological impact of technology, inviting the audience to reconsider humanity's relationship with non-human organisms in the face of growing disconnection caused by technological advances in the Global South.

5 Conclusion

The piece Ecological Ensemble results from research and exploration into various forms of non-human communication, connecting a personal story with the arrival of the internet in Atlixco, Puebla. The work bridges biology and technology, demonstrating that connections between humans and non-humans are vital for mutual development and survival. The Wood Wide Web and nature teach us that alternative communication methods are possible, showing that different species have developed ways of interacting. While humans have achieved communication through the internet, this does not mean other species lack communication networks. The artwork invites us to broaden our understanding of communication, illustrating how the symbiotic networks between fungi and plants can inspire future technologies that are more resilient, sustainable, and mutually beneficial across species. Continuing to learn from others will be crucial for our future. At a time

when technology dominates our lives, the installation presented at the REMNANTS exhibition in Edinburgh in 2019 invites reflection on communication beyond digital infrastructures. It suggests that, much like in the plant world, there are resilient and sustainable communication networks that could inspire innovative technologies for the future.

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