

WHAT IS IT LIKE TO BE A MUSHROOM?

Reactive Fungi Wearable & Mycelium Motherboard

“On December 8th 2022 we made first contact with a terrestrial intelligence – the mycelial network of a *Pleurotus ostreatus* or oyster fungus. I am proud to say, that it was the first record of a successful human-fungus communication.”

Prof. Dr. Sergey Nikolayevich Vernadsky

“Given the history of exploitative and hostile nature relations in the past, we were surprised by the friendly and gentle response of this complex otherworldly organism to *homo sapiens*’ sudden attempts of an interspecies dialogue.”

Dr. Anna Wu

The Reactive Fungi Bodysuit (RFB) in front of you, created in cooperation with the Institute for Unconventional Computing and Bioelectronics, is an apparatus for parallel sensing with fungi. From March to December 2022 arts, humanities and sciences joined forces to tackle the challenge of human-fungus communication. A team consisting of me, computer scientist Prof. Dr. Vernadsky, mycologist Dr. Wu and two biolinguists, undertook an exciting series of laboratory experiments.

SLIP ON AND PLUG IN

for Parallel Sensing with Fungi

The first step was to design a working human-fungus-machine interface, a bodysuit with a sensory membrane colonized with mycelium of filamentous fungi and equipped with embedded intelligent electronic patches for signal processing. The Reactive Fungi Wearable is a user-responsive symbiotic system, able to sense and process information from a hosting body linked with the wearable ecological unit, connecting neural and fungal networks. Changing patterns of electrical activity and properties allow to interface mycelium with conventional electronics.

In July we had our first promising prototype. I had the honor to be amongst the first humans to slip in and plug in for a sweet afternoon chat perceiving the world from a fungal point-of-view. We connected the wearable with the **Mycelial Motherboard**, the actual fungal body to communicate with, a reactive carpet made from soil with long stretching fungal hyphae. Every kilogram of the multispecies cosmos of soil contains astonishing 200 kilometers of mycelium threads.



Pleurotus eryngii with electronic interface for signal processing – August 2022.

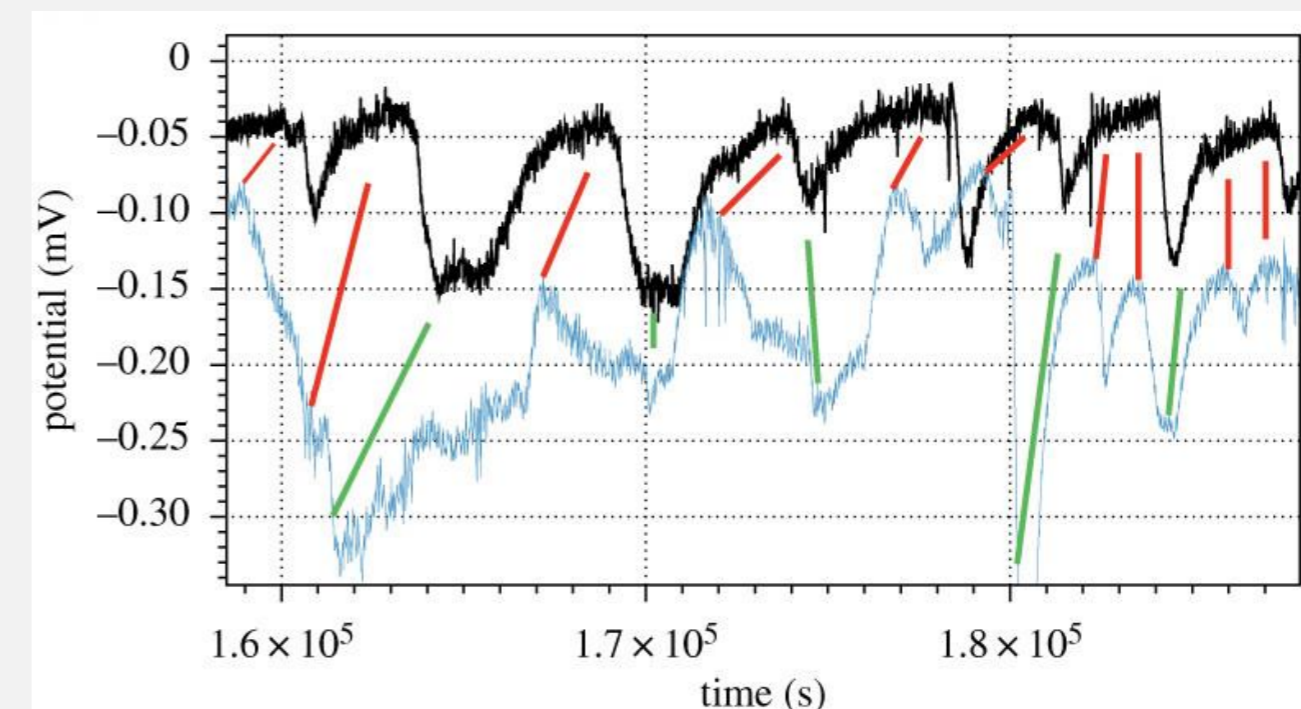


Me wearing the prototype of the Reactive Fungi Bodysuit plugging in with fungi
– July 2022.

THE MYSTERIES OF FUNGAL WORLD PERCEPTION

How do organisms perceive the world, that have no central nervous system, no brain, no eyes, no nose or ears, but clearly show intelligent behavior?

Mycelial networks, those fascinating vast interconnected underground webs, monitor a large number of data streams as part of their everyday existence. They possess senses similar to human ones and others that go far beyond our limited experience. They sense light, chemicals, gases, gravity and electric fields, they respond to changes in pH levels, toxics, CO₂, stress hormones and touch. Fungi, who are closer to animals than to plants, since they need to eat other organisms to survive, are in constant movement, seeking food or mates, dealing with disease and predators, making decisions where to explore and when and whether or not to grow a beautiful mushroom. As social beings they achieve that by communication: with each other, signaling through their network via infochemicals, as well as with others, building symbioses with plant roots, microbes or algae, producing spores or giving off alluring scents or a luminescent glow.



Fungal reaction to skin emissions of human joy – December 2022.

OUTCOME OF THE EXPERIMENT – *WHAT IS IT LIKE TO BE A MUSHROOM?*

After several failed attempts – I basically only felt a weird tickling sensation and our monitors showed a kind of inconsistent white noise – we had a breakthrough on December 8th.

Describing how it feels to suddenly be part of a large distributed sensorial network of a related yet utterly distinct species goes far beyond the capacities of human language, which, I only now fully understand, is based on the experience of human physicality. Until then I had not realized how limited the species-specific human sensory apparatus actually is and that we, for the time being, must content ourselves with mere approximations of fungal perception.

The human analogy for the sensation of interconnectedness I experienced that comes closest, though utterly unscientific and unduly pathetic, is love, in which, if only for moments, we lose our sense of self and individuality.

In general, however, one must state that **what the fungi said was entirely cryptic**. To be honest, we are clueless. This may be a result of the limited human sensorial perception or a problem of the electrochemical translation of fungal semantics. Nevertheless, we hope to overcome the obstacles and enable Post-Anthropocene perception and communication. At this very hour biolinguists are working on the interpretation deciphering the fungal message. We expect first results by the end of the year.