Tosca Teran

The transformation of Myth into Matter.

The Mycelium Martian Dome Project

My residency at MoCA in partnership with the Ontario Science culminates with the Mycelium Martian Dome project {Prototype 1.0} installation at the Ontario Science Centre for the summer of 2019.

(https://toscaterancom.files.wordpress.com/2019/05/918de602-1c33-4bef-b0fe-7aeef0bc9daa.jpg)
The Mycelium {Tardis} Martian Dome

Mycelium has been referred to as the “internet of the forest” because it coordinates the exchange of nutrients between tree roots in a forest. We conjecture that there exists the possibility that this is a form of communication but just not one that we can as of yet fully comprehend or quantize. We have chosen bio-sonification, i.e.the translation of bio-data to musical sounds, as a means to excite a dialogue about non-human communication as well as co-operation between species. While we mediate the data to note values that are familiar to us and provide a timbral voice, the interpreting algorithm is fairly raw and the more closely one listens, one can hear that different living things (including people) produce distinctive patterns.

In addition to the mycelium being connected to sensors, there exist two sets of copper touch surfaces for visitors to be able to hear their own bio-sonification.

——-> Original proposal —-

An 8’x16’ geodesic dome grown from living mycelium. Inside, a living mycelium sculpture generates sounds (bio-sonification) that are translated to MIDI creating a non-human derived soundscape. Visitors may interact with the Mycelium sculpture, having their bio-data read and translated through the fungus.

(https://toscaterancom.files.wordpress.com/2019/05/img_5132.jpg)
Visitors interacting with the Mycelium

The European Space Agency is exploring whether fungi could be used to grow buildings, like labs and other facilities, in space (http://www.esa.int/gsp/ACT/doc/ARI/ARI%20Call%20doc/Study%20descriptions/ARI-study_16-6101.pdf). Nasa is also examining whether their Mars missions could grow surface structures on the planet itself (https://www.nasa.gov/directorates/spacetech/niac/2018_Phase_I_Phase_II/Myco-architecture_off_planet). NASA are considering producing on Earth a flexible plastic shell seeded with mycelium and then activating the fungal growth once on Mars.

(https://toscaterancom.files.wordpress.com/2019/05/22-2v-1_2.a.png)

Mycelium provides a golden example of a circular economy (http://www.bbc.com/future/gallery/20171212-the-intriguing-world-of-circular-design). Waste comes in as input for the mycelium and the resulting material is potentially biodegradable, just like wood. Mycelium has amazing properties. It is a great recycler, as it feeds off a substrate (like sawdust or agricultural waste) to create more material, and has the potential of almost limitless growth in the right conditions. It can endure more pressure than conventional concrete without breaking (https://youtu.be/IHhVpXCpTA0?t=124), is a known insulator and fire-retardant and could even provide radiation protection on space missions.

(https://toscaterancom.files.wordpress.com/2019/05/img_5121.jpg)Human exploration of space requires minimal volume and mass of materials to be transported from Earth. In situ manufacturing of fungal structures will require transporting a minimum amount of fungal spores to space which would then be used to inoculate local organic material for growing bio-composites in situ.

(https://toscaterancom.files.wordpress.com/2019/05/img_5117.jpg)The Mycelium Martian Dome project imagines what these structures might look like through a Science Fiction lens. How collaboration with non-human organisms can (re)connect humanity with Earth's natural environment and each other.

(https://toscaterancom.files.wordpress.com/2019/05/img_5118.jpg)

(https://toscaterancom.files.wordpress.com/2019/05/img_5137.jpg)

Dôme martien en mycélium

Tosca Teran

Entrez dans ce dôme géodésique en «briques» de cultures de mycélium vivant et écoutez. Grâce à la sonification bio-informatique, le mycélium (structure souterraine des champignons) et les plantes créent un paysage sonore interactif à base non humaine.

L'Agence spatiale européenne et la NASA étudient la culture in situ de structures fongiques de surface pour les missions vers Mars et la Lune. Cette installation montre de quoi ces structures auraient l'air sous l'angle de la science-fiction – et explore comment une collaboration humaine avec des organismes non humains renouerait l'humanité avec son milieu terrestre naturel.

La présente installation est rendue possible par leur généreux appui :

Evocative Design, Brothers Dressler, Moog Audio, GuttmanLaboratory of Pathogen Genomics & Evolution, The MushroomGuerrilla

(https://toscaterancom.files.wordpress.com/2019/05/img_5120.jpg)

(https://toscaterancom.files.wordpress.com/2019/05/img_5066.jpg)

(https://toscaterancom.files.wordpress.com/2019/05/img_5059.jpg)

One of the Hosts at the Ontario Science Centre shared the following feedback:

I had the opportunity to host the dome Monday afternoon, July 22 and had overwhelmingly positive responses. I found that folks of all ages took something away from it. In particular, I had a group of mostly African Canadian 20 somethings who were fascinated by the bio-sonification. When they heard their bio-data one of them proudly exclaimed that he had African drums beating within him. They asked amazing questions and brainstormed applications for the mycelium panels here on Earth. For the next 15 minutes, this group became hosts, showing others who wandered in how to interact with the dome and encouraging them to “listen to the rhythm inside themselves”. It was a wonderful experience that I am grateful to have been a part of!
-Madison

Tagged bio materials, BioArt, design, Dome, Dressler, ecovative, Martian, moog, mycelium, Ontario science centre · Leave a comment