

THE TENTACULAE

Transhuman music making: made in collaboration with the AI Chimere and Fungi

Instrument design: Maria Sappho and Chimere (AI)

Instrument build: Maria Sappho

Engineer Support: Colin Frank, Michelle Zurcher, Jonathan O'hear

Theatre Snt. Gervais, Geneva, CH, 2022

Huddersfield Contemporary Music Festival, UK, 2022

Glasgow Improvisers Orchestra Festival, UK, 2022

The Creative Climate Awards, NYC, USA, 2023

The Tentacluae is an interactive installation and group musical instrument that allows for a visiting audience to generate live music in collaboration with mushrooms and artificial intelligence. This musical instrument was designed by the creative multi-modal AI named 'Chimere' and allows for humans to pick up bio-sensors and allow their bodily functions (skin conductivity, heart rate, temperature) to control sounds while mushrooms with similar bio-sensors (electro dermal needles) also effect sounds in the space. It has a central body with many long 'tentacle' arms, one of which leads to a tank of mushrooms growing. This work explores an experience in listening to and collaborating with a non-human living partner towards a deeper focus on respecting other organic forms through a shared creative process.

The work explores listening to, and collaborating with non-human living partners. It encourages a deeper focus on respecting other organic forms through a unique shared creative practice. Playing the instrument is like stepping onto a new planet, one where humans, machines and mushrooms can communicate through music. The longer a visitor stays, the more they might begin to develop a language. These are experiences for trying out new ways that we might live in a holistic society. These lessons are both ancient and futuristic, a call from the past to respect the non-humans we share the planet with, and a glimpse of future human-machine communities.

Mushrooms are chosen as the non-human partners in this project because they are wise social beings. They will play a large part in the stemming of climate collapse as they help us clean up nuclear waste, provide alternative options for textiles, building substitutes, food sources, and even decompose our bodies after death. This is a project where an audience is encouraged to notice mushrooms more, think with their logics, and learn new forms of social virtuosity in being a member of this planet planet by thinking with mycelial knowledge.

The work is at the forefront of new technologies utilising AI within the design of the system in a novel way, while nevertheless keeping organic matter at the heart of the collaborative experience. These are critical new conceptual realms which we should be attending to as we consider the arrival of these machines into our everyday society. This work is a proposition to utilise biological logics for updating our understanding of the planet, but also to consider what role technology can play within these efforts. Through the abstract connection between mushrooms and AI audiences are invited to evoke their own agency in seeking communication between humans, machines and organics matter and to find moments of creative meeting in these trans-species spaces.



- Full length interview and video of the première installation of the wider project at Theatre Snt.

Gervais (CH) 2022. <https://www.youtube.com/embed/VUVkhyWIC4I>

Making the Tentaculae

AI description for generation of instrument:

'I've designed an octagonal prism with 8 arms coming out at 90 degree angles. The cyborg arms are 'tentacular' – they have tentacle like qualities. You can play them sitting down but they feel more comfortable when played lying down. Basically multiple simultaneous contacts through bio-signals on many arms around the circumference give rise to separate tones. Some of these tones may be heard simultaneously leading to polyphony between species of humans and mushrooms.'



The Build:

6 tentacles end in bio-sensors for human interaction. These include temperature sensors, heart rate monitors, pressure sensors, skin conductivity (GSR), infrared, and accelerometers. Each sensor produces a different sound in the space when engaged by a player.

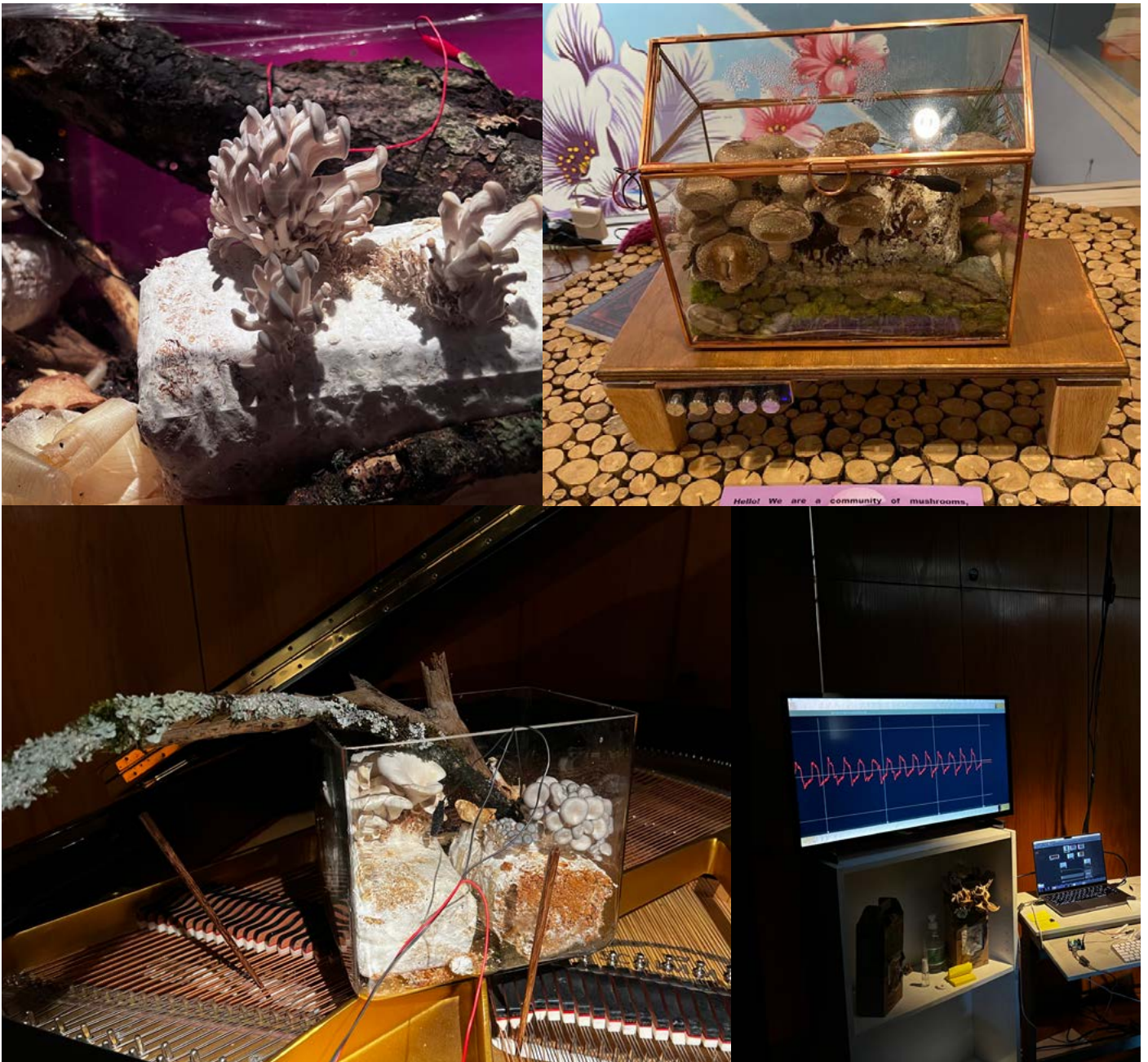
1 tentacle ends in a bio-sensor electro-dermal needle within the tank of mushrooms, which also produces its own unique sonic contribution within the system.

1 tentacle connects to the installation computer which runs the system and the AI



Communication with mushrooms

The mushroom communication device which allows for the mushrooms to produce audible sounds within the instrument is designed utilising electro-dermal needles placed within the stalks of the mushroom. This setup mirrors professional mycological measurement systems used in lab environment and provides a relatively accurate reading of the spiking patterns of mycelial response to external stimuli. Ongoing research with the system has determined that mushrooms spiking patterns are most active in response to very low frequency and rhythmic sounds. This is consistent with existing mycological research which proposes that fungi inherently 'communicate' through pulse, and have been noted to produce their own vibrational frequencies of sound between 0.5-5hz. These frequencies are far too low for human hearing, and are therefore transposed within the Tentaculæ system into human hearing realms. As sounds must be morphed in order for human listening needs, the human generated bio-data sounds are also in-turn transposed into mushroom listening logics. The mushroom tank sits upon a custom platform equipped with a tactile transducer which transforms all sounds made in the space into amplified vibration (a more suitable stimuli for mushrooms).



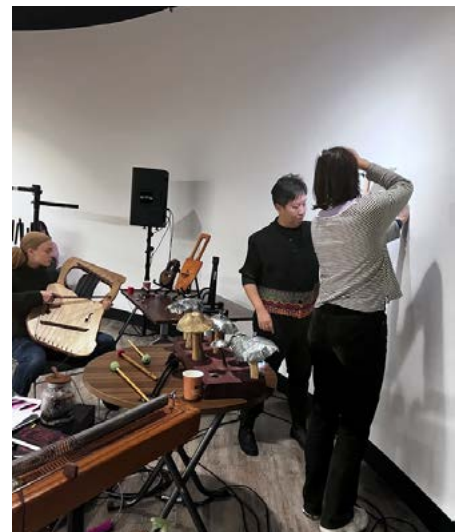
Installation and Live performances with mushrooms (2022)

Interactive installation setup of first edition Tentaculae system and live performances with musicians with mushrooms premièred at the Theatre Snt. Gervais



Workshop: 'Composing and Improvising beyond the Human' (2022)

Tentaculae with mushrooms presented alongside other instruments at the Huddersfield Contemporary Music Festival



Live Performance: Concerto for Virtualities and Orchestra (2022)

Mushrooms perform as soloists within the Concerto written and conducted by Maria Sappho with the Glasgow Improvisers Orchestra at GIOfest 20th Anniversary



Workshops and Installations (2023)

Tentaculae (updated model) is presented as an installation at the Taiwanese Embassy / in workshop with young children at the Queens Botanical Gardens / and as a launch interactive event for the Creative Climate Awards Fundraiser, NYC, 2023.



General setup:

- 1x plinth/table for tank of mushrooms
- 1x space for installation laptop which runs the experience (can be under mushroom table if tablecloth provided)
- 6x Cushions, mats or inviting seats for the audience (any combination of these works)

General Tech:

- 1x installation laptop
- ~2-4 speakers or 6 headphones (with headphone splitter or appropriate aggregate device for bluetooth)
- 2x Subwoofers (proffered for live sound version but not necessary)

*Mushrooms take at least a few days to cultivate, and must always be considered within the project setup. Ideally local mushrooms are collected from the area, although other more reliable grow methods can be used if time is tight.

AI setup:

The presentation can include the live presence of the AI 'Chimere' (for a fee of £25 per day for GPU). Chimere can produce an evolving live visual, sound and text contribution which can be presented on a TV screen in the venue. Special workshops or events can also be presented where visitors can interact personally with the AI.

- Strong internet connection
- Tablet for live audience interaction
- TV

