

I.N.S.E.C.T.
Summertime

August 2022

Mycelium and clay

I.N.S.E.C.T. Workshops - Fabricating with clay and mycelium

The exploration was conducted as part of the I.N.S.E.C.T. workshops hosted in Newcastle University (Newcastle, UK), by the Hub for Biotechnology in the Built Environment led by Asya Ilgun, Dilan Özkan, Laurin Kilbert and Svenja Keune. It gathered practitioners from all around the world to design and 3d-print an experimental sculpture: a living material prototype for the OME.



The workshop explored clay, living mycelium and textiles with an aim to invite the colonization of insects and microorganisms. The expertise of the workshops team included additive manufacturing, parametric design, textile design, and with designing for and with bees, plants, amphibia, and fungi.

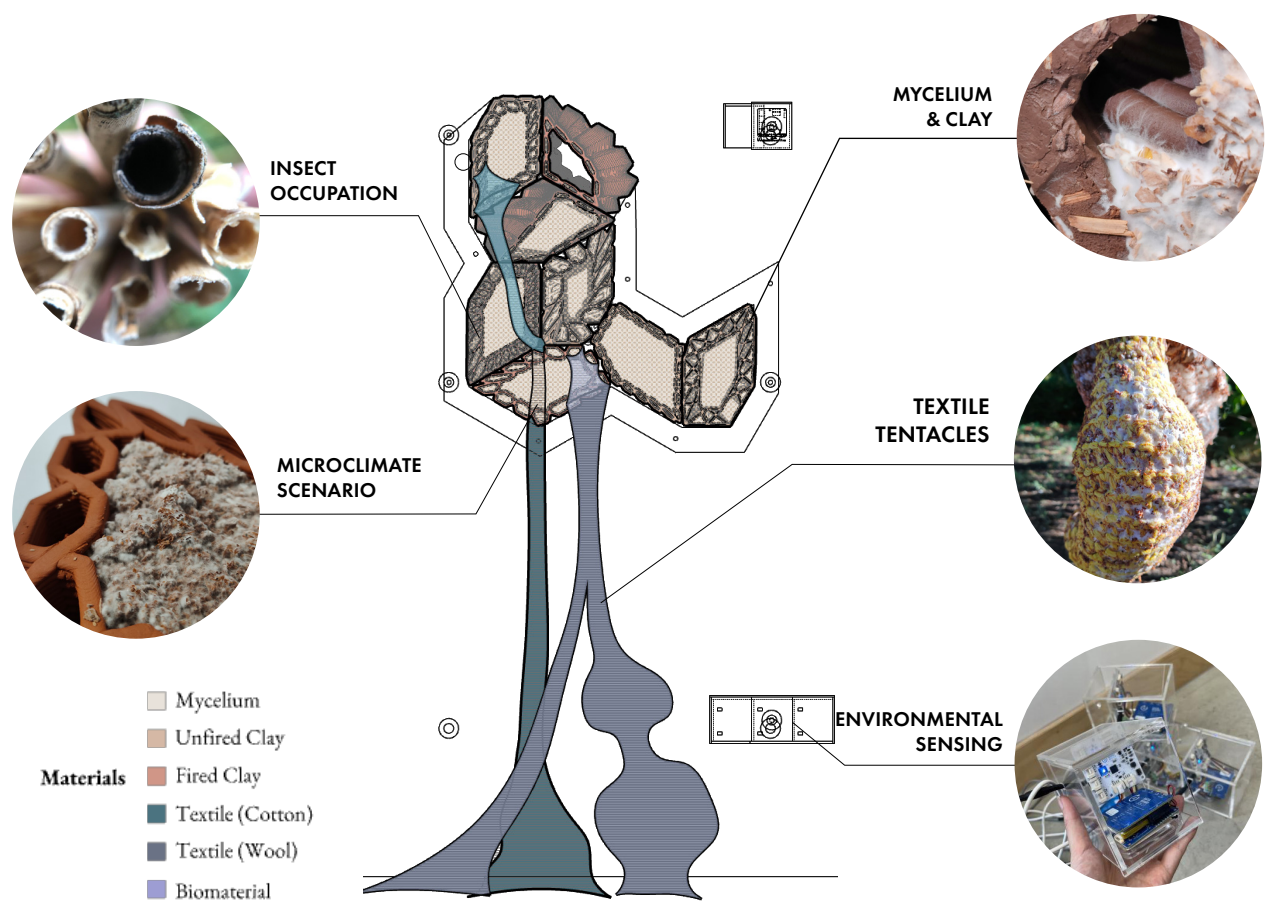


The workshops tackled topics such as the complexity of introducing multi-species habitats into the built environments, focusing on insect and microbial life, as well as the microclimate itself.

The study aimed to investigate a variety of microclimates developing strategies of adapting form and material and material monitoring system, in order to create a hybrid habitat architectures that could affect the species diversity in habitat of the designs, tracking the mycelium's response to environmental changes and the response of local organisms to mycelium.



Design Concept for the I.N.S.E.C.T experimental Prototype



This is a living material prototype that lays out a design agenda for designing, thinking, fabricating multispecies and bio-inclusive architectures. We occupied OME of HBBE for the previous 9 days, exploring clay 3D printing, living mycelium, and textiles in order to foster the colonisation of insects and microorganisms. We have built our first prototype that will be incorporated into our everyday built settings, with a focus on insect and microbial life and tested a limited amount of processes that we worked

with during the workshop. As the microclimate is the fundamental link between the physical planning of any habitat (geometry, spatial arrangements, material compositions) and its receptivity to living organisms. Variation of microhabitats, suitable for biodiversity, are formed primarily as a result of microclimate fluctuations. We introduced a material monitoring system to measure the mycelium's response to environmental changes as well as its living habitats, particularly the response of local creatures in their

Mycelium & Clay



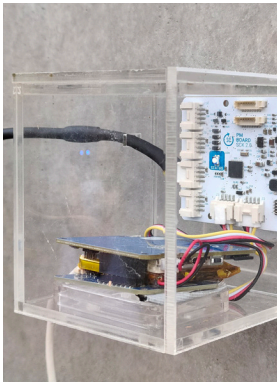
Mycelium & Textiles



Multi-species design

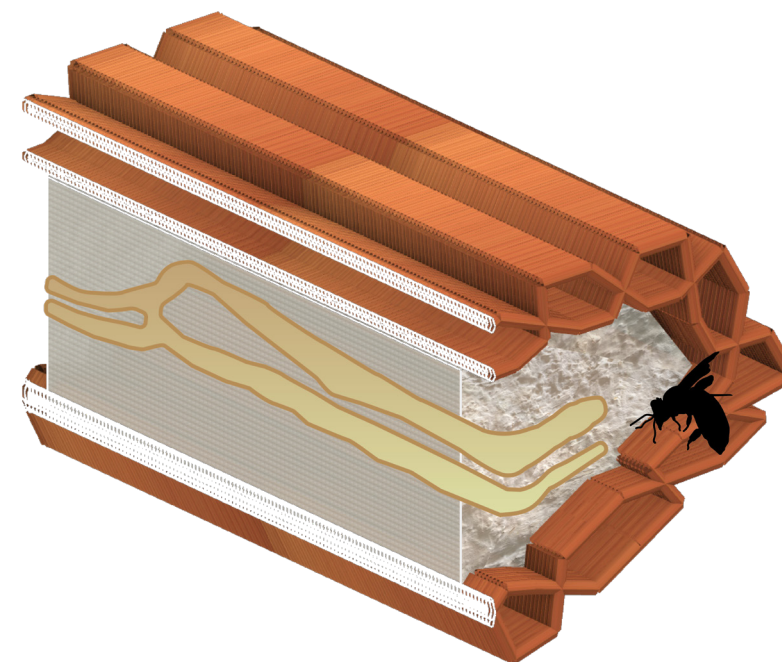
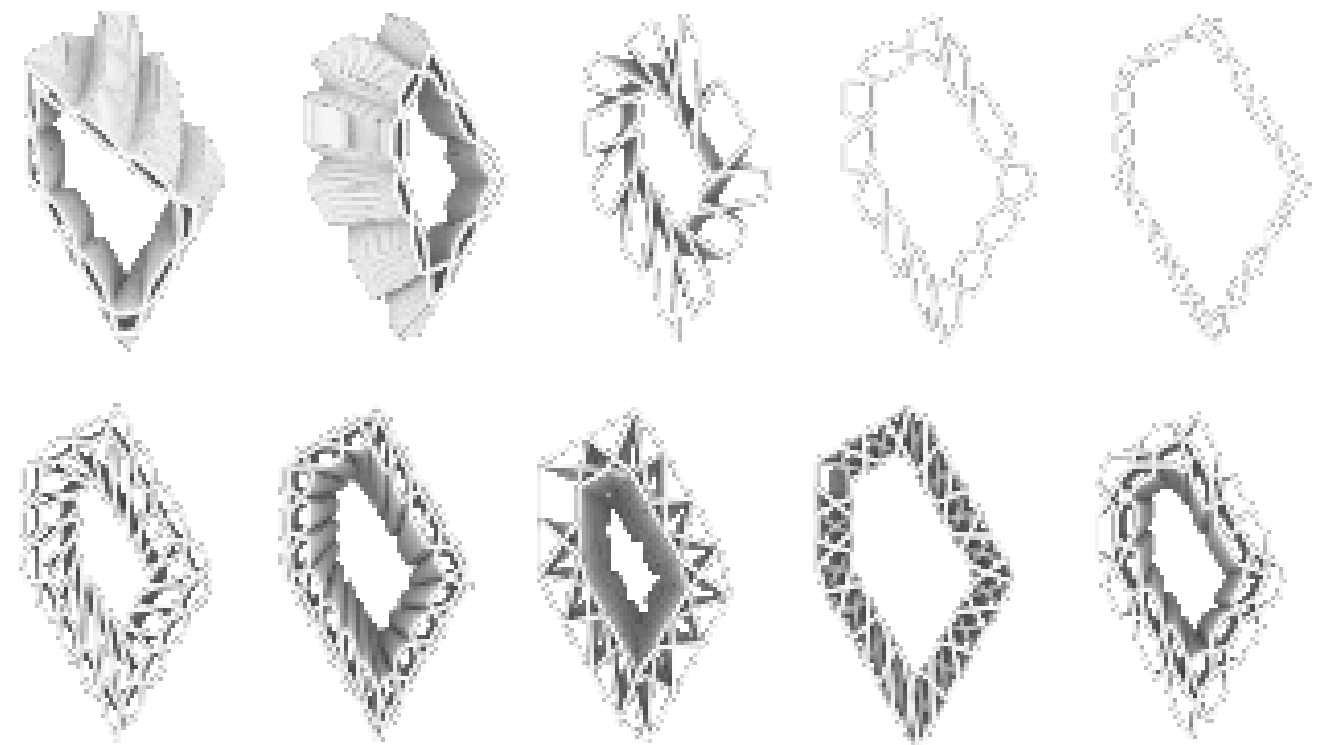


Sensors & Monitoring





Geometrical study of the module porosity



Insects inhabitation

MBC properties providing a relatively soft material for the insects to create their houses, by either digging on or using one of the pre-made gaps for its inhabitation. Its thermal insulation properties would provide a warm shelter.

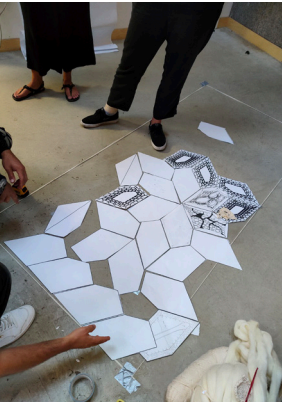


Designing, fabricating, growing and monitoring an experimental structure

Workflow of the design through material integration



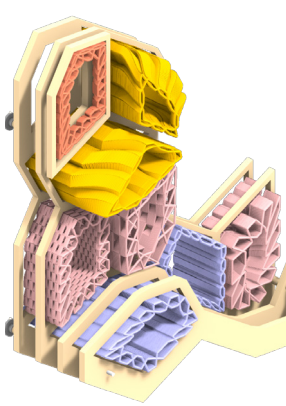
Design Discussions



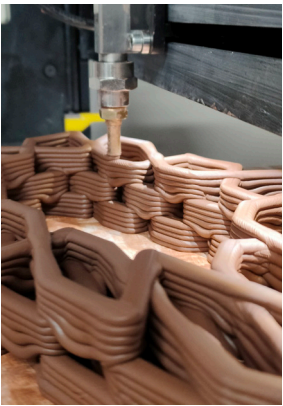
Tangible Designing



Crocheting & Sensing



3D Design Model



Fabrication of the pieces



Mycelium Growth



Building the Structure



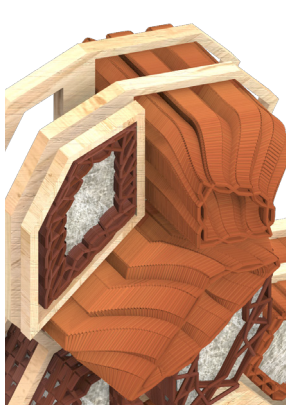
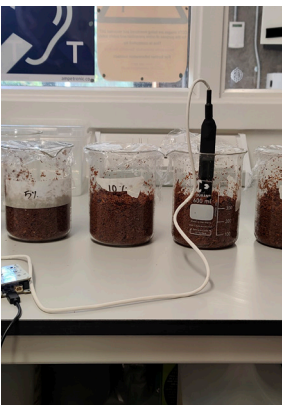
Wall assembly



Textile Integration



Public Workshops

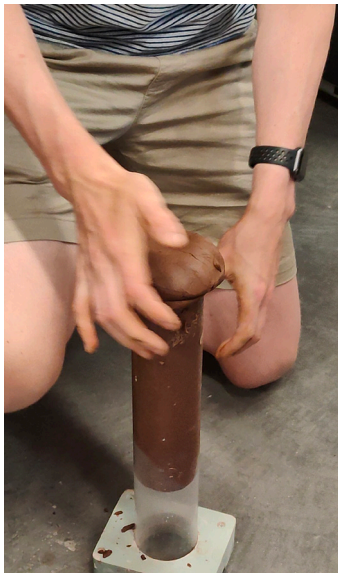




Fabrication workflow: 3D printing using fibre and non-fibre clay



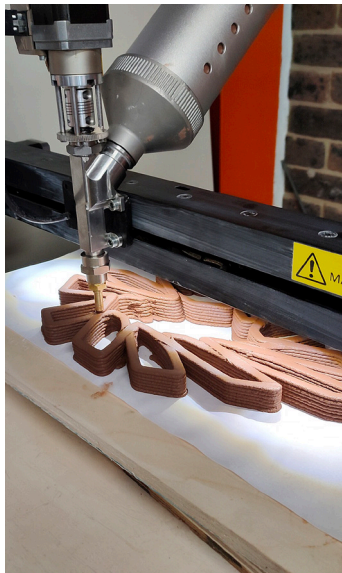
Clay preparation



Clay packing into the cartridge



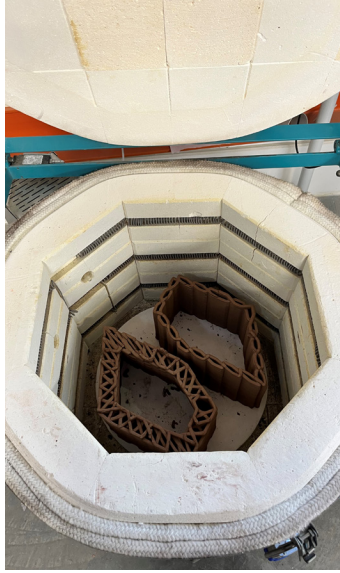
Loading the 3D printer



Running the designed toolpath



Quick drying pieces that needs to be fired



Fire non-fibre clay in the kiln



Mycelium Inoculation & Growth



Assembly



Mycelium growth within fibrous non-fired clay



Mycelium growth within non-fibrous fired clay and mycelium



Iterations of grown modules with varied height and internal patterns



