REVIEW OF PREVIOUS MYCELIUM PROJECTS

Mycocrete

- Clear agenda - goal achieved
- Material tests could have been more rigorous - or better documented?
- Performance of mycelium blocks in water remediation and buoyancy
- Further geometry studies - restricted due to fabrication technique
- Good control over mycelium growth - no contamination

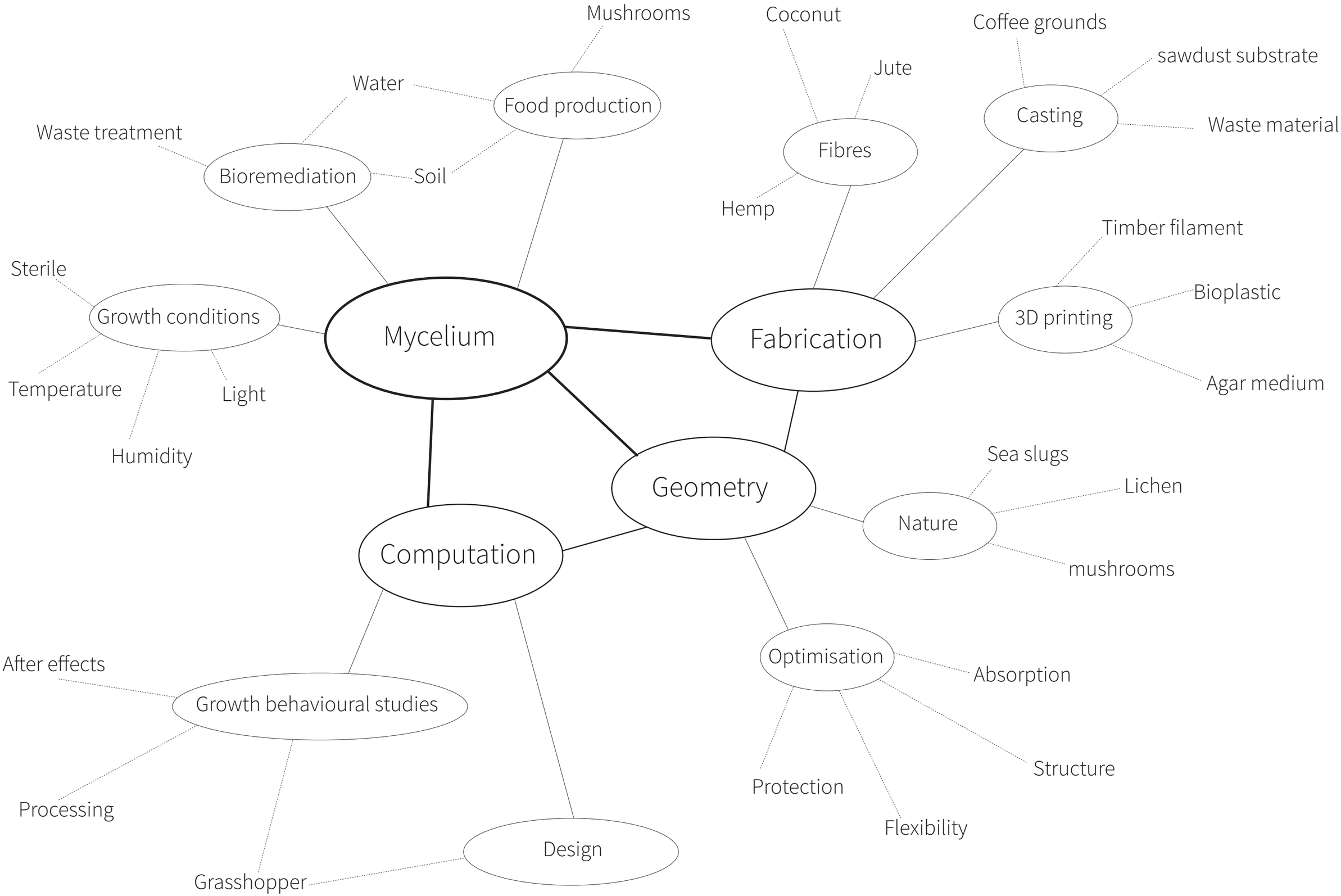




Bio-Scafold

- Used mycelium for its structural purposes - reinforcing its substratum
- Rigorous material research into 3D printing filaments that work well with mycelium - wooden filament with a lower percentage of PVA (PVA disintegrated first due to it water soluble nature)
- Geometric investigation was thorough however no clear reasoning for forms
- Contamination was a recurring factor - perhaps not enough was done to keep conditions sterile, this became an issue for further development
- Could have experimented with extruding other materials such as agar/ bioplastic
- Non performative - except for reinforcement and use of biomaterial

THESIS PROPOSAL



Material

- Which is the best material recipe for: mycelia growth, mycelia reinforcement.

- How to contain/prevent the growth - alcohol, tea tree oil?

- Changing the colouring of the mycelia/ substrate - Adding food colouring to an agar medium

- Natural glue investigations: starch-based, protein-based, vegetable-oil resins

- Homemade timber filament for an extruder

Growth/Fabrication

- Can the substrate be 3D printed/extruded?

- What are the optimum conditions for quick growth?

- What is the best drying techniques?

- What is the best fabrication method: 3D printing, milling moulds, laser cutting moulds

- How do two separate timber ‘blocks’ bind together ?

- Substrate designs: grid, voronoi, tree trunks, organic sea slugs

Binding/Reinforcement Properties

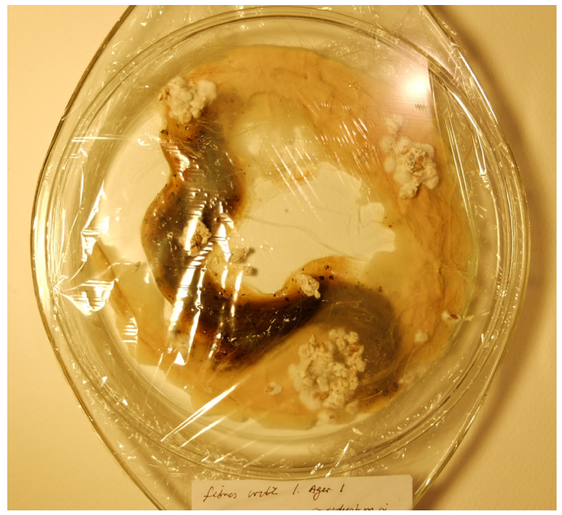
- Testing the composite in tension and compression

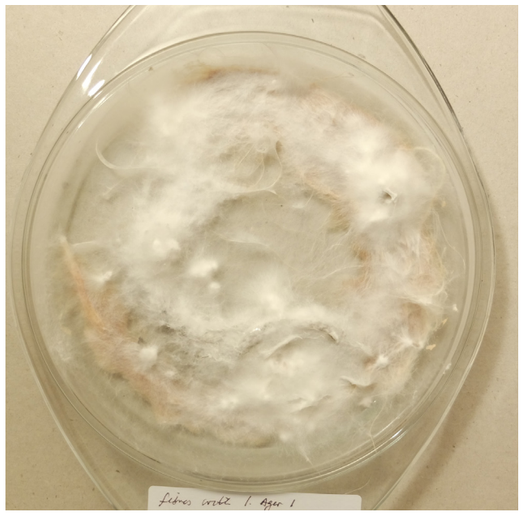
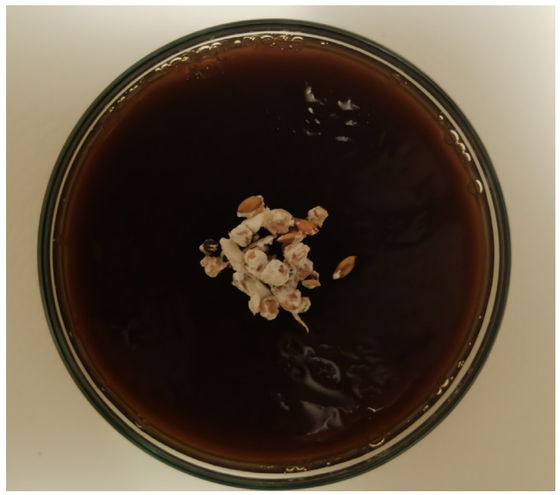
- Can two dried mycelium blocks bind together using solely mycelium

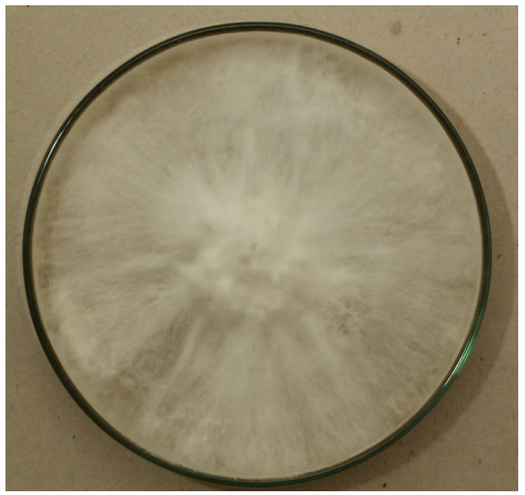
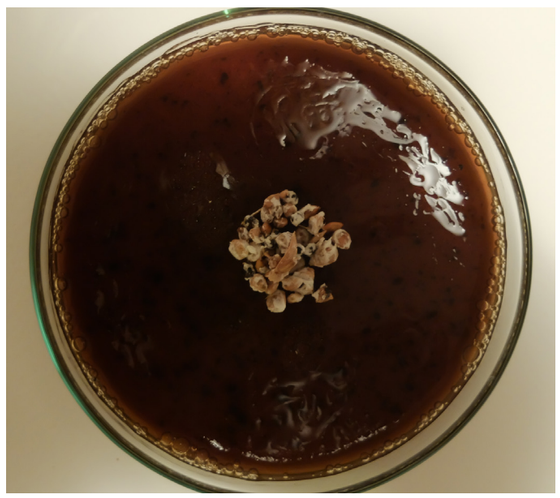
- Mechanical property test

- A range of reinforcements, fibres, and fabrication techniques

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GEOMETRIC STUDIES:
NATURE









NEXT STEPS

Material and Fabrication Studies

Fibres
- Innoculate fibres with mycelium in optimum conditions
- Jute and coconut fibres
- Addition of agar
- Testing tensile strength of material

3D printing/extruder
- timber filament
- agar printing
- bioplastic printing

Casting
- waste products
- bioplastic casting
- sawdust

Refining Direction of Investigation

Bio-Technology
- Bioremediation in soil and water
- Waste treatment; decomposing plastics
- Absorption of harmful toxins
- Food production

Design applications
- performative furniture
- natural insulation
- floating device
- textile
- eco building block
- plastic substitute
- performative shelter
- natural glue/reinforcement

Case study/site
- Polluted site
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