

Graduation Plan

P1 // 02.22.2018

Personal Information

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Studio

Architectural Engineering	Intecture_Harvest BK	
Tutors	Architecture	Annebregje Snijders
	Research	Martijn Stellingwerff

Argumentations of choice of the studio

Architectural Engineering is focussed on the synergy between design and technology to solve societal issues. The Harvest studio provides me the freedom to investigate my fascination for mycelium based materials and the circular economy on a larger scale and let me think more out of the box. Which give me the feeling to contribute to a more sustainable future.

Title

Mycelium: a building block for Parkstad

Problem statement

Our current way of consuming is producing a lot of waste, which is harming the planet and its inhabitants. Only a small and prosperous land as the Netherlands is already producing about 60.000 kilotonnes of waste each year. We recycle 78% and 10% is used for other applications, but the remaining 12% of waste (7.200 kilotonnes per year) is still polluting the environment (Afvalmonitor databank, 2018). At the same time we still are depending on natural resources, but these materials are getting scarce and eventually nothing is left for the coming generations. And if the consumption continues to grow like at the current rate the metals will be running out in 2040. Due to the current linear economy these useful materials will be burned or ending up in landfills polluting the environment. So we need to change the way we produce into a sustainable circular economy, where waste don't exist but seen as a valuable building material.

Located in the south of Limburg, eight municipalities are forming the region Parkstad. The region is still known as the Eastern Mining Region (Oostelijke Mijnstreek) due its former mining industry, which provided great prosperity from the beginning of the 20th century till the 70's. Before that time, agriculture with small farming villages constituted the industry. After closing all mines, many people became unemployed and no new job opportunities were provided what resulted in a decline of the local economy, vacancy and a lack of identity. Migration of the working and younger population followed. This demographic change is still going on resulting that it is one of the strongest shrinking and aging regions in the Netherlands. New circular and self-build economy could solve these problems.

Objective

"We see a world of abundance, not limits. In the midst of a great deal of talk about reducing the human ecological footprint, we offer a different vision. What if humans designed products and system that celebrate an abundance of human creativity, culture, and productivity? That are so intelligent and safe, our species leaves an ecological footprint to delight in, not lament?"

(Braungart & McDonough, 2008)

1. Upcycling biological waste cycles with a low embodied emission.
2. Connecting nature and technology & urban and rural area
3. Attract (young) entrepreneurs, artist and craftsmen for circular economic activity
4. Revitalise vacant places with a positive effect/added value on the environment; cleaning polluted land with nutrients for the soil (mycoremediation), creativity, innovation, jobs and social liveability.

5. Strengthen the identity of Parkstad
6. Explore design solutions with mycelium for temporary incubators.

Overall design question

How can the biological waste flows be integrated into a temporary incubator to revitalise vacant places in Parkstad?

Sub questions:

- Which organic waste flows and stakeholders are available in parkstad?
- Which vacant buildings or places have potential?
- How to create symbiosis between urban and agricultural area?
- How to attract (young) stakeholders like entrepreneurs, artists, craftsmen, researchers, students and others with innovative ideas and let them work together?

Sub questions:

- Which vacant buildings or places have potential?
- How to create symbiosis between urban and agricultural area?
- How can you implement this waste flows in vacant places.
- How can mycelium be the connecting factor of an incubator?
- How to express the temporality built to grow, decay and eventually will disappear.
- How to implement the variety of possible

Thematic Research Question

What are the opportunities and how to apply mycelium (based materials) within a temporary incubators on vacant buildings/places?

Sub questions:

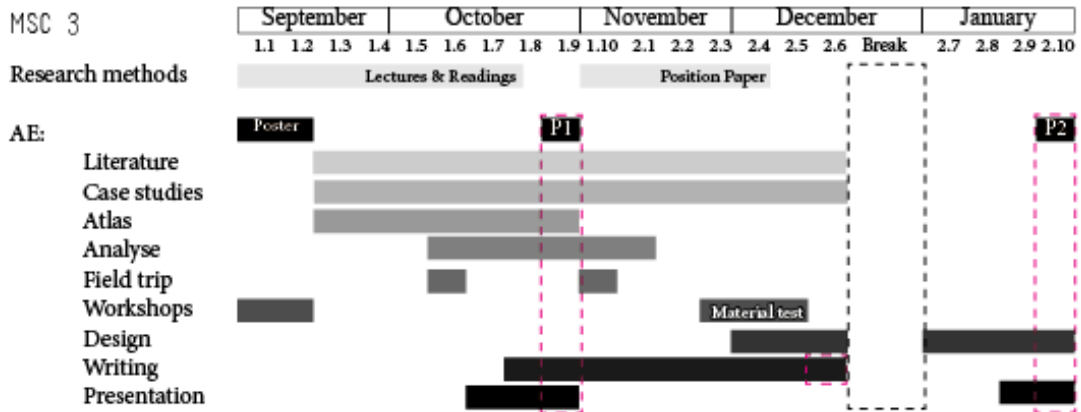
- What is the production process of mycelium composites? Under what conditions?
- What kind of substrates (waste flows) are available in Parkstad and what mycelium species have what qualities?
- How can you implement this waste flows in vacant places.
- How can mycelium be the connecting factor of an incubator?

Methodologies

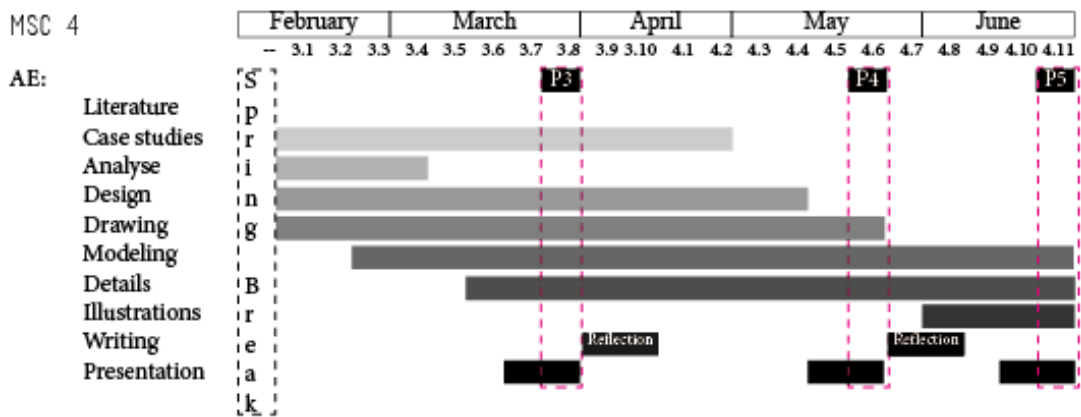
- Literature study
- Analysis of the site: the current waste flows, vacant buildings and stakeholders
- Case studies: incubators and mycelium based design
- Making samples and doing materials tests
- Interview/ talk to experts: Davine Blauwhoff (lab Breda), Lea, Brecht, Jan Jongert

PLANNING

MSC 3



MSC 4



Literature

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