Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Xulingyun Ji
Student number	5344050

Studio		
Name / Theme	Urban Ecology	
Main mentor	Nico Tillie	City Quality of life Inner city Transition Urban landscape Carbon Planning Integrated planning Plastic Stakeholder
Second mentor	Remon Rooij	Education Planning Spatial planning Book Learning Book review International organization Curriculum
Argumentation of choice of the studio	Animals always fascinate me. With the expansion of cities, whether it is wild animals or domestic food animals, the living conditions of animals are facing serious problems. However, animals are our partners on this planet. They deserve to have good living habitats and have the right to enjoy the resources occupied or taken away by humans on this planet. This is also the reason for choosing this studio. I want to know how to improve the living conditions of animals under the pressure of urbanization and find a beneficial way for humans and animals to live in harmony.	

Graduation project	
Title of the graduation project	Animal Farming in Evolving Foodscapes and Thoughtscapes
Goal	

Location:	Den Bosch, Noord Brabant, NL
The posed problem,	1. Environmental issues caused by current animal farming. 2. Animal welfare is not good in current intensive animal factories. 3. Insufficient recreational landscapes work as foodscapes and thoughtscapes in Den Bosch. 4. Other climate-related issues in Den Bosch such as flooding risks, and urban heat effect ...
research questions and	How to build up a sustainable, nature-inclusive animal farming landscape that also provides attractive recreational qualities, through landscape design in Den Bosch region?
design assignment in which these results.	Solve the problems of economically oriented intensive animal farming by building up a sustainable and nature-inclusive animal farming system through landscape design. Animal farming could be eco-friendly and sustainable foodscapes and thoughtscapes, which educate people to respect and appreciate other lives' sacrifices.

There are 4 main focuses in my topic:

Focus 1: Increase Ecological Value of Animal Farming

PROBLEM STATEMENT

- Current intensive animal farming has caused environmental issues including manure surplus, water pollution, soil pollution, etc.
- Animal farming has a high footprint consumption of natural resources.
- The environmental issues of current intensive animal farming cause the loss of biodiversity.

RESEARCH QUESTIONS

- How to realize the nutrient cycle, water cycle, and manure cycle… and reduce the pollution of animal farming within the areas through landscape design?
- What is the good assemblage of multi-species food animals in the landscape that can maximize the use of land?
- How can food animals' behaviors help to shape landscapes and increase biodiversity?

Focus 2: Improve Welfare of Animal Farming of Food Animals

PROBLEM STATEMENT:

- Current intensive animal farming makes food animals have very bad living conditions. Food animals cannot move and behave naturally.

- Undesirable and unnatural diets (corns, soja...) cause health problems in food animals.
- The usage of chemicals such as antibiotics, pesticides, artificial hormones, etc. to resist diseases and improve production damages the welfare of food animals.

RESEARCH QUESTIONS:
- What kind of landscape can be the ideal living environment for food animals to be able to behave naturally?
- What kinds of local plants can be used in landscape design to satisfy the demands of food animals for foraging and sheltering at different seasons?
- What landscape design principles can keep food animals healthy and improve production in a natural way?

Focus 3: Create Recreational Foodscapes of Animal Farming

PROBLEM STATEMENT
- People are unfamiliar with food animals.
- Local agricultural/food culture has been forgotten.
- Den Bosch has recreational pressure and is lack green areas for people to go to.

RESEARCH QUESTIONS:
- How to make people more familiar and connected to food animals through landscape design?
- How to bring back/reshow some characteristics of local historical animal farming through landscape design?
- How to create attractive foodscapes and thoughtscapes of animal farming to decrease the recreational pressure of Den Bosch?

Focus 4: Create Climate-adaptive Animal Farming Landscapes

PROBLEM STATEMENT
- There are climate-related issues in the Den Bosch region.
- Current green structures are not well connected.

RESEARCH QUESTIONS:
- What are the climate-related problems in the Den Bosch region currently and how animal farming landscapes can react to them?
- Which areas have a high demand for improving animal farming there in order to improve the green structure of the Den Bosch region?

Process

Method description

Focus 1: Increase Ecological Value of Animal Farming

WHAT KNOWLEDGE IS NEEDED?
- Current environmental issues caused by intensive animal farming and their solutions.
- The social structure & behaviors within the food animal species as well as the relationship and impacts between different food animal species.
- The behaviors of food animals are beneficial to the landscape and help increase biodiversity.

HOW CAN DATA BE COLLECTED?
- Government database & documents about environmental issues caused by animal farming.
- Literature review about impacts and treatments of animal farming pollution.
- Watch documentaries & Literature reviews related to food animal behaviors.

HOW WILL DATA BE ANALYSED?

- Show the research results of treating pollution and realizing circular trophic flows in graphics & sections.
- Show the social structure within the same species and the relationship & impacts between different species in graphics.
- Show the impact of animal behaviors on the landscape through graphics & scenarios & models.

EXPECTED RESULTS

- Design principles for realizing circular trophic flows.
- The good assemblage of multi-species food animals can maximize the use of land.
- Design principles encourage animal behaviors which help to improve landscape quality.

Focus 2: Improve Welfare of Food Animals

WHAT KNOWLEDGE IS NEEDED?

- Food animals' living styles, behavior, and living space they needed individually.
- Food animals' different diets and foraging behaviors at different seasons.
- Current artificial ways of treating food animals to keep healthy and improve/keep production, and alternative ways of treating food animals naturally need to be found.

HOW CAN DATA BE COLLECTED?

- Literature review of food animal behaviors & diets.
- Watch documentaries of this topic.
- Case study:
  Natural Grazing---Practices in the rewilding of cattle and horses (Rewilding Europe, 2015).

HOW WILL DATA BE ANALYSED?

- Summarize the strategies used in the literature & cases.
- Visualize the characteristics of food animal behavior and living styles through graphics & scenarios.

EXPECTED RESULTS

- Toolbox of ideal living environment for food animals that could be used in LA design.
- Find out groups of plants for foraging and sheltering at different seasons that could be used in the LA design.

Focus 3: Create Recreational Foodscapes of Animal Farming

WHAT KNOWLEDGE IS NEEDED?

- Methods that could enhance the connection between humans and food animals.
- Characteristics of local historical animal farming in the region.
- Recreational patterns in Den Bosch.

HOW CAN DATA BE COLLECTED?

- Study-related cases about foodscapes and thoughscapes of animal farming.
- Literature review of local animal farming history and read the historical maps.
- Read government reports on the green plan.
- Site visit & Interviews of local people

HOW WILL DATA BE ANALYSED?

- Summarize methods that could enhance connections between people and food animals used in the literature & cases of foodscapes.
- Show the characteristics of historical animal farming through drawings/scenarios.
- Analyze the pattern of current existing natural recreational areas and find out the potential areas to develop foodscapes to reduce the recreational pressure in Den Bosch through maps.

EXPECTED RESULTS
- Design principles to connect people with food animals.
- Design principles to reshow the selected characteristics of historical animal farming.
- Design strategies on the city's natural recreational planning & green structure.

Focus 4: Create Climate-adaptive Animal Farming Landscapes

WHAT KNOWLEDGE IS NEEDED?
- The specific climate-related issues in specific areas of the Den Bosch region.
- Knowledge to help solve the climate-related issues in the Den Bosch region.

HOW CAN DATA BE COLLECTED?
- Study cases that solve climate-related issues such as flooding risks, high urban heat effect, etc.
- Literature review about the related topics that dedicate to solving climate-related issues.
- Collect GIS data from the website of the government.

HOW WILL DATA BE ANALYSED?
- Summarize methods that could help solve climate-related issues.
- Visualize the GIS data about climate issues collected from the government website in the Den Bosch region.

EXPECTED RESULTS
- Design principles to help improve water retention ability, reduce urban heat effect and improve the livability of neighborhoods.
- A set of maps to show the climate issues in Den Bosch region.

Literature and general practical preference

Bagchi S, Goyal SP, Sankar K (2003) Niche relationships of an ungulate assemblage in a dry tropical forest. J Mammal 84:981–988.

Bailey, D. W., Mosley, J. C., Estell, R. E., Cibils, A. F., Horney, M., Hendrickson, J. R., Walker, J. W., Launchbaugh, K. L., & Burritt, E. A. (2019). Synthesis Paper: Targeted Livestock Grazing: Prescription for Healthy Rangelands. Rangeland Ecology & Management, 72(6), 865–877. https://doi.org/10.1016/j.rama.2019.06.003

Beck MR and Gregorini P (2021) Animal Design Through Functional Dietary Diversity for Future Productive Landscapes. Front. Sustain. Food Syst. 5:546581. https://doi.org/10.3389/fsufs.2021.546581

Davis S (2021) Urban Foodscapes and Greenspace Design: Integrating Grazing Landscapes Within Multi-Use Urban Parks. Front. Sustain. Food Syst. 5:559025. https://doi.org/10.3389/fsufs.2021.559025

Gordon, I.J.; Pérez-Barbería, F.J.; Manning, A.D. Rewilding Lite: Using Traditional Domestic Livestock to Achieve Rewilding Outcomes. Sustainability 2021, 13, 3347. https://doi.org/10.3390/su13063347

Hofmann, R.R. (1989). Evolutionary steps of ecophysiological adaptation and diversification of ruminants; a comparative view of their digestive system. Oecologia 78: 443-457.

Leroy F, Hite AH and Gregorini P (2020) Livestock in Evolving Foodscapes and Thoughtscapes. Front. Sustain. Food Syst. 4:105. https://doi.org/10.3389/fsufs.2020.00105

Yayota M and Doi K (2020) Goat Grazing for Restoring, Managing, and Conserving "Satoyama", a Unique Socio-Ecological Production Landscape. Front. Sustain. Food Syst. 4:541721. https://doi.org/10.3389/fsufs.2020.541721

Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?
2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

The graduation topic 'Animal Liberation --- Food Animals in Evolving Foodscapes and Thoughtscapes' concerns the welfare of food animals and building up sustainable animal farming systems under the current pressure of urbanization through landscape design. Its concern can be consistent with part of the concerns of 'Urban Ecology', while 'Urban Ecology' does have a broader view and more concerns. The topic 'Urban Ecology' stretches across both the track of landscape architecture and urbanism: when considering 'Urban Ecology', not only the landscape design principles should be considered, but the planning strategies of the site should also be taken into account. As a result, the graduation project also needs to consider the design principles for building up sustainable, nature-inclusive animal farming landscapes, but also needs the establishment of design strategies for these animal farming

landscapes through considering timelines, different stakeholders and developing stages, etc.

Furthermore, as a landscape architecture student, the track of landscape architecture does belong to the Msc AUBS, but it is also beyond the field of Msc AUBS. Landscape architecture covers many other fields such as Environment, Ecology, Humanities, Botany, Biology, etc. The study of knowledge should not be limited to the domain of Msc AUBS, interdisciplinary skills and knowledge should be explored. Therefore, when doing the graduation project, comprehensive research ought to cover many other fields in order to find out the most reasonable and suitable design principles and strategies for the site.

From the perspective of a larger social framework, my graduation work helps to improve the living conditions for food animals by providing them with ideal habitats through landscape design. The environmental issues of animal farming are also being mitigated through landscape design. By creating foodscapes and providing more opportunities for people to get to know more about food animals, people learn to respect and appreciate food animals' sacrifice.

As for professional framework, my graduation work studies how the sustainable, nature-inclusive animal farming landscape works through design principles. This could provide a new perspective from landscape architecture toward the field of animal husbandry and animal behaviors.

As for the scientific framework, I'm studying why we should build up sustainable, nature-inclusive animal farming landscapes in order to help my reader realize the problems of the current animal farming system and the urgency to change. I'm also studying how animal behaviors could help to increase biodiversity in order to help my reader understand the benefit of animal behaviors and see the potentials of animal behaviors in improving the landscapes.