

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	Manon Speul
Student number	4532465

Studio		
Name / Theme	Graduation Studio Cross Domain City of the Future	
Main mentor	Ir. JA (Joran) Kuijper	Architecture, Architectural Design Crossovers, Urban Design
Second mentor	Dr. P. Medici	Building Technology
Third mentor	Ir. R.J. (Robbert Jan) van der Veen	Urban landscape
Argumentation of choice of the studio	<p>Through my studies I have always been interested in the multidisciplinary of architecture and design. During my masters I have done courses from building technology, landscape architecture and urbanism, next to the fixed courses of architecture. City of the future is a cross domain studio and as such focuses on this multidisciplinary. The topic I was interested in, urban agriculture is also characterized by the different scales it can be designed on, urban and building, as well as the influence it has on socio-economic systems, ecological structures, infrastructure, urban climate and spatial quality. City of the future allowed for this exchange between the different scales as well as the focus on this specific topic.</p>	

Graduation project	
Title of the graduation project	Urban Oasis: Improving the liveability of the city through urban agriculture
Goal	
Location:	London; Hackney (Beauvoir Estate)
The posed problem,	Due to population growth, more people are living in a city, leading to densification and expansion of cities. On top of that, we have adopted a form of high consumption living. This has not only put pressure on housing in the city, but also on the cities resources, such as food. This has led to planetary urbanization. The process in which

	<p>densification of, and living in the city lead to the exhaustion of terrain and natural systems outside of the city. An important factor in planetary urbanization is the increased need for food and thus agricultural land outside of the city. The expansion of these agricultural lands has led among others to demolition of natural ecosystems. To prevent further decay of our environment and deal with the only increasing expansion of city population, we need to rethink our food system.</p> <p>Redesigning our food system, is not only of great importance for our planet. Due to global instability, climate change and economic crises, food security and food accessibility are out of reach for an increasing part of the population. Everyone needs food to be able to live, thus not being able to buy food, or nutritious and fresh food, damages people's health and strengthen inequality. Altogether the current food system has significant negative effects on our environment and society, which will only increase.</p>
<p>research questions and</p>	<p>To be able to solve this problem, the research will focus on the question:</p> <p>How can urban agriculture be implemented into cities to improve the liveability of the city?</p> <p>The research is divided into multiple sub questions:</p> <ul style="list-style-type: none"> - How is the current food system shaped? - What is urban agriculture? - What types of urban agriculture can be implemented into cities? - How does urban agriculture influence the urban metabolism? - What defines the liveability of a city? - What is the effect of the possible types of urban agriculture on the liveability of the city?
<p>design assignment in which these result.</p>	<p>The research shows that urban agriculture can improve the liveability of the city. In what ways, is dependent on the type of urban agriculture or strategy that is implemented. The most clear division is that between the interventions that focus on the social consequences and the interventions that focus on a high production yield. The design assignment therefore focuses on bridging this gap and creating a new strategy that creates the food security and high yield as well as the social qualities. To</p>

do so the program will consist of both a production center as well as individual production space, meeting spaces and educative spaces. As such the production center should not only give food security, but should also be the platform where people learn to produce their own food and reconnect to the food production system. There are three important aspects of this design. First of all, the integration in the neighborhood. The design should strive to connect to the existing morphology and form of the area. Secondly, the food produced should be accessible to all inhabitants of the neighbourhood. The inhabitants should connect to the new complex and be able to use it for their own food related activities. Thirdly, the new production center should improve the liveability, thus special attention should be payed to the infrastructure and new flows in and out of the complex. The question here is, how waste and energy flows can be reused and how the transport to and from the area will be done.

[This should be formulated in such a way that the graduation project can answer these questions.

The definition of the problem has to be significant to a clearly defined area of research and design.]

Process

Method description

Research

The main focus of the research will be on a literature review of existing urban agricultural strategies. Next to this, case studies will be analyzed and organized to determine the types of urban agriculture. These two methods will form the basis of the research through design. Here these types and strategies are tested on the design location to review their spatial effects, embeddability and realizability. Through different interviews, more insight will be gained on the management, economic and technical systems behind urban agriculture. These will be used to create an overview of different types of urban agriculture not only from a physical characteristic, but also from a socio-economic perspective. Next to that, different liveability indexes from literature and policy reports will be compared to come to a liveability framework. This framework will be used to test the different urban agriculture types and strategies and come to a conclusion on the effects they have on liveability.

In summary:

- Literature review
- Interviews
- Case studies
- Research through design
- (Framework) tests

Design

The design will be based on spatial, morphological and programmatic analysis. Special attentions will be paid to the public, semi-public and shared space. This analysis will be used to integrate the design into the context in a urban masterplan (1:500). The materialization and overall mass of the design are also important in this step of the design. These analysis also form the base of the more urban strategy of the implementation of urban agriculture into the city. After this, the program will be further defined based on the case studies from the research project. With the program in place, the design will be further developed through sections, façade drawings and floorplans on a smaller scale (1:100-1:200) as to develop the relation between the design and the context, specifically focusing on the different open and closed characteristics of the functions. This scale will also be used to lay the foundation for all technical functions and systems in the building. Due to its program special attention will need to be paid to daylight and climate design. Lastly, a detailed scale will be used to design the actual implementation of the materials and the effect it has on the building technology and climate design.

Literature and general practical preference

The main theories and concepts of this research are:

- The commons [de Angelis, M. (2017). *Omnia Sunt Communia: On the Commons and the Transformation to Postcapitalism*. Van Haren Publishing. / Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.]
- Urban Metabolism [Zhang, Y., Yang, Z. & Yu, X. (2015). Urban Metabolism: A Review of Current Knowledge and Directions for Future Study. *Environmental Science & Technology*, 49(19), 11247–11263. <https://doi.org/10.1021/acs.est.5b03060>]
- Ecosystem services [Birtles, P., Hore, J., Dean, M., Hamilton, R., Dahlenburg, J., Moore, J. A., & Bailey, M. (2014). Creating a Liveable City - The Role of Ecosystem Services. In *State of Australian cities conference*. <https://doi.org/10.13140/2.1.4643.6167>
- The food system [Ericksen, P. J. (2008). Conceptualizing food systems for global environmental change research. *Global Environmental Change*, 18(1), 234–245. <https://doi.org/10.1016/j.gloenvcha.2007.09.002>

Liveability will be defined through literature as well as existing frameworks.

- Birtles, P. J., Hore, J., Dean, M., Hamilton, R., Dahlenburg, J., Moore, J. A. & Bailey, M. (2013). *Creating a Liveable City - The Role of Ecosystem Services*. <https://doi.org/10.13140/2.1.4643.6167>
- Southworth, M. (2003). Measuring the Liveable City. *Built Environment*, 29(4), 343–354. <https://doi.org/10.2148/benv.29.4.343.54293>
- Leidelmeijer, K., & Mandemakers, J. (2020). *Leefbaarheid in Nederland 2020* (Atlas Research, Red.). <https://www.leefbaarometer.nl/home.php>
- Economist Intelligence. (2022). *The Global Liveability Index 2022*. <https://www.eiu.com/n/campaigns/global-liveability-index-2022/>

Urban agriculture will be based on the following literature:

- Bakker, N., Dubbeling, M., Gündel, S., Sabel-Koschella, U., & de Zeeuw, H. (2000). *Growing cities, growing food: Urban agriculture on the policy agenda*. Deutsche Stiftung für internationale Entwicklung. <https://www.bivica.org/files/agricultura-urbana.pdf>
- Despommier, D., Giacomelli, G. A. & Carter, M. (2020). *The Vertical Farm (Tenth Anniversary Edition): Feeding the World in the 21st Century*. Picador.
- Koc, M., MacRae, R., Welsh, J. & Mougeot, L. J. A. (2000). *For Hunger-Proof Cities: Sustainable Urban Food Systems*. IDRC Books.
- Lim, C. J. & Liu, E. (2019). *Smartcities and Eco-Warriors: The Ecological Landscapes for Urban Resilience*. Routledge.
- Steel, C. (2013). *Hungry City: How Food Shapes Our Lives* (Reissue). Vintage UK.
- Steel, C. (2020). *Sitopia: How Food Can Save the World*. Chatto & Windus.
- de Zeeuw, H. & Drechsel, P. (2015). *Cities and Agriculture: Developing Resilient Urban Food Systems*. Taylor & Francis.

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)?

The graduation studio city of the future poses the question what our cities would look like in the future. How would they develop to deal with the problems that our cities and planet are suffering from at this time. The current design of our food system causes many different problems. Urban agriculture is a means to change our food system. Thus envisioning and designing a city that produces its own food is an important step in solving problems in our food system. As student of the track architecture, I focus on the program needed to implement urban agriculture as well as the materialisation. If we design what our future self-sustaining cities should look like, it is important to design sustainable buildings in materialisation, program and form. The master AUBS, touches not only on these architectural aspects, but also on the integration in the urban context and the relation to the social and economic structures in place. Urban agriculture has many facets, depending on its typology it has an important place in the community or can be a source of new economic development. In my project I strive to find a balance between a production space that strengthens the community and the liveability of the surrounding areas as well as effectively tackle the problems of the food system through a new production centre. All while integrating it in the context of a normal neighbourhood.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

Urban agriculture is a quickly developing topic. Much has been written about the need to change our food system as well as the effectiveness and qualities of urban agriculture. However, the focus in existing research is often on food security and the consequences urban agriculture has on our natural environment. The relation between liveability and urban agriculture has been mentioned, but remains on the urban micro climate qualities that urban agriculture has on the city. However, the interdisciplinarity of urban agriculture asks for a bigger

overview of the actual effect on the city and those that live in it. This should be done, not only from a general overview, but also taking into account the different typologies of urban agriculture and the significantly different effects they have on the environment, spatial quality and the socio-economic structure of society.

Most current implementations of urban agriculture are designs of communal gardens, allotments or other forms of shared production. These spaces produce education and community, and only food as a by-product. Therefore, the effect on the larger scale of our food system is only small. As a consequence, the design assignment focuses on combining both the high production scale of urban agriculture with its communal and educative qualities as visible in today's designs. To showcase another possible implementation, with a higher effect on the improvement of the liveability of the city.