

# 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](mailto: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	LAI KA CHUN
Student number	5757843

Studio		
Name / Theme	URBAN ARCHITECTURE	
Main mentor	Rosie van der Schans	Architectural Design
Second mentor	Lex van Deudekom	Building Technology
Third mentor	Leeke Reinders	Urban Research
Argumentation of choice of the studio	<p>The studio confronted a contemporary urban issue in the Capital of Belgium, questioning the architectural interference to an abandoned land which inhabited urban animal and plant species. The teachers were knowledgeable of the architectural and planning practice in Brussels but also open to discussions about heterotopia and alternative mindsets of urban settlements.</p>	

Graduation project	
Title of the graduation project	50 Billion Raindrops on the Friche
Goal	
Location:	Friche Josaphat, Schaerbeek, Brussels
The posed problem,	<p>As a capital city which invested heavily in infrastructure and greenery, Brussels also developed many landscape typologies along its logistic arteries. Friche Josaphat is a rare example of an abandoned type in which the trainyard was reclaimed back to the territories of urban nature and thrived with rich biodiversity. In the framework of urban development, the isolation of the site becomes the unique character of the proposed neighbourhood, but also leads to problems like:</p> <ul style="list-style-type: none"> <li>- The conflict between rising housing demand and the preservation of specific urban species defended by ecologists.</li> </ul>

	<ul style="list-style-type: none"> <li>- The spatial division resulted by the operating train track in the middle of the site</li> <li>- The existing logistic industries and trucks which may pose danger to future pedestrians</li> <li>- The potential of disconnection and social isolation depending on the masterplan</li> </ul>
<p>research questions and</p>	<p>The scale of the site offers or restores the sky before urbanization, it is no longer trimmed away by the roofs nor completely insulated from the glasshouse, but allows citizens to interact again with the landscape of air - the climate and weather of the site.</p> <p>The climatic aspect of a site in today's practice is often used to simulate the impact of construction in terms of wind, temperature and gas emission, under the global discussion of climate change or even catastrophe of civilization. Nonetheless, there should be an alternative field where climatic research would not only result in comfort and efficiency, but also physiological or social impulses shared by a neighbourhood. Thus, the research question bridging the site analysis and building proposal would be as the following:</p> <p><i>How can Architecture act as a mediator between the local climatic character of the site and the emergence of a new urban neighbourhood ?</i></p>
<p>design assignment in which these result.</p>	<p>To challenge the existing controversial masterplan, an alternative proposal would be designed to concentrate the housing density on the east side of the site, freeing up space for the equally valuable urban species on the west side. Down to the building scale, the dynamic between shelters and climate will be explored in a proposal of a school. Apart from being an education institution, school is also a place where a miniature of young community could be born and grow. The diversity of building volumes inside a school campus also provides a potential ground to propose different mindsets of sheltering, reflecting the previous research on climate and architecture. Furthermore, I hope the proposed design can also help build up the character or shared identity for the future neighbourhood of the site, settling on an innocent land in innocent eyes.</p>

## Process

### Method description

In order to visualize the hypothesis, the methodology of this thesis research can take reference from the classical and contemporary meteorological measurement methods for different scales: climate writing on the physiological scale, botanical studies on the biospheric scale, in-situ meteorological data collection on the neighbourhood scale, and computer simulation on the urban scale. Rather than the conventional scientific explanations and predictions, this combination of different measures will allow the data and information to build a more anthropological bond with the citizens, telling an urban life dancing with the dynamics of weather.

At the later stage of the research, the content will be compiled into a climatic biography or storybook of the site. This compilation will act as a guidebook for the designers who are interested in intervening climate in both conservative and proactive manners. On the other hand, the book could also portray how would a kid experience the journey going inside and outside the friche, expressing the urban context in a juvenile vision.

In parallel, case studies of school typologies will be carried out to understand the network behind the positive and negative volumes. Since the site has a complex topography, specific examples with significant terrains will also be studied in details. Combing this operational and typological research with the previous storybook, the final chapter of the project will reveal the approach to the design and its construction feasibility.

### Literature and general practical references

*Brussels: Heavy rain closes tunnels and public transport.* The Brussels Times, 8 November 2023.

Coen, Deborah R. *Climate in Motion: Science, Empire, and the Problem of Scale.* Chicago, IL: University of Chicago Press, 2020.

Claire Billen, Michel De Beule, Marie-Françoise Degembe, Denis DiagreVanderpelen, Catherine Franceschi-Zaharia, Eric Hennaut, Michael Jakob, Thierry Kandjee, Serge Kempeneers, Luisa Limido, Chiara Santini, Sylvie Van Damme, Ursula Wieser Benedetti. *Brussels. Two and a Half Centuries of Public Parks and Gardens. 1775-2020.* Text. C.I.II.III.IV.A, 5 November 2019.

Dufour, L. *Esquisse d'une histoire de la météorologie en Belgique.* Ciel et Terre, Vol. 61, p. 1. 1945.

Galton, Francis. *Meteorographica, Or, Methods of Mapping the Weather: Illustrated by Upwards of 600 Printed and Lithographed Diagrams Referring to the Weather of a Large Part of Europe, During the Month of December 1861*. Macmillan. 1863.

Makoto, Shinkai, director. *Weathering with you*. Japan. Toho Company, Ltd., 2019.

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Rahm, Philippe. *Climatic Architecture*. New York, Barcelona. Actar Publishers. 2023.

R. Hamdi, F. Duchêne, J. Berckmans, A. Delcloo, C. Vanpoucke, P. Termonia, *Evolution of urban heat wave intensity for the Brussels Capital Region in the ARPEGE-Climat A1B scenario*, Urban Climate, Volume 17, 2016, Pages 176-195.

Ryan, Daniel J, Jennifer Ferng, and Erik G L'Heureux, eds. *Drawing Climate: Visualising Invisible Elements of Architecture*. Basel: Birkhäuser, 2022.

*Next steps for Brussels 'ambitious' flood and drought plan*. The Brussels Times, 23 June 2023.

## 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)?
  - "50 Billion Raindrops on the Friche" tries to draw the invisible material of the urban context framed by the Urban Architecture Studio. The site is an abandoned land with a rich urban biodiversity, inspiring researchers to raise questions and challenge urbanization for the conservation of the urban ecology. Nonetheless, choosing the invisible research subject - climate and weather may reveal more distinct characteristics of the site, or even the mediator in this bipolar discussion between 'nature' and 'city'. The study of science sometimes can be based from an observation or interaction with our existing context, not always necessarily about upgrading our tools or methodologies.

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

- "50 Billion Raindrops on the Friche" will picture climate and weather with colours, touches and forms. In the recent decades, climate always comes with disasters and solutions while professionals gave lots of effort to forecast or even stimulate climate for various applications. The overwhelming global phenomenon has pushed many architectural practices to examine climate as a checkbox to be implemented under new legislations. Although this help alleviate the greenhouse effect, the homogeneity of climatic research in architectural projects makes people forget some qualities of the landscape of air at the site. I hope my project will be able to render climate not as a diagram, numbers nor disasters, but a shared value which contribute to build up the essence of what we call urban architecture.