Reflection

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The relationship between research and design

My research is mainly focused on site situation, agriculture cultivation and the methods of digital architecture design. The concept of urban vertical agriculture is driven by the defined problems (food shortage, low income population, unused land, air and noise pollution from the site) from the research. The study on both agriculture cultivation aspects and the digital architecture design assist me to design the geometry of the building. The shape, routing, orientation are based on the research very much, and to some extent, they are the results of the research (the simulation).

The relationship between the theme of the studio and the subject/case study chosen by the student within this framework (location/object)

Since the theme of Graduation studio for Hyperbody focuses on generating self-sustaining Climatic Ecologies, my case study within this framework is to apply computational tools to proceed the performance driven form finding process. Therefore the subject is the study of the generative architecture design as well a process finding a form solve those issues.

The relationship between the methodical line of approach of the studio and the method chosen by the student in this framework

The methodical line of approach of Hyperbody is as follows: firstly, do research and analysis in different scales; then, study the generative systems and choose the system/systems to build and develop geometry with regard to the urban settings iteratively, finally optimize the geometry and translate it into building which integrate varies green strategies.

In this subject, I explored and employed the particle system, which imported the site data and utilized various groups of particles to represent different function clusters depending on the previous research and analysis such as their light demands, relationships, and the existing site limitations, to simulate and generate a conceptual geometry. In the system, particles’ movements followed the defined principles such as the high-light demand particles should locate at place where they were able to acquire natural daylight for some certain hours (in a sunny day), those particles which were near the flyovers must avoid it but not leave the main clusters. After the system generating the initial geometry, the geometry was imported to the analysis software such as geco to check whether it meets the requirements. Finally, I developed and improved the shape, the circulation, the space, the structure, the climate to achieve the strategy on a architectural level.
The relationship between the project and the wider social context
The project reveals the complexity and difficulty of inserting a design on urban infrastructure, especially on such a busy interchange. Because the generation of the project is limited and affected by the site, various cultivation requirements (daylight, cooling and sizes), the project can be an very interesting example to present how urban agriculture is introduced to such places which are abandoned.