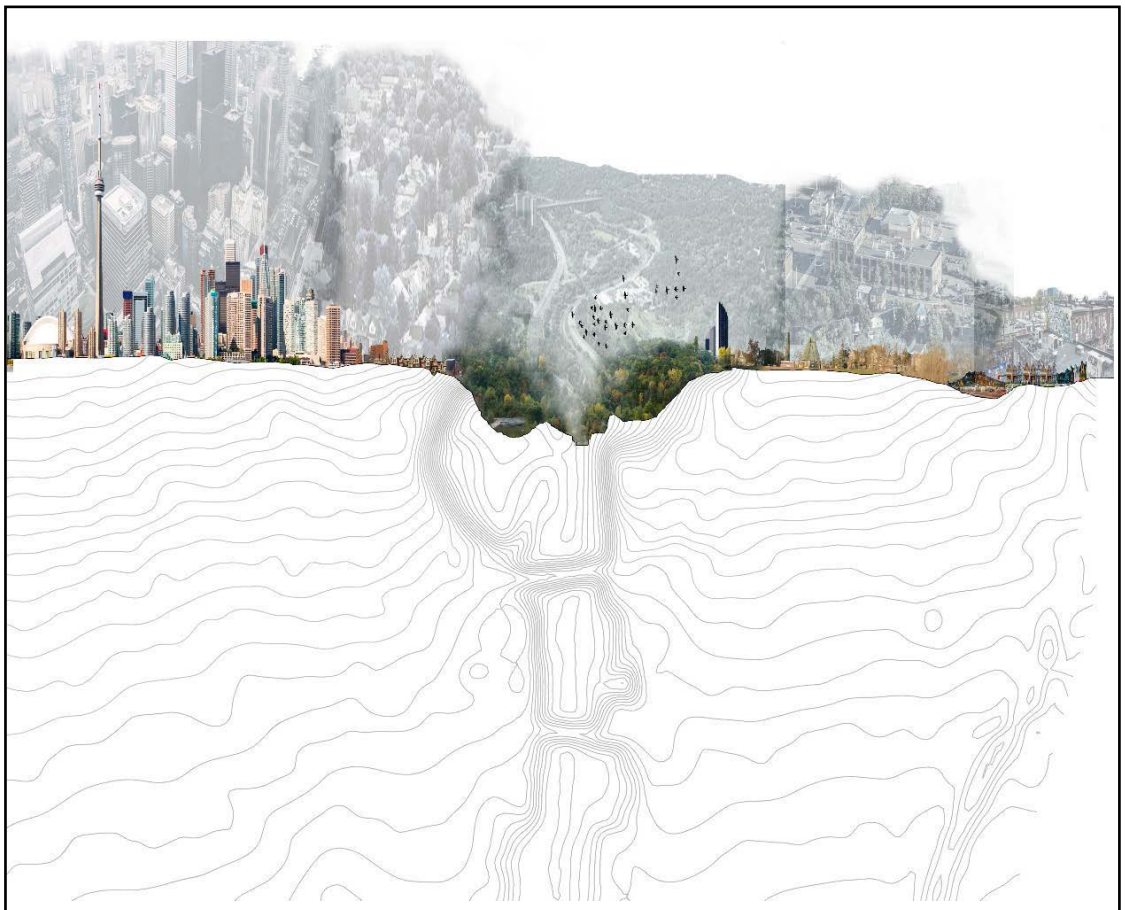

Adaptive Interface Development

Reflection

Jie Yang
2017.05

Being inspired by the emphasis on the interaction of humans and their environment, and to actually integrate flows and scapes by landscape infrastructures in my graduation lab *Flowscape*, my fascination is to study how to balance the human culture and the natural environment in urban area, how to integrate flows of natural and human system with scapes of urban territory.

While natural environment and urban environment influence on each other, the interaction between human induced factors and nature environment add more vulnerability of the whole landscape. In order to study with these interactions, I developed the concept of 'interface'. It is the territory where human system and natural system confront and be porous into each other. Being in the unique position between urban and nature, interface conveys the most frequent urban dynamism and natural process. Thus interface is a changing structure. In that case, on top of the concept of interface, how to add adaptivity is the most important issue because of the volatile forms of interface.

In conclusion, the main objective of my project is to use the concept of "adaptive interface" as an instrument to facilitate the interactions between urban and nature. In city Toronto, there are a lot of struggles between urban and nature because the interwoven ravine systems in the grand region, which exactly meets my design objective. So in the beginning of my project, I chose the experimental site - the Lower Don area, where natural ravine system is siting within Downtown Toronto.

Following the structure of landscape studio, "research-by-design" is the method framing my project. "Research-by-design is about study through design using knowledge acquired by design research."[i] There are two main steps in my project: 1.experimental design, 2.design study. The first part of my graduation project is acquiring knowledge through analyzing the interface of Lower Don River. The situation was analyzed by mapping tools and sections. After that, I started to compare my project with some precedents in urban planning, architecture design, and landscape architecture subjects, transforming their relative spatial compositions into the Lower Don River interface to find the design principle of it. The later part is applying these acquired design principles through landscape architectonical design, specifying the principles through one area in the experimental site, in order to adjust the research principles and derive the design principles from that.

While doing the project, I figured out that it's an effective way to use several dimensions on adaptive interface to frame both experimental design and design strategy. These dimensions are the focusing points of the living landscape from quick development to slow development. The clue for this approach is the Dutch three layers approach which distinguishes three layers in the spatial organization – substratum, networks and the layer of the occupation pattern. In the consideration of Toronto interface and to my personal interests as a landscape architecture student, I decided to focus on these five layers in the end: Natural landscape, water network, transportation network, building typology and accessibility. While doing experimental design parts with these five layers, I found it was a powerful structure to analyze Toronto interface through different aspects, and finding the

principles for each aspects, providing the potential solutions. Some of these principles place more emphasis on urban aspects while some focus on nature aspects.

The five-dimension-approach is also contribute to identifying design principles in the later part of my project. In corresponding to the principles on five dimensions, I tested these principles on one area in Lower Don interface where all those dimensions are involved within. Natural landscape principles were applied into one design for mainly optimizing the ecological value of the site; Water principles were focusing on solving the problems of wet-weather overflows and the polluted open water; Transport principles were adapted into the Toronto network systems to facilitate the slow traffic zone on site; Buildings principles were combined with functional values of the site to reconstruct the spatial relationship between buildings and nature; Accessibility principles were emphasizing on creating more comfortable spatial experience from urban to nature.

The five-dimension-principles were justified within the certain context and new principles were generated through the designing. In order to identify the design principles which can be used in developing other urban-nature interface, I combined these one-dimensional design by evaluating strengthens, weakness, opportunities, threatens of each design and recomposing them in a certain way to reach an integral design. After the combined design, I already found out that there is the sixth dimension: public/ semi-public space, which can be the machine to combine other dimensions and become the new dimension for the interface.

In the view of Flowscapes studio, the principles for planning and design are: multi-functionality, connectivity, integration, communicative and social-inclusive design process and long term strategy. And so are the design principles for developing the adaptive interface. Developing a changeable and adaptive landscape structure for interface, it's crucial to consider different roles of it, the ecological, spatial, functional and social roles especially. And by doing the research and design with 5 dimensions, the design results are adaptive to the uncertainties and dynamism of interface.

This research-by-design for developing adaptive interface provides me a new lens on viewing the landscape infrastructure. The final design is not a solitary infrastructure design but an adaptive landscape structure for green, blue and transport infrastructure. The concept of adaptive interface for me is a powerful tool to develop the place in-between urban environments and natural environment. In considering of the context of Toronto interface and due to my personal preference, I chose five dimensions to research and design on. This may lead to certain limitation of design principles, and the principles should be justified through designing repeatedly in the same site or in different sites. But within the structure of dimension-approach for developing adaptive interface, the design is open-ended which can be repeated and provide new principles for interface. The other important thing with the project is that the method helps people to positioning themselves in making designing choices with the interaction of human and nature environment. The emphasis on different dimensions may decide different design solutions, but it provided

the method for not only our designers but also other groups of people like social participations, stake holders, ecologists, engineers, and politician, etc. to evaluate the interface and make design decisions on it.

[i] Nijhuis, S., Bobbink,I. (2012) 'Design-related research in landscape architecture', *J. Design Research, Vol. 10, No. 4, 2012,* Pp239-257