Experimental Interactions with Nature in the City

Tony Ip
Director, Tony Ip Green Architects Ltd., Hong Kong
Email: tony@tonyip.green

Abstract. There has been an increasing demand for a peaceful and natural environment in urban areas, which has led to the growing trend of various green building rating schemes advocating urban greenery and human-nature interaction. In order to identify the significant elements associated with nature and effective methods of promoting human-nature interactions in a high-density urban city, two experimental public engagement projects were carried out to explore urban nature from the perspective of urban dwellers in Hong Kong. Based on the findings of the photo-elicitation survey, trees and sky were discovered to be the two most significant elements in representing naturalness in an urban context. Another four-month public engagement project was conducted, consisting of a green education hub, urban farming, and birdwatching tours, which were held in an undesignated space under a flyover. Throughout the duration of the project, human-nature interactions were demonstrated in three layers: design for humans, design for humans with nature and design for nature.

1. Introduction
As the demand for a peaceful and natural environment in urban areas increased, so did the desire for a natural green environment where people can stay and socialize with their families, friends and neighbours. This resulted in various green building rating schemes advocating for urban greenery and human-nature interactions. What kinds of naturalness and human-nature interactions should we advocate, specifically for an urban population? The purpose of this paper is, therefore, to identify and investigate (i) the significant elements that represent nature in an urban setting to urban dwellers and (ii) how human-nature interactions can be designed and promoted in the city centre.

2. Background
Hong Kong is a densely populated city with numerous high-rise buildings. It preserves large portions of natural lands with rich biodiversity, but citizens have limited opportunities to encounter its naturalness. Although the green space per capita is 105.3m² and about 85% of population in Hong Kong are within 3km of the country park, the green open space per capita within urban districts is merely 2.7m², revealing the limited urban greenery in Hong Kong city centre.[1] Thus, urban dwellers tend to be more biophobic and socially isolated as they experience a lack of exposure to nature.[2] Urban green spaces serve to facilitate socialization and relaxation, so more human-nature interaction should be explored and promoted to improve the urban living environment.[3]
3. Methods
In order to distinguish the popular perspective, two experimental public engagement projects were carried out to understand human-nature interactions in an urban context. First, the photo elicitation survey was conducted to explore how urban dwellers consider nature in their daily lives through their own records of urban nature. The photo elicitation survey is a participatory qualitative methodology that can reflect participants’ actual experience and encourage an in-depth consideration of their own view through visuals and words.[4] This method is adopted as photos are readily comparable and able to express multi-layered meanings, including those that are more difficult to verbalize.[5] Urban dwellers, mainly from Hong Kong and surrounding Asian cities such as Singapore and Taiwan, were asked to express their interpretations of nature in their urban environment by taking photos and writing. They were asked to provide a photo with writing that they associate with nature in their cities. The photos were then compared and analysed to pinpoint the elements most representative of nature in an urban context, i.e. the elements that appeared most frequently. All elements were also classified as one of seven categories. The second public engagement project aimed to explore the possibility of human-nature interactions. It was conducted at an undesignated space under a flyover in Central, Hong Kong. It was held for 4 months to provide urban dwellers first-hand experience with nature in the central business district through a green education hub, urban farming and birdwatching tours. Individuals of various backgrounds were encouraged to participate.

4. Photo Elicitation Survey
Over 100 urban dwellers were asked to express their interpretations of nature in their urban environment by taking photos and writing. The photos illustrated substances and representations of nature from their perspectives. Their narratives implied diverse spiritual and physical connections to nature. The study revealed that nature existed in various forms, statuses and situations, but the majority’s views of it were limited, distorted and sometimes conflicted with human activities.

The photos collected from the survey were analysed by sorting out the three major elements of each photo separately from the accompanying writing. Based on the survey results, elements are classified as one of seven types based on whether they are greens, weather, water, artificial substances, humans, animals or natural materials. Refer to Table 1. and Figure 1. for a detailed list and analysis of the elements. In general, every element found in the photos enabled citizens to experience direct contact with nature. People can interact with nature from a close distance or from just within sight. Artificial substances indicate that the individual is located in an urban region.

| Type               | Element                                                      | Percentage |
|--------------------|--------------------------------------------------------------|------------|
| Greens             | Trees, vegetation, leaves, plants, mountains, flowers, etc.  | 35%        |
| Weather            | Sky, sunlight, clouds, sun, fog                             | 18%        |
| Water              | Sea, water, fountains, snow, mist                           | 9%         |
| Natural materials  | Rocks, soil, branches, pinecones, sticks, snail shells, wood| 5%         |
| Humans             | Birds, cows, butterflies, monkeys                           | 5%         |
| Artificial substances | Buildings, roads, windows, vehicles, lamp posts, etc.     | 25%        |

The two categories most associated with nature are Greens and Weather. These two types of elements can be more easily found in urban regions and are able to exist in diverse forms, statuses and situations. Among all the elements, trees are the most common. This can be explained by the following three points...
according to the survey results. Firstly, it is one of the most easily identifiable green elements in cities, filling space along streets and stairs, under bridges, around buildings, near waterfronts and in parks. It grows in various situations to acclimate to urban development.

Figure 1. Photos taken by the participants in the photo elicitation survey.
Secondly, it has functional and recreational communal uses. It may be treated as a fence in-between spaces and utilized for shade for urban dwellers to provide natural cooling. It holds practical value to the community rather than existing as a mere decoration. Thirdly, it exists in a wide variety of forms, such as lines of hedges, single trees or stonewall trees. They grow according to their environment and urban development to survive in between and around city infrastructures. The survival of trees in the face of human intervention has evinced the resilience of trees. As a result, they can be found and grown easily around cities, which has helped increase their significance in urban nature. Furthermore, vegetation, leaves and plants are other top elements found in all the photos. Planting is the most common element appearing both indoors and outdoors. Planting can link people to nature in indoor spaces such as offices and homes. It not only brings living nature to urban dwellers but also allows them to participate in the natural process of growing.\[[6]\]

Weather is the second most popular type of element, as illustrated by the following two reasons. Firstly, the weather is a linkage to the outdoors for urban dwellers. Weather refers to the atmospheric condition, which is also the most common method of understanding the condition of nature in a cityscape. People will understand the external environment by observing the sky, which explains why it is the second most popular element. Secondly, the sky is constantly changing due to the reflection of the sun’s shifts in position throughout the day on diurnal light. This is the law of nature to humans, it is uncontrollable and independent of human activities. Thus, people will look at the natural change of the sky when they are in search of nature in an urban environment.

According to the survey, animals are another way for urban dwellers to interact with nature. Birds are the most popular choice of animals as they can be found easily in urban districts. Sharing space with animals will provide dwellers with a direct connection to nature, echoing the direct experience of nature mentioned in “Nature by Design: The Practice of Biophilic Design” by Stephen Kellert.\[[7]\] Nature is wild and untouched. Its association with the quality of being rich in species has caused animals to become a sign of nature to humans.\[[8]\] Sharing urban space with animals can thus create an association to nature for the inhabitants. This has also brought into light the need for an investigation of urban biodiversity.

Nature to urban dwellers is regarded as relatively versatile and ever-changing in comparison to artificial substances. The elements associated with nature selected by dwellers are generally non-static and non-rigid. They change and develop over time. Nature is in fact found everywhere in the urban city. While human-nature interaction is possible in any urban setting, its existence requires more attention, appreciation and action.

5. Public Experiential Programmes
The second public engagement project involved architects, farmers, office workers, students and the public co-creating and transforming the space under a flyover into an improvised community green education hub and urban farm using a container shed and upcycled, discarded wood pallets. Within the 4-month exhibition period, three batches of vegetables were harvested and over fifteen workshops and tours involving bird watching in the city were conducted.

5.1 Green Education Hub
A container shed was transformed into an education hub for the public to understand the jungle’s ecosystem and explore the relationship between nature and urban populations through ten questions as listed and shown in Table 2 and Figure 2. Green Education hub was designed to enlighten the public and encourage them to rethink how and why human-nature interactions should be integrated in their daily lives. It illustrated how various shareholders of the jungle ecosystem are maintained in the city. People were encouraged to share their thoughts and experiences on the artificial grassland within the shed.
Table 2. 10 questions shown on the display panels in Green Education Hub.

| Questions                                                                 |
|---------------------------------------------------------------------------|
| Q.1 Are plants staging a retaliation?                                    |
| Q.2 Why is it important to have plants in the city when we have our country parks? |
| Q.3 Where can we farm collectively?                                      |
| Q.4 Who can challenge our commitment to planting my own greens?           |
| Q.5 Bee-friends forever?                                                 |
| Q.6 Is there a proper way to get along with the birds?                   |
| Q.7 The more we plant the better it is?                                  |
| Q.8 How to be a self-sufficient city?                                    |
| Q.9 What is the unique relationship between senior citizens and plants?  |
| Q.10 Does getting in touch with mother nature make children smarter?      |

Figure 2. Green Education Hub transformed from a container shed.

5.2 Community Urban Farm

Urban farm was organized next to the education hub for the community to explore and experience the life cycle of plants. Urban farm was constructed with upcycled wood pallets arranged in various heights to engage a wider range of social groups such as families, office workers and the elderly etc. In addition, it was intended to encourage public gathering and contribution as shown in Figure 3.

Throughout the period, a sense of appreciation of nature was developed in participants as they learnt about how greens grow in various climates and in an urban context. The farm-to-table experience of Indian and Romaine lettuce had introduced the entire life cycle of vegetables in order to enhance the public’s environmental attitudes and ecological behaviours. They realised and experienced the way
greens could be involved in their daily lives. A sense of attachment was built when the public’s duty to maintain the urban farm fostered socialization.

![Image of urban farm]

**Figure 3.** Urban Farm constructed with upcycling discarded wood pellets.

5.3 *Bird Watching*

Bird watching tours were organized to guide the public in discovering the hidden bird ecology in the city centre. Through learning the etiquette of birdwatching, participants would discover how birds build their habitats around the city and adapt to the urban setting like the urban dwellers themselves, as shown in Figures 4 and 5. Birds’ habitats were found not only in trees but also in the gaps of city infrastructures, like bridges and flower tanks. On the tour, participants were provoked to reflect on their impact on birds’ habitats when they saw nests made of tissue and cable ties, and birds crashing into building facades.

Furthermore, through understanding birds’ living, feeding and resting habits from the tour, the public understood the birds’ role as pollinators in the city’s ecosystem. Urban dwellers were empowered to protect and appreciate animals in the city centre when they acquired knowledge about them and discovered the linkage between birds and their own lives. When people acknowledged birds as their neighbour, they began to examine the society from birds’ perspective. Ecologically responsible living environments, such as those incorporating birdhouses, bio-diverse brown roofs and bird-friendly glazing in building design, could, therefore, be explored and developed for the benefit of the biotic community when people understand the needs of the birds in the city.

In light of the two public engagement projects, human-nature interaction in urban living is found to be developed progressively. Human-nature interaction is built upon humans' discovery and acknowledgment of the co-existence and connection between nature and humans, which was explored in the first engagement project to understand what urban nature is to people. A green education hub, urban farming and bird watching tours were then organized to investigate how human-nature interaction could develop in three main different layers: design for humans, design for humans with nature and design for nature.
Figure 4 & 5. Bird Watching tours in the central business district in Hong Kong.

Human-nature interaction should be advocated for on a wide spectrum, ranging from anthropocentric to non-anthropocentric according to different forms, statuses and situations of nature and human activities. The philosophical framework of human-nature relationships associated within urban living is further elaborated in Figure 6.
Anthropocentric

Human-Nature Interactions

Anthropocentric

Design for human

Design for human with nature

Non-anthropocentric

Design for nature

Psychological / physiological aspects on a personal level (e.g. visual enjoyment & sensory pleasure; stress relief & attention restoration; soft fascination)

Social aspects on a community level (e.g. community garden, urban farming)

Environmental aspects on a district level (e.g. improving micro-climate for thermal comfort, mitigating urban heat island effect)

Appreciation of the existence of nature (i.e. biotic community) for its non-instrumental / intrinsic value

Influence of human behaviour and attitude to protect the biotic community for its intrinsic value

Ecologically responsibly built environment harmless to the biotic community

Environment built with regenerative qualities beneficial to the biotic community

Figure 6. Different layers of human-nature interactions.

6. Conclusion
These public engagement activities provided insightful observations of urban dwellers’ interactions with nature in different urban settings. Based on the photo elicitation survey, all urban nature related elements allow the public direct exposure to nature. Greens and weather are the two main elements representing urban nature while trees and sky are the most common elements found in all the photos. These elements share the characteristic of being non-static and non-rigid and having their own natural pattern of change. Although these elements are easily accessible in urban living, they are disconnected from urban dwellers without proper design. In the second project, human-nature interactions were demonstrated to be advocated in three layers: designing for humans, humans with nature and nature. Urban naturalness poses a positive influence on urban dwellers in high-density urban environments, which can be manifested with simple interventions and community programmes to promote human respect, interaction and coexistence with nature.

References
[1] HKSAR Government 2016 Planning Department: Hong Kong 2030+ Green and Blue Space Conceptual Framework
[2] Collado S and Corraliza, J A and Staats H and Ruiz M 2015 Effect of frequency and mode of contact with nature on children’s self-reported ecological behaviours Journal of Environmental Psychology 41 65-73
[3] Karin KP and Jasper S and Ulrika K S 2012 Use of small public urban green spaces (SPUGS) Urban Forestry & Urban Greening 11 235-244
[4] Richard V M and Lahman K E 2014 Photo-elicitation: reflexivity on method, analysis, and graphic portraits International Journal of Research & Method in Education 38 3-22
[5] Garrod B 2008 Exploring place perception a photo-based analysis Annals of Tourism Research 35 381-401
[6] Gillis K and Gatersleben B 2015 A review of psychological literature on the health and wellbeing benefits of biophilic design Buildings 5 948-963
[7] Stephen R K 2018 Nature by Design: The Practice of Biophilic Design (New Haven: Yale University Press)
[8] Grahn P and Stigsdotter U K 2010 The relation between perceived sensory dimensions of urban green space and stress restoration Landscape and Urban Planning 94 264-275