

Developing place attachment in high-density residential neighbourhoods in China: comparing the role of shared outdoor environments in two residential models in Qingdao

Xintian, Wang^{a*}, Kate, Bishop^a, Linda, Corkery^a, Nancy Marshall^b

^a University of New South Wales, Sydney, NSW 2052, Australia

^b The University of Sydney, Sydney, NSW 2006, Australia

* Corresponding author: xintian.wang@unsw.edu.au

ABSTRACT

Residential neighbourhoods in urban China have witnessed great change over the last forty years due to rapid urbanisation. This has placed great pressure on landscape urban design to provide quality outdoor environments that support community interaction, recreation, wellbeing and place attachment for residents. Currently, there are two typical residential models: one, mid-rise apartment blocks with unrestricted street patterns built in the 1980s and 1990s; the other, high-rise towers in gated superblocks built in the past 20 years. Using a comparative case study of these two residential models, this study investigates the attributes shared outdoor environments to identify those that may contribute to place attachment. Theories of place attachment, urban spatial design and environment-behaviour studies provide the conceptual framework for this study. Three methods were used: (a) semi-structured interviews with adult residents; (b) a questionnaire with adult residents; (c) and participant observation of the outdoor areas. Data analysis will be used to identify the convergence and divergence of residents' experiences of shared outdoor environments in each of the two residential models. This study is timely in relation to the COVID-19 pandemic and its implications for evidence-based design practice in landscape architecture in relation to the design of outdoor settings in residential neighbourhoods in China.

Keywords: *place attachment, shared outdoor environment, high-density residential neighbourhoods, China.*

INTRODUCTION

This study aims to investigate how residents develop place attachment in outdoor environments of high-density residential neighbourhoods by comparing the two typical, high-density residential models in urban China. The need for this research is driven by rapidly increasing urbanisation which China has experienced since the 1970s. This has led to the demand for new residential models and mass construction of new high-density residential settings which now house millions of people. Place

attachment encompasses relationships between people and their environment, and it also plays a role in human well-being as it delivers psychological benefits and a sense of stability which are needed in a rapidly changing society (Hay, 1998). Two sites, each distinct and commonly used residential models, were selected in Qingdao, a major coastal city located in eastern China, occupying 11 square kilometres with a population of over 10 million. The study uses a mixed method methodology to address two research questions: 1) What kind of shared neighbourhood spaces do people feel attached to in the two cases and what are their experiences in these settings? 2) What are the physical attributes contributing to the convergence and divergence between two cases? Ultimately the aim of this research is to inform contemporary landscape urban design practice in its capacity to design quality outdoor environments as part of residential settings that support the development of place attachment among residents.

This paper consists of four parts. The first part provides background to the context for this study; the second part reviews relevant environment-behaviour and urban design theories and concepts used to construct the conceptual framework for this research; the third part describes the research settings, methodology, and methods for data collection and analysis; and the fourth part discusses the potential contribution and significance of the study.

BACKGROUND

In 1978, China started economic reform and opened up to the outside world with the goal of developing the national economy. The rapid urbanisation in China during the post-1978 period brought a profound change to social and economic institutions. The urban population was 16.7 million in 1950, constituting only 11.18% of the total population in China; in 1980, urban population reached around 190 million, constituting 19.39% of the China's total population; and the urban population as a percentage of total population, or the so-called urbanisation rate, reached 56.1% in 2015. Figure 1 illustrates the trend in China's urbanisation from 1950 to 2015 and the rapid growth in urbanisation rates can be seen since the 1980s.

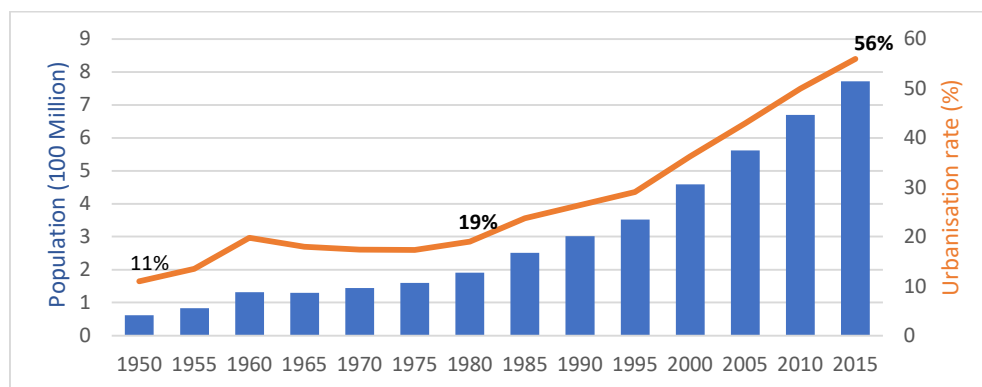


Figure 1: Urbanisation in China from 1950 to 2015. Source: based on National Bureau of Statistics of China (2018).

Urban housing transformation is one of the great changes driven by rapid urbanisation. Since the 1980s, the significant increase in urban housing construction as the standout outcome of the reform policy has been refiguring urban space and social life (Bray, 2005, pp. 166-167). The work-unit (*danwei*), as a typical model integrating work and residence in the socialist period has declined due to the

transition from a planned economy to a market economy. In the 1980s and 1990s, the subsidized housing settlements developed by the public sector were constructed to encourage housing purchasing with the aim to provide low-cost housing for medium- to low-income households (Wang & Murie, 2000). Then, commodity housing (*shangpin fang*), which is developed by real estate developers with the aim to privatise the property market, pushed urban housing development and profitable real estate industry further forward. Commodity housing was defined as the national main industry in the housing policy issued in 1998 and the following two decades have witnessed its dominance in China's booming property market (Fu, Zhu, & Ren, 2015).

Currently, there are two typical residential models in urban China. One residential model consists of mid-rise parallel blocks with an unrestricted street pattern built in the 1980s and 1990s. They were developed by the public sector with the aim of providing a large amount of affordable housing. When it comes to outdoor environments, the design solution was simple. Adding greenery was used as the most effective way to beautify the environment. A large greenspace with services and amenities was usually placed at centre of the complex for social gathering and general recreation for the whole neighbourhood, and a small greenspace was also planned for each cluster of four to six buildings. These open neighbourhoods are called 'old residential neighbourhoods' (Beijing News, 2019). The old neighbourhoods lag behind in housing quality and outdoor environmental quality due to the nature of these not-for-profit housing projects¹ as well as the limitation of the construction techniques and available finance at that time (Rosen & Ross, 2010). An innovative plan was proposed for updating the old residential areas in 2015. The aim of the plan was to improve the quality of housing and outdoor environments for neighbourhoods constructed before the year 2000. About 160 thousand old neighbourhoods and over 42 million families are involved, and these neighbourhoods are scheduled to be updated by 2025 (Beijing News, 2019).

The other model consists of high-rise towers in gated communities mainly built in the last 20 years. Commodity housing developed by the private sector tends to adopt this residential model. Unlike subsidized housing, property developers of commodity housing have the incentive to provide beautiful surroundings to attract potential buyers. The overall physical character of outdoor settings in gated communities can be summarised as 'towers in the park.' Moreover, a huge premium is placed on aesthetically appealing outdoor environments with the aim of selling the estate (Pow, 2009). Gating is commonly employed in these estates as a tool to ensure that only the homeowners have the privilege of using their facilities whilst 'free riders' are kept out (Glasze, Webster, & Frantz, 2004). Table 1 depicts the differences between the two residential models across multiple aspects.

¹ Due to the nature of subsidized housing, the sales price was set administratively at a minimum level needed to recover basic costs. The housing development projects relied on subsidies from central and local governments.

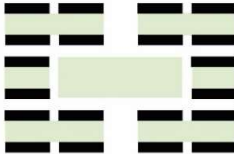
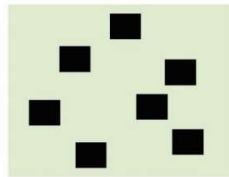
Items		Open neighbourhood	Gated community
Main construction period		1980s-1990s	After 1998
Main housing property & developer		Subsidized housing developed by the public sector	Commodity housing developed by the private sector
Accessibility in general		Open to all	Homeowners only
Situation		Defined as older settlements, have been updated since 2015	Dominating residential development
Physical forms		Mid-rise blocks in a parallel pattern	High-rise towers in the park
			
Density (Floor area ratio)		0.7-1.5	1.5-5
Neighbourhood outdoor environments	Features	Simple landscape architectural design, Adding greenery as the main design solution	Professional landscape architectural design, A park-like outdoor setting
	Underlying reasons	Provision of a large amount of affordable housing	The aim of attracting buyers

Table 1: Comparison of the two residential models

Note: The density data for each residential model are derived from Yang and Chen (2005).

THEORETICAL AND CONCEPTUAL FRAMEWORK

Theories of place attachment, urban spatial design and environment-behaviour studies provide the conceptual framework for this study. Rapid urbanisation as well as the consequent housing transformation have placed great pressure on landscape urban design to provide quality neighbourhood outdoor environments. Central to quality environments is how residents perceive and respond to the settings. Neighbourhood environments provide opportunities for social interaction, recreation and activities, playing a role in people's physical and psychological health. Meanwhile, people ascribe meanings and develop attachment to environments through their experiences (Tuan, 1977). The understanding of how people experience the setting, and how meaning and place attachment evolve is essential for planning and design decision making for a quality outdoor environment.

The concept of place attachment is the foundation of the conceptual framework for this research. Places are not simply locations, but rather "fusions of human and natural order and are the significant centres of our immediate experiences of the world" (Relph, 1976, p.141). Place attachment is "a set of feelings about a geographic location that emotionally binds a person to that place as a function of its role as a setting for experience" (Rubinstein & Parmelee, 1992, p.139), depicting "the bonding of people to places" (Altman & Low, 1992, p.2). Place attachment, as a concept describing people-place relations, encompasses a cognitive-emotional bond that connects individuals and their meaningful environments (Scannell & Gifford, 2014). Place attachment involves both the place features and attachment attributes. Place features explain how physical settings support residents' desired activities,

positive perceptions and consequently meaningful experiences (Williams & Patterson, 2008). Attachment features illustrate the development of emotional or symbolic bonds because of the functional and/or symbolic meanings of place attributes (Najafi & Kamal, 2012).

Both the social and physical qualities of a setting contribute to place attachment. On the one hand, place attachment is socially constructed for humans ascribe meanings to spaces through experiences (Tuan, 1977). On the other hand, people can also be attached to tangible features in physical environments for their symbolic meanings without the social mediation (Stedman, 2003). Place attachment, for instance, is sometimes formed because of the aesthetic value of places (Hwang, Lee, & Chen, 2005), which is shaped by local culture. As a result, in the processes of place attachment, “people confer meaning on the environment in ways that reflect their social and cultural experiences” (Eisenhauer, Krannich, & Blahna, 2000, p.422).

As discussed by Scannell and Gifford (2010), place attachment can be analysed using a tripartite model, consisting of person, place and process. This model considers who is attached, what one is attached to, and how one develops attachment. Lewicka (2011) identifies a problem of disproportion in what we know of these three components in place attachment research. She states that “we know relatively much about who are the attached people, how and how much they are attached, but relatively little about which places have the highest ‘attachment potential’ and through which processes the attachment is achieved” (pp.222-223).

The figure-ground theory provides a way of analysing the role of the physical environment in place attachment from a perspective of spatial design. The figure-ground theory deals with the pattern of solid mass (‘figure’) and open voids (‘ground’) of the urban environment and clarifies the structure and order of defined urban outdoor space (Trancik, 1986). At the scale of an urban district, ‘solids’ refer to object buildings and urban blocks while ‘voids’ refer to unbuilt open spaces including streets, squares, parks and other forms of openings. At the site scale of a site, the definitions will be modified. ‘Solids’ refer to massed plants and water features in addition to object buildings while ‘voids’ include accessible spaces, such as paths and squares. This modification is consistent with the nature of solids and voids. If solid mass is greater than voids in the setting, the spatial continuity is achieved so that the texture fosters pedestrian activity. If voids dominate, the space serves as “a medium of the urban experience” or “a vessel of human gathering” (Trancik, 1986, p.100). Within each category, Lynch (1960)’s theory regarding spatial legibility and place imageability is used to identify key physical features which play a role in people’s love of the place. In addition to the figure-ground theory, the other two theories of urban spatial design- linkage theory and place theory (Trancik, 1986, p.97)- are also considered to add contextual and social components when analysing the physical settings.

Environment-behaviour studies (EBS), develop from the confluence of architecture, landscape architecture and urban design and the social and behavioural sciences and focus on the interdependence of physical and socio-cultural environmental factors (Moore, 2004). This study draws upon the theories of affordances (Gibson, 1979), behaviour-settings (Barker, 1968) and culture-environment relations (Rapoport, 1980). Affordances are the physical characteristics of the environment that are perceived as functionally significant for supporting actions based on the perceiver’s needs. This theory explains how the affordances of physical features with perceptual qualities support certain behaviours (Gibson, 1979). The theory of behaviour-settings explains the relationship between people and the social qualities of environment. According to the theory of behaviour settings, an individual’s behaviour in a setting is not only influenced by physical features, but also other occupants’ collective behaviours (Barker, 1968). Rapoport’s cultural-environment relations theory (1980) is used to explain the role of culture in human perception, cognition and behaviour in an

environment. The cultural-environment relations may underly the symbolic meanings and aesthetic preference which is related to psychological processes of place attachment. The environment-behaviour theories offer empirically based models for conceptualising the complex relationships between individuals, societies, cultures and their environments.

Figure 2 presents a summary for the conceptual framework for this study. This framework will be used to underpin the methodology, method, and data analysis frameworks of this study.

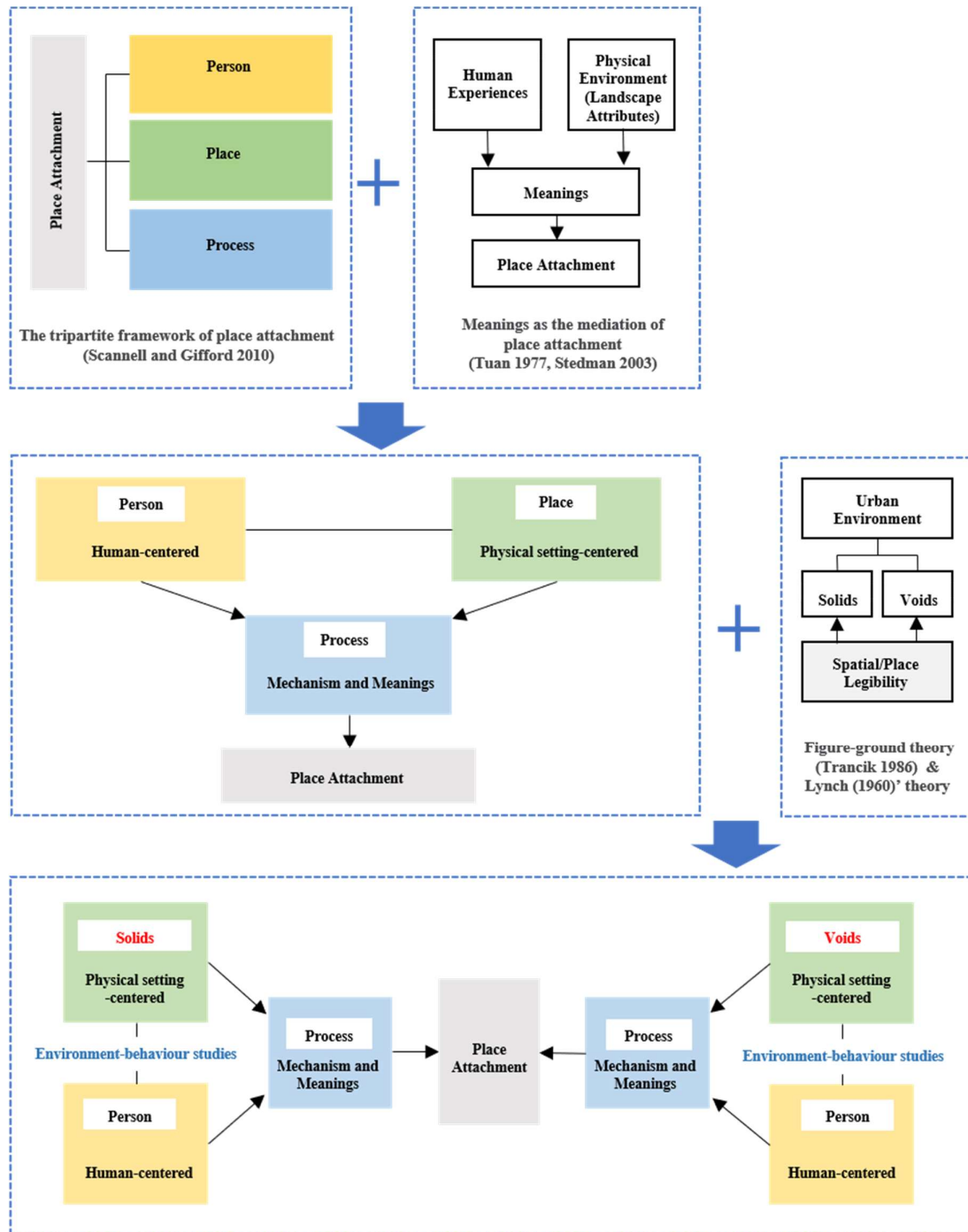


Figure 2: The conceptual framework of this study.

METHODOLOGY AND METHODS

Two neighbourhoods in Qingdao were selected for a comparative case study research design. These cases represent the two typical residential models, respectively. One case is an open neighbourhood built as a demonstration model for nationwide housing reform projects in the early 1990s; it is a typical example of this residential model. It consists of seven clusters of mid-rise (5-7 storeys) buildings with three high-rise (18 storeys) buildings (constructed later after 2000) at the heart. The other case consists of a gated enclave nearby built in 2012, consisting of eighteen high-rise (12- 18 storeys) towers. Figure 3 illustrates the different features of buildings and outdoor settings in the two cases.



Figure 3: An open void surrounded by mid-rise buildings in the open neighbourhood (left) and the central landscaped area surrounded by high-rise towers in the gated community (right).

In terms of the data collection within the case studies, mixed methods including semi-structured interview, questionnaires and participant observation were used. The procedure of the fieldwork in the two cases consisted of two phases, encompassing the use of three methods. The first phase involved a semi-structured interview and a short questionnaire with the same sample group. With a snowball technique, 40 adult participants were selected in total, 20 for each case. Senior residents and women were given more attention for, in addition to children, they tend to be the main group using neighbourhood environments (Marcus & Francis, 1997). The semi-structured interviews were the main method used in this research to explore residents' experiences of neighbourhood environments, offering insight into meanings in place attachment (Van Patten & Williams, 2008). The first part of the semi-structured interview involved the questions relating to their general perception and behaviour in neighbourhood outdoor environments and the second part aimed to explore the physical and social attributes of the place to which participants are attached. After the semi-structured interview, a short questionnaire was used to learn of participants' general usage of the favourite places (Amaratunga, Baldry, Sarshar, & Newton, 2002) and quickly obtain basic information, such as age and occupation (Richards, 2014). Their evaluation of the favourite places, and the degree of attachment to the favourite place as well as the neighbourhood were also measured using a Likert scale in the questionnaire (Mesch & Manor, 1998).

The second phase was participant observation of the outdoor settings surrounding or embedded in each of these residential models. For research on outdoor spaces, participant observation has been used frequently to add subjective responses to the objective observations (Marcus and Francis 1997). The selection of the sites for participant observation was driven by the information provided by

participants in the interview. Participant observation was conducted at different times both on weekdays and weekends. A site plan was created, subjective sensory elements and objective activity observations were recorded, and the areas were photographed.

At this stage, interview analysis has been partially completed. All interviews were transcribed by the researcher and the interview transcriptions were analysed using NVivo software. Thematic analysis will be used to analyse the interviews (Braun & Clarke, 2006) using the conceptual framework to provide the major and minor themes. The questionnaire data will be processed in SPSS software. The data derived from participant observation will be analysed in terms of both physical and behavioural aspects using a framework from the post-occupancy evaluation guide suggested by Marcus and Francis (1997). For the former, a contextual map will be drawn to show the physical and social features of the surrounding areas and a site plan will also be used to illustrate the built form, design features, functional sub-areas and sensory elements. For the latter, an activity mapping will be used to show the usage pattern of the site. Then, the data will be triangulated across the three research methods for each case. Finally, findings will be compared between the two cases for discussion and conclusion.

PRELIMINARY RESULTS AND THE POTENTIAL CONTRIBUTION OF THE STUDY

Early stage analysis of the interview data reveals that physical attributes influence people's place attachment in neighbourhood outdoor environments. In the case of the open neighbourhood, some participants expressed their attachment to a natural setting featuring diverse trees and water, expressing their appreciation of nature. These residents tend to walk around the setting on their own, enjoying a beautiful and peaceful atmosphere. By contrast, some other participants from the same community ascribed attachment to an open void where they participate group activities, such as *Tai-chi* and square dancing. They expressed their social connectedness with the group and some significant group members.

The differences mentioned above implied that the impact of physical attributes on place attachment may be associated with the affordances of the physical settings. The setting dominated by natural elements (solid mass) is more likely to afford spatial continuity and pedestrian activities (Trancik, 1986). The experiences in the setting are based on the person-environment interactions and place attachment also develops from these experiences. By contrast, the setting dominated by open voids is more likely to afford human gathering and social interactions (Trancik, 1986). Place attachment in this type of settings is more about interpersonal interactions and social constructions. As a result, it can be hypothesised that there may be associations between physical attributes and processes of place attachment.

CONCLUSION

This study investigates how people develop place attachment to shared outdoor environments in two high-density residential models in urban China. A comparative case study was selected as a research design and three methods were used for data collection. The early stage of interview analysis reveals that there may be associations between spatial design and processes of place attachment for affordances of solid-void patterns influence residents' experiences in the setting. Then, the complete interview analysis is expected to further involve the impact of specific environmental attributes on place attachment. The findings from the other two methods will be triangulated with the interview analysis results to obtain the final findings. The final outcomes will have the potential capacity of

understanding the role of neighbourhood outdoor spaces in place attachment across the physical, social and cultural aspects within the Chinese context.

The new points for future studies might be derived from a reflection on the implications of the COVID-19 pandemic. The pandemic has affected residents' uses of outdoor environments, well-being and their place attachment, especially for those living in high-density residential neighbourhoods. Currently, billions of people around the world have been ordered to stay home to help reduce the spread of coronavirus disease. People have limited opportunities to go outdoors for recreation and the pandemic might pose negative impacts on community interactions in shared neighbourhood spaces as use of these settings may be associated with fears of contracting the virus from others. These challenges might threaten residents' place attachment in neighbourhood environment.

On the other hand, place attachment as a positive person-place bond might help reduce the negative impact of pandemic on residents' well-being. Since COVID-19 spread earlier this year in Qingdao, many senior residents have been organising virtual square dances on TikTok and communicated with other group members through Wechat. They have attempted hard to preserve their daily activity as well as the bond with significant others. Moreover, the pandemic may introduce residents to a new pattern of localised outdoor use and be the motivation for an enhanced relationship with their outdoor settings as the pandemic has driven up the value of natural environments in dense urban areas.

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