Design for Social Capital: Improve Community Welfare for Left-behind Children in Rural China

Siqing Chen
Faculty of Architecture, Building and Planning, University of Melbourne, Parkville, Australia
E-mail: chens@unimelb.edu.au

Yang Li
Email: liyang103127932@163.com

Correspondence: chens@unimelb.edu.au (S. Chen)

ABSTRACT

China’s urbanisation in the past decades has been mirrored by large scale rural-urban migration. During this process, hundreds of millions rural inhabitants move to cities for better employment opportunities while leaving their children behind in rural villages. The separation with parents causes negative transformation of family welfare supply structure. As a result, many “left-behind” children (LBC) display characteristics include loneliness, misconduct, low self-esteem, and crime tendencies. Based on welfare pluralism theory, this paper uses GIS-based planning and design approaches to improve social welfare for LBC in rural China. Using a case study in Hubei Province, we demonstrate that LBC welfare can be improved by increasing community social capital through the provision of functional and child-friendly public space in rural villages. This study provides useful insights to issues surrounding LBC through the lens of planning and design. We hope it will inform similar endeavours aiming at improving LBC welfare in other villages in rural China.
1. Introduction

During China’s rapid urbanisation and economic development, hundreds of millions of rural inhabitants migrated into cities for employment opportunities while leaving their children to be cared for by grandparents or other relatives in rural villages (Li et al. 2015; Loosee and Yao 2012). Left-behind children refer to the underage children below sixteen years old with one or two parents working outside and were left behind at the place of household registration (Duan and Zhou 2005). According to the statistics of Women of China, there are approximately 61 million of LBC in China in 2016. Many LBC can only see their parents once a year. The primary cause of this phenomenon is that in the Chinese urban-rural dual economic structure - the income inequality gap between rural and urban areas attracts rural parents migrated to urban areas for employment opportunities with higher income, and Chinese household register system restrains the education and healthcare of migrant labourers' children (Wan 2016; Loosee and Yao 2012). Thus, these children have to be left in rural villages.

The lack of parental company and parent-child contact from parents in long-term make them prone to psychological, physical, behaviourul, social and academic problems (Meng et al. 2011; Zhang et al. 2015; Wang and Guo 2010). These children suffer higher levels of loneliness, depression and anxiety compared with non-LBC and some of them have the suicidal tendency as well as the addiction to tobacco, alcohol and the internet (Jia and Tian 2010; Dong and Yuan 2013; Li 2009; Gao et al. 2010). These problems and inadequate academic assistance from parents at homes further cause the LBC's educational underperformance than their counterparts from empirical evidence (Hu and Li, 2009; Li and Wen, 2009).

Although LBC are currently facing a variety of issues, their welfare can be improved by increasing community social capital theoretically. From the perspective of welfare supply, the major cause of the problems of LBC is that the separation and alienation between parents and children lead to the negative transformation of family welfare supply structure, which results in family welfare supply deficiency, resulting in low educational results, misconduct, social isolation and low self-esteem et al (Wan 2016). Jack and Jordan (1999) argue that "children's welfare is primarily related to the social capital of communities that is, the cultural resources and interpersonal bonds shared by members". The theory of welfare pluralism argues that children's welfare is not only received from families but also from the communities, states, nations and voluntary organisations (Wan 2016). Therefore, communities, the most familiar and relevant social context for children's growth, become another major welfare supply source. In this paper, we first describe the theoretical framework of social capital and community public space, then proposes essential design principles for improved social welfare outcomes. Finally, we apply these principles to design convertible public space in Tongling village, Jingzhou district, Hubei province in China, aiming to improve the welfare of local LBC by increasing community social capital.

2. Research Design

2.1 Theoretical framework

The concept of social capital has developed for decades without a universally accepted theory. The analysis of social capital by Pierre Bourdieu (1986) is often seen as the first systematic contemporary analysis of social capital, which defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual recognition". It is then distinguished from the physical and human capital by Coleman (1990), who defines social capital as "social resources inherent in social relationships that facilitate a social outcome". In addition, Putnam explained social capital as a “feature of social organization, such as trust, norms and networks, which can improve the efficacy of society by facilitating coordinated actions” (Putnam 1993), and it is generated at any level of social aggregation in a range of social contexts (Parcel and Menaghan 1993; Coleman 1990).

Social capital is constituted and categorised from four dimensions: cognitive, structural, bonding and
bridging (Murayama et al. 2012). Cognitive social capital refers to interpersonal trust, sharing, reciprocity among a group of members. Structural social capital has been described as the density of social networks or the pattern of civic engagement. Bonding social capital describes the relationships within homogenous groups, in which members are similar concerning social characteristics such as age, ethnicity and social class. Family members and neighbours, for example, are usually classified in homogenous groups. Bringing social capital generates between individuals who are dissimilar concerning social identity and power (Murayama et al. 2012). From the analysis of the characteristics of social capital, the community social capital can be built from increasing the trust, share, reciprocity, sense of belonging and the social connection among community members, while the public space possesses this potential.

Increasing community social capital by public space is mainly through attracting and connecting people in the designed places while providing opportunities for conducting appropriate social interaction and social activities that are beneficial for facilitating reciprocity and trust in their everyday life. Public space offers opportunities for people to catalyse social interaction, conduct community activities together, enhance social networks, commit themselves to each other and build cohesive communities (Carmona et al. 2010; Ijla 2012). The community social capital, level of trust and social networks are improving during the process of social interaction (Ijla 2012). Many scholars have demonstrated the importance of public space in creating social capital. For example, Barliana, Cahyani and Paramite (2014) compared three cities in Indonesia (Bandung, Surabaya and Surakarta) and they concluded that the level of social capital is high with public spaces where people like to use and the reinforcement of social capital occurs as a result of the community involvement and various activities in public spaces.

Therefore, in order to improve the welfare of LBC, increasing community social capital through the design of public space is a viable approach. The design needs to focus on connecting local inhabitants to improve their social networks and provide social activities which are beneficial for promoting the development of reciprocity, level of trust and sense of belonging. As the everyday life, social norms and lifestyles vary in different areas; the design should embrace the bottom-up design process and consider local culture and daily life of local inhabitants. The next section will apply the theoretical research discussed above in practice through an experimental design of a rural public space that increases community social capital for improving the welfare of LBC in Tongling village in rural China.

2.2 Public space design principles for improved community social capital

Based on the analysis of theoretical research and the village context, we propose a set of principles for designing public space which can serve to increase community social capital in Chinese rural villages. These principles include inclusiveness, accessibility, safety, playability, temporality and engaging with the daily life of LBC and other local inhabitants.

Engaging with the daily life of local inhabitants

The public space for building community social capital is a space for the social interaction of local community members, whose social behaviours, social norms and public life usually vary in different cities and villages. In order to design a space that satisfies the needs of local inhabitants and provide more social opportunities, it is necessary to understand their daily life as they are the users of the places with distinct cultures, lifestyles and behaviours (Carmona et al. 2010, Gehl and Svarre 2013). In this way, the designed public space is possible to be an integrated part of their daily life, increasing the extent of usage of the designed area.

Inclusiveness

Even though the purpose of this project is to improve the welfare of LBC but the design should not be exclusive and only for LBC. The reason is that the increase of community social capital needs social interaction and the participation of all community members. If the design is just for children, it could not
attract other residents to conduct social interaction. In the village context, only when LBC, non-LBC, the elderly and local farmers like to use the public space, participate in a range of social activities, communicate, trust and share with each other, the community social capital can increase persistently and incrementally. Thus, inclusiveness is an indispensable part of this design.

Accessibility

Accessibility is crucial in public space for increasing community social capital. Public space with environmental barriers including narrow gateways, slippery paths, loose or sandy terrain, uneven surfacing and high curbs with risk of falls restrict the social interaction and participation of both adults with disabilities and children in playing activities (Rimmer et al. 2004; Perry et al. 2018). In other words, accessible public space provides more opportunities for the public including the disabled to use and engage in the social activities. In rural China, most of the LBC is taken cared by grandparents and some of them are old and have mobility difficulties. Therefore, in order to enable the elderly, adults and children to encounter and participate in social activities in the public space easily, the site should be accessible.

Safety

Creating a sense of safety is a primary requirement in many public spaces and enhancing public security is a way to provide more opportunities for increasing socialisation and social capital (Harvard Graduate School of Design 2014). The perception of lack of safety will influence the extent to which the public realms are used (Carmona et al. 2010), which in turn restricts the increase of community social capital. This principle becomes more important in when children are the main users of this type of public space as generally, they are easier to be injured without the supervision of parents. This principle should also be embedded in the selection of plants, materials, forms, lighting and the programs in the design.

Playability

The primary users of the public space are children and the increasing social capital through the public space is based on the situation that children use and like the designed space. The play is probably the most attractive method for children to enter and stay in the area. A well-designed playing environment can provide opportunities for children to acquire experience and develop skills including cooperation and social interaction (Wardle 2000, Kraft 1989), which directly affect the increase of social capital. Besides, the playing activities in this public space should be different from traditional playgrounds because they restricted children's activities to particular functional play and facilitated competition rather than cooperation (Hayward et al. 1971, Barbour, 1999). As the aim of this public space is to increase social capital, the playing programs will relatively focus more on promoting cooperation, communication and interaction.

Temporality

This design is not static but changeable in the different time with different social activities. Time and space are interrelated, and the use of environments changes over time (Carmona et al. 2010). In the village, children need to study in schools during weekdays, and others need to conduct agricultural production activities. Some people like the physical exercise in the morning while some people prefer walking after dinner. They use the space in different time with various functions. Thus, it is important that considering what they do in particular time and what type of space and form can satisfy their needs and provide more opportunities to increase social interaction.

2.3 Study area

Tongling village, a small agricultural village located in Jingzhou district in Hubei province in central China (Figure 1), is selected as the case study. There are 19 LBC living in this village and their parents are working in cities in Guangdong and Zhejiang. The average age of the 19 LBC is eight. Specifically, there are three
children in the age group between 0-3 and 4-6 separately, five children between age 7-9 and there are eight children in the category of 10-14 years old. Even though the local government proposes a series of policies for improving their living conditions and care-giving situation, these kids are still suffering from different levels of loneliness and low educational support based on an informal conversation with local inhabitants and local government officers. Therefore, alternative attempts to resolve these issues should be encouraged.

This project proposes that designing a public space as a medium to connect local inhabitants, increase community social capital, and facilitate the social interaction and communication between LBC, non-LBC and other local inhabitants.

![Fig. 1. The location of Tongling Village](image)

3. Results

3.1 Site Selection

This project applied the principles discussed above in the design of a public space experimentally during the process of site selection, site analysis, design concept and design development. First of all, selecting a suitable site is crucial for the design. The site selection of this project is based on the tool of weighted overlay in Arc GIS with five selection criteria including proximity to living locations of LBC, accessible walking area, respecting existing land use, topography, location of frequent activities (Figure 2).

Residential locations of LBC.

The majority of LBC in this village are living in central and eastern areas along the major road (Figure 02). This spatial arrangement of their living locations will be the basic element for analysing the accessible walking area in next step.

Walking accessibility

The walking area of local LBC has been classified as three types, including 2 minutes, 5 minutes and 10 minutes walking areas. The walking area in each category is calculated by route analysis tool in Arc GIS. It uses the living locations of LBC as central points and calculates the areas that children can walk within 2
minutes, 5 minutes and 10 minutes respectively based on their general walking speed and existing form of paths and roads in the village. Figure 03 shows the results of accessible walking area of LBC in each category.

Topography

As one of the design principles is inclusiveness, which means the site should be accessible for all inhabitants including the elderly. Thus, the slope of the site needs to be gentle for a range of users. Figure 04 shows that the slope of most of areas are between 0-2 degrees and the mountainous area is located at the west of the village, which would not be suitable for fostering social interaction of all local inhabitants and these areas are less weighted during overlay process.

Frequent playing area

Play is the most attractive feature of public space for children generally. After interviews and conversation with local inhabitants and children, they usually play hopscotch, mud, water, hide and seek in the areas shown in figure 05. This data will have more weight than others as this is where children like to spend their spare time after studying in schools.

Respecting existing land use

Most of lands are farmlands and fish ponds for agricultural use. For minimising the destruction for local agricultural production. The site selection will avoid using farmlands as the site when distributing weights in overlay process or retaining existing farmlands with design tactics if the most suitable area is farmland.

Overlay result
By utilising weighted overlay in ArcGIS, the most suitable area for the design is selected (Figure 2), which is a concrete square located in the central village. The area of the square is approximately 3380 m² with concrete surface surrounded by farmlands, houses and a village clinic. It connects a large area of lavender field and the main residential area. People usually use the square for playing badminton, meeting friends and playing outdoor games by children such as hopscotch and hide and seek.

![Figure 2. Site selection (f) using spatial overlay of LPC locations (a), walking accessibility (b), Topography (c), Visiting frequency (d), and exiting landuse (e).](image)

The most suitable site is selected for designing the public space. Community social capital is usually measured from the factors of social cohesion, civic engagement, social norms, social support and cognitive social capital such as trust, sharing and sense of belonging to the community (Wu et al. 2015; Carrillo and Riera 2017). Hence, to build and increase community social capital, this public space needs to focus on facilitating social interaction among local children, grandparents and adults. In addition, as the social interaction is various in different contexts and it is embedded in their daily life and socialization methods, thus, analyzing and understanding everyday life of local children and other inhabitants is significant for designing a public space specifically for the people in this village. When the designed space becomes a part of their daily life, the social interaction between them will occur naturally and persistently.

### 3.2. Conceptual Design

The public space in this rural village fulfils the following functions.
Convertible playing space

The convertible playing space is constituted by designed playing space, which retains current playing activities in the site such as badminton and hopscotch, with different size of straw bales for various ages of children. There are a large number of straws in the village, which can be processed to hay bales. These straw bales can be assembled to various forms by children themselves based on their imagination and the types of games they want to play. For instance, two or three straw bales combined horizontally can be a bench for them to sit and relax. A few hay bales stacked to become a simple wall and a few walls create a space for children to play hide and seek such as a small maze with the different spatial organization based on children's creativity. More importantly, the creation of spaces by straw bales requires children's cooperation and the social capital between children will generate during the playing process.

Performative space

Performance is an iconic and typical characteristic of the local culture. The performative space is mainly used during traditional Chinese festivals, which provide an opportunity that all local inhabitants can gather and conduct social interaction. The performative space and playing space can be converted mutually. During local festivals, the straw bales can be assembled to rows of seats that allow the public to seat while watching the performance. These types of collective events are beneficial for enhancing their social networks and increasing community social capital.

Farmers' relaxing space

The design of farmers' relaxing space is mainly for local adults and the elderly to conduct outdoor social activities and to relax after daily farm works based on the analysis of their everyday life. It is an outdoor space that local farmers can chat, drink tea, playing Chinese chess and cards. These recreationally social activities usually occur in their houses, and there is no public space in the village for them to enjoy the happiness of these day-to-day activities in outdoor space. Thus, this area provides the opportunity that local adults and the elderly can conduct daily social events to improve their structural and cognitive social capital.

Educational space

From the above daily life analysis of LBC, the supportive educational activities are crucial for both assisting the education of LBC and increase community social capital during the collective teaching and learning process. This space is constituted by indoor and outdoor spaces for satisfying different educational demands and ignoring the limitations of weather. It can also be converted to playing area after the informal class through the moving and assembling straw bales by children themselves. The community social capital can be increased incrementally through this long-term educational and play programs.

![Fig. 3. Conceptual plan of the public space](image-url)
3.3 Materiality

One of the most common, affordable, and easily available local material-straw bales – is selected for creating a convertible public space that serves to increase community social capital by providing opportunities for children, adults and the elderly to conduct various social activities, enhancing their social interaction, communication, trust and sense of belonging incrementally. The selection of materials and plants in this project is informed by the principles of safety, temporality and local identity. From the site visit, there are many local waste materials after construction including red bricks, grey bricks and timber. These recyclable materials are used in this design. Local inhabitants can join in the recycling and constructing processes, which allows local children and farmers to participate in the construction process of this public space. The connection between people and the place generated during this process, which is beneficial for increasing sense of belonging and cognitive social capital during this process.

Fig. 4. Convertible design of the public space

4. Discussion

Convertibility is embodied in two factors. On the one hand, the form of playing space is convertible. Children can move and stack straw bales, which are similar to the building blocks of Lego to create their desired shapes and spaces collectively such as a maze for playing hide and seek. On the other hand, the functions of the space are convertible. It can be converted to playing space when children have time to play, educational space that local mentors can impart knowledge to children and answer questions about their study, relax space that local farmers and the elderly can relax, chat, drink tea, enjoy sunshine, playing chess games, and performative space in order to celebrate local traditional festivals. In the situation of family welfare supply deficiency, the community welfare supply becomes critical to children's wellbeing. Currently, the improvement of their living status is mainly through policies, economic assistance and various social programs of voluntary organisations. Most of the scholars study this issue from the perspective of sociology
and provide the suggestion for policy-making, and studies from the perspective of planning and design are relatively lacking. This paper fills the knowledge gap by improving the welfare of LBC in rural China by increasing community social capital through a designed public space.

5. Conclusion

This study indicates the achievability of improving the welfare of LBC by increasing community social capital through the design of public space in a Chinese rural village. By doing so, the public space is deployed to connect local inhabitants, facilitate social interaction and provide social activities for improving the reciprocity, social connections and the level of trust between LBC and other community members. Public space is capable to improve social cohesion of a community by providing a range of collective social activities that enhance the social interaction of the public. The trust, share, reciprocity and the relationship between children and other local inhabitants can be built and improved incrementally during the long-term social interaction in their daily life. In addition, the GIS-based spatial overlay of all relevant spatial data associated with each design principle enables the validity and functions of the design, that is to increase community social capital including inclusiveness, accessibility, safety, playability, temporality are general factors that the design need to consider but more importantly, this type of design needs to respect local culture and the daily life of local inhabitants as each Chinese rural village has different culture and characteristic, while the people in different villages have their own lifestyle. Therefore, in order to design a public space that can serve to increase community social capital and welfare for LBC, one must consider the economic, geographical, cultural and social context of the rural village based on a bottom-up design process.

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Author/s:
Chen, S; Li, Y

Title:
Design for Social Capital: Improve Community Welfare for Left-behind Children in Rural China

Date:
2019

Citation:

Persistent Link:
http://hdl.handle.net/11343/225688

File Description:
Published version