



This is a repository copy of *Urban planning exhibition halls in the Pearl River Delta for planning communication and public participation*.

White Rose Research Online URL for this paper:
<https://eprints.whiterose.ac.uk/215770/>

Version: Published Version

Book Section:

Lu, X., Hehl-Lange, S. and Lange, E. orcid.org/0000-0002-2917-697X (2023) Urban planning exhibition halls in the Pearl River Delta for planning communication and public participation. In: Nijhuis, S., Sun, Y. and Lange, E., (eds.) Adaptive Urban Transformation: Urban Landscape Dynamics, Regional Design and Territorial Governance in the Pearl River Delta, China. The Urban Book Series . Springer International Publishing , pp. 195-205. ISBN 9783030898274

https://doi.org/10.1007/978-3-030-89828-1_10

Reuse

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial (CC BY-NC) licence. This licence allows you to remix, tweak, and build upon this work non-commercially, and any new works must also acknowledge the authors and be non-commercial. You don't have to license any derivative works on the same terms. More information and the full terms of the licence here:
<https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

Chapter 10

Urban Planning Exhibition Halls in the Pearl River Delta for Planning Communication and Public Participation



Xi Lu, Sigrid Hehl-Lange, and Eckart Lange

Abstract Planning exhibitions are one of the tools for raising awareness and civic engagement in urban planning, yet their effectiveness has hardly been examined in practice. This study aims to quantify the impact of the urban planning exhibition halls (UPEHs) in China on planning communication and public participation. The Guangzhou UPEH, a vital knowledge hub in the Pearl River Delta (PRD), is used as a case study. Using a repeated measures design, 115 adult visitors to the Guangzhou UPEH were randomly recruited and surveyed before and after visiting. Participants' knowledge of and degree of involvement in urban planning significantly improved after their visits. Levels of education, prior knowledge and visiting length were found to influence specific dimensions of knowledge acquisition. The study highlights implications for the potential of planning exhibitions for better engaging with the general public in the planning process.

Keywords Planning communication · Public participation · Urban planning exhibition hall

10.1 Introduction

Engaging the general public at a higher rung of Arnstein's (1969) ladder of citizen participation remains an important challenge in contemporary planning processes (Tewdwr-Jones et al. 2020). Enhanced public awareness is necessary for fostering a better understanding of the value of planning and progress (Council of Europe, 2004, 2008). Internationally, the role of planning exhibitions towards increasing

X. Lu (✉)

College of Landscape Architecture, Nanjing Forestry University, Nanjing 210037, China

e-mail: luxi@njfu.edu.cn

S. Hehl-Lange · E. Lange

Department of Landscape Architecture, The University of Sheffield, S10 2TN Sheffield, UK

e-mail: hehllange@gmail.com

E. Lange

e-mail: e.lange@sheffield.ac.uk

© The Author(s) 2023

S. Nijhuis et al. (eds.), *Adaptive Urban Transformation*, The Urban Book Series,

https://doi.org/10.1007/978-3-030-89828-1_10

civic engagement and communication in urban planning has been highlighted in a series of theories and practices. From the ‘White City’ presented in the 1893 World’s Columbia Exposition in Chicago, to the prototype of the ‘Outlook Tower’ in Edinburgh by Patrick Geddes (1915), to the ‘Futurama’ ride in New York’s World Fair in 1939, to ‘Barcelona in Progress’, a permanent exhibition featured in a 1:1,000 scale city model in 2004, to the concept of the ‘Urban Room’ proposed by Farrell (2014) and implemented in over 15 cities and towns in the UK (Tewdwr-Jones et al. 2020), various forms of past, present and future urban change have attracted visitors through diverse media.

Planning exhibitions worldwide vary due to the differences in funding bodies and planning systems (Tewdwr-Jones et al. 2020). The urban planning exhibition halls (UPEHs) in China are a similar example, which differ from others in terms of their huge number and scale. Since the first UPEH was built in Shanghai in the late 1990s, it has spread over the country at an unprecedented rate, totalling 880 UPEHs by 2017. The UPEH provides a platform to understand the past, present and future of a specific geographical area (Lu et al. 2020). As stated by the China Association of Urban Planning (CAUP 2007), the mission of the UPEH is to enhance planning communication and public participation, while some scholars have seen it rooted more in top down hierarchical power and city branding (de Jong et al. 2018; Fan 2014; Lai 2009).

Until now there is a considerable gap in knowledge about UPEHs and they have hardly been examined in practice, particularly from a quantitative perspective. Therefore, this study seeks to quantify the effectiveness of the UPEH in planning communication and public engagement. The contextual model of learning by Falk and Dierking (2016) provides a theoretical framework for understanding the dynamics of the individual learning process and outcome, in the example the UPEH suggesting that participants’ knowledge acquisition is jointly affected by their personal, social and physical contexts. The study focuses on two questions: (1) Are there differences in the knowledge acquisition and participation level in urban planning before and after the public’s visit to the UPEH? And if there are, (2) How do personal, social and physical factors interact with their changes in knowledge and participation in the UPEH?

10.2 Methods

10.2.1 Case Study

The Pearl River Delta (PRD) region refers to the dense city network in the Guangdong Province, including Guangzhou, Shenzhen, Zhuhai, Dongguan, Zhongshan (<https://en.wikipedia.org/wiki/Zhongshan>), Foshan (<https://en.wikipedia.org/wiki/Foshan>), Huizhou (<https://en.wikipedia.org/wiki/Huizhou>), Jiangmen (<https://en.wikipedia.org/wiki/Jiangmen>) and Zhaoqing (<https://en.wikipedia.org/wiki/Zhaoqing>) with approximately 78 million inhabitants. It includes the Special Administrative Regions

Table 10.1 UPEHs in the Pearl River Delta

City	Name	Year of opening	Floor space (m ²)	Media richness	Social impact	Accessibility
Dongguan	Dongguan Urban Planning Exhibition Hall	2017	15,000	***	**	***
Foshan	Foshan Urban Planning Exhibition Hall	2019	20,000	***	**	***
Guangzhou	Guangzhou Urban Planning Exhibition Hall	2018	84,000	***	***	***
	Nansha Pearl Bay Exhibition Hall	2016	3,800	**	*	*
Hong Kong	Hong Kong City Gallery	2012	3,000	*	**	***
Shenzhen	The Museum of Contemporary Art & Planning Exhibition	2020	88,185	***	***	**
	Bao'an District Urban Planning Exhibition Hall	2016	5,300	**	*	**
Zhuhai	Zhuhai Hengqin Urban Planning Exhibition Hall	2012	22,242	**	*	*

Note “*” to “***” indicates performance in the particular parameter, verified by the fieldwork of the first author

(SARs) of Hong Kong and Macau as well. There are a total of eight UPEHs in this region (Table 10.1). Using parameters including exhibition size, media richness, social impact and accessibility, the Guangzhou UPEH was selected as a focus of this study (Fig. 10.1). It occupies an exhibition area of 30,000 square metres and contains 119 sets of exhibitions over four floors. The exhibition content covers a range of topics regarding the past, present and future of Guangzhou, such as history, geography and culture, future planning, transportation, utilities and landscape environment.

10.2.2 Methodological Framework

Drawing on Falk and Storksdieck (2005), a repeated measures design approach was adopted to examine whether there are changes in knowledge and participation in

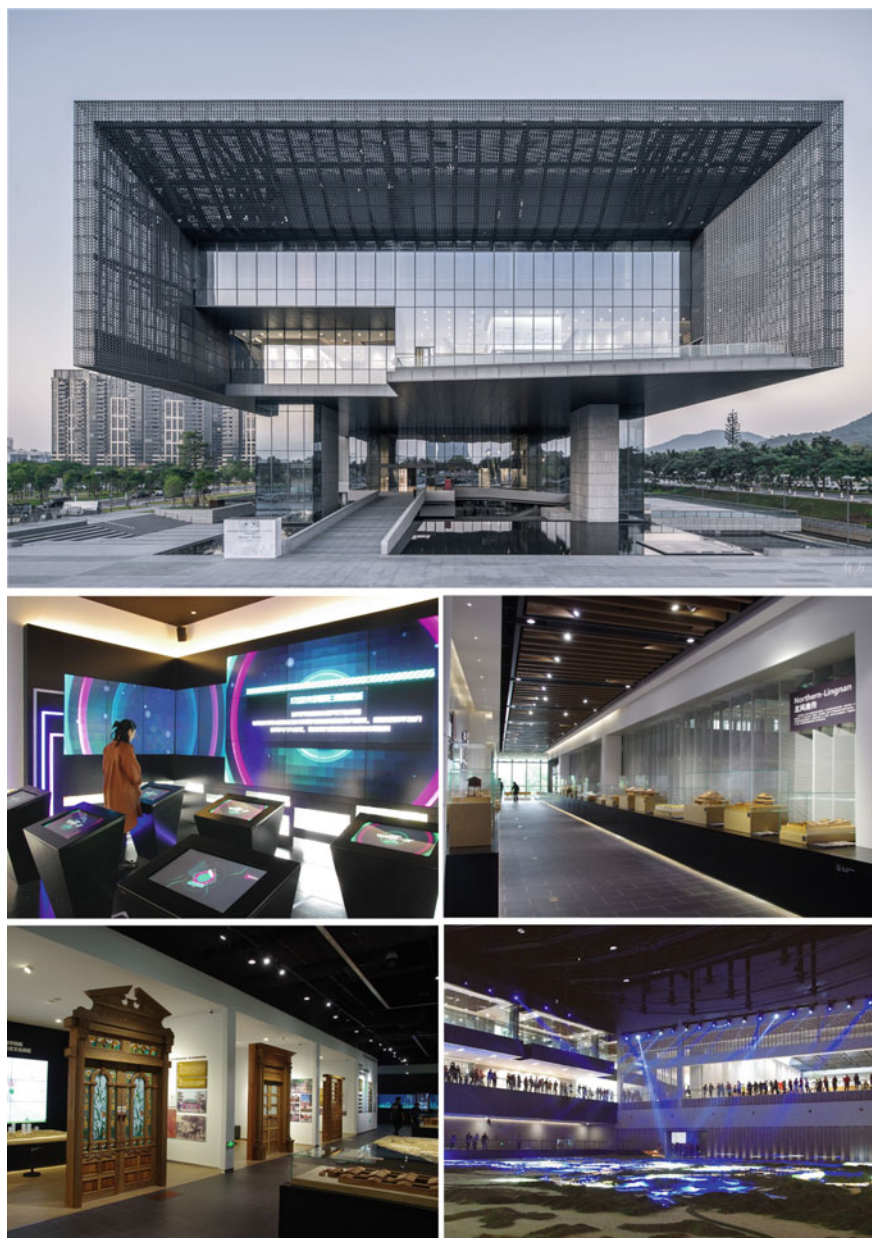


Fig. 10.1 The Guangzhou UPEH and selective exhibits within it. *Photos Xi Lu*

Table 10.2 Framework of research method

Group	Before visits	During visits	After visits
Experiment group	Personal info Self-assessment Test questions	Walking interview Record their time of duration in each exhibit	Re-evaluate self-assessment Revise test questions
Control group	Personal info Self-assessment Test questions	N/A	Re-evaluate self-assessment Revise test questions

urban planning after people spent time in the Guangzhou UPEH. Participant selection was designed to be unbiased and representative of the typical visiting public of the Guangzhou UPEH. One adult from every fifth group of visitors was randomly approached at the UPEH entrance and invited to participate in the experiment. As is shown in Table 10.2, participants were classified into two groups. The experiment group ($n = 55$) received questionnaires before and after their visit and a walking interview during their visit. The control group ($n = 60$) completed a questionnaire before and after their journey without the researcher's presence. The walking interview data is discussed by Lu et al. (2020), and the primary focus of this study is on the data collected before and after visiting.

Building upon Falk and Dierking (2016), we collected participant data regarding personal, physical and social-cultural dimensions before and after their visits. This included age, gender, education level, familiarity with the city, prior knowledge, whether they came alone or with a group, if they were guided or not, researcher presence and the total length of their time in the exhibition.

Three types of measurements of knowledge acquisition with varying complexity were used before the journey: (1) a self-assessment of participant knowledge level based on a Five-Likert scale from 'minimum or none' to 'very high', (2) nine single-choice questions based on different facts about urban planning in Guangzhou and (3) an open-ended question to test participants' comprehension of different knowledge dimensions of urban planning in Guangzhou. The questions were discussed with the local staff to ensure that they covered the key points as conveyed by the exhibition. Concerning visitors' level of participation in urban planning, a self-assessment was conducted based on a Five-Likert scale ranging from none or minimal participation, informed about planning, involved in consultation and collaboration with others, to empowerment (Arnstein 1969).

Upon finishing their journey in the Guangzhou UPEH, the questionnaire was shown again to the participants. Given the time limitation and possible fatigue for repetitive work, they were asked to re-evaluate their knowledge level and participation extent in urban planning, revise their answers for the single-choice questions and supplement their responses to the open-ended questions.

10.2.3 Data Analysis

The personal, social and physical factors were calculated through descriptive analysis in SPSS version 26. The participants' self-assessment data on their knowledge and participation levels was analysed on a basis of 1–5. Single-choice questions were evaluated according to the standard answers with a score of one for a right answer and zero for a wrong answer. Drawing on Falk and Dierking (2016), the open-ended question results were measured by the breadth and depth of the answers. The breadth of responses is defined by the number of conceptual categories proposed by participants. The score ranges from 0–8, representing the answer out of a total of eight non-overlapping categories in the exhibition, including urban development and layout, future planning, economy and geography, landscape and environment, history and culture, historical preservation of ancient buildings and districts, transportation and utilities. The depth of responses is classified into six levels based on the level of detail and sophistication in the answers provided within each conceptual category. A score of 0–5 was used to represent the level of detail ranging from none, extremely limited, somewhat limited, generally adequate and fairly good to excellent. The user data was scrutinised and measured using the aforementioned standard and cross-checked by a research assistant.

To examine the difference between the outcomes prior to and after their visit, as well as the influencing factors on the changes in learning and extent of participation, the normality of participants' scores in different parameters was first measured with the Shapiro–Wilk test (Field 2013). The dependent variables were not distributed normally; thus, the Wilcoxon Signed Ranks Test was used to analyse the difference in mean scores and evaluation levels before and after their visit. The ordinal regression was used to examine the effects of different personal, social and physical factors on changes made in their self-assessed knowledge level, participation degree and single-choice questions. The Analysis of Covariance (ANCOVA) was used to detect the difference between the means of different independent groups for the open-ended questions.

10.3 Results

Between the data collection period from October 2018 to January 2019, there were altogether 115 effective participants involved in the experiment. The personal (age, gender, education level, occupation and familiarity with the city), social (if they came alone or with a group, if they were guided or not and researcher presence) and physical (visit length) factors that were hypothesised to influence the outcomes in learning and level of participation are shown in Table 10.3. Prior knowledge, as an additional hypothetical influencing factor, was determined by the participant's score before each visit.

Table 10.3 Personal, social and physical environment of the UPEH

	Factor	Number	Proportion (%)
Gender	Male	62	53.9
	Female	53	46.1
Age	18–34	73	63.5
	35–54	31	27
	55 +	11	9.6
Level of education	High school, college and below	18	15.7
	University	70	60.9
	Master's and above	27	23.5
Familiarity with the city	Foreigner and people from SARs	4	3.5
	Visitors from mainland China excluding Guangzhou	24	20.9
	Local (<5 years)	23	20
	Local (>5 years)	64	55.7
Occupation	Government official	8	7.1
	Professionals and students in the built environment fields	16	14.2
	Professionals/students in the media/interior field	13	11.5
	Investor/businessman/policy-related	6	5.3
	Others	70	61.9
Researcher presence	With researcher	55	47.8
	Without researcher	60	52.2
Come alone or with a group	Alone	29	25.4
	In a group without kids	65	57
	In a group with kids	20	17.5
With guide or not	With guide whole process	14	12.4
	With guide periodically	7	6.2
	Without guide	92	81.4
Visiting length	0.13–4.5 h	115	100

The participants' knowledge levels significantly increased in all three tests. The mean score of self-evaluation of knowledge ($M = 2.91$) after visiting was 0.8 points higher than the prior self-evaluation level ($M = 2.10$) ($p < 0.001$). The mean score of the single-choice questions was 4.08, and it increased to an average of 5.98 after each visit ($p < 0.001$). Concerning the open-ended questions, the scores improved significantly in both depth and breadth dimensions. The average breadth of knowledge was 1.37 out of eight exhibition themes before visiting, and it increased to an average of 2.5 in the post-visit evaluation ($p < 0.001$). The mean depth of the participants' knowledge increased from 2.85 to 6 after their visit ($p < 0.001$). Regarding

level of participation in urban planning, there was also a significant increase in their self-assessment results from before visiting ($M = 1.51$, $SD = 0.842$) to after visiting ($M = 2.05$, 1.016) ($p < 0.001$).

Ordinal regression and ANCOVA tests were applied where appropriate to examine the significant differences between personal, social and physical factors in the changes in knowledge and participation levels in urban planning. Age, gender, occupation, familiarity with the city, whether they came alone or not, whether or not they used a guide and the researcher's presence did not significantly influence participants' knowledge acquisition and the extent of participation. However, prior knowledge, level of education and the visit length were significant predictors of the changes in specific knowledge tests.

An increase in prior knowledge level was associated with a decrease in the odds of having a higher knowledge level, with an odds ratio of 0.232 (95% Confidence Interval (CI), 0.108 to 0.499). Wald Chi-Squared test (or Wald test) showed a significant effect of prior knowledge level, $\chi^2(1) = 13.988$, $p < 0.001$. For the factual knowledge revealed by single-choice questions, an increase in prior accuracy was linked to a decrease in the odds of improvement, with an odds ratio of 0.959 (95% CI, 0.930 to 0.989), Wald $\chi^2(1) = 6.986$, $p = 0.008$. In contrast, an increase in time spent visiting the UPEH was positively linked to the odds of improvement in single-choice questions, with an odds ratio of 5.640 (95% CI, 2.4 to 13.2), Wald $\chi^2(1) = 15.8$, $p < 0.001$.

Regarding the open-ended questions, there was a significant difference in mean depth gain [$F(2,105) = 5.892$, $p = 0.004$] between the level of education. Post hoc tests using Bonferri's test revealed a significant difference between master's level and above and high school level or lower ($p = 0.006$) as well as between university level and master's level and above ($p = 0.017$). People with a higher level of education are more likely to have an increased depth of knowledge ($M = 4.58$) compared to those who hold a degree of high school level or below ($M = 2.18$) and university level ($M = 2.99$).

10.4 Discussion

The study showed that visitors to the Guangzhou UPEH improved significantly in terms of knowledge acquisition in urban planning. This is in line with the finding of Fan (2014) through the post-evaluation of visitors to the UPEHs in Shanghai, Nanjing, Hangzhou and Chongqing, where visitors were generally satisfied with the function of information dissemination. It supports the official function stated by CAUP (2007), and provides empirical backing for the framework proposed by Geddes (1915) and Farrell (2014). Similar to the results of Falk and Dierking (2016), demographic variables such as age, gender, familiarity with the city and occupation did not significantly influence knowledge increase. Social factors, including the nature of the visiting group, the presence of a tourist guide and the researcher bias

did not play a significant role either. These findings suggest that the UPEH could serve as a platform for inclusive learning for the general public.

People with less prior knowledge were found to be more likely to improve significantly in both the self-assessment and factual questions. Those with a higher education level were linked to an increased possibility of enhancing the depth of complicated knowledge. This suggests that people with varied knowledge backgrounds can visit the UPEH and improve in different knowledge dimensions. The results also revealed that people with a lengthier visit were more likely to gain more factual knowledge. This implies that the UPEH should focus on retaining visitor attention in order to enhance learning effects. Possible ideas for exhibition design could include using exhibits with larger dimensions, presentations through multi-media devices and presenting information that focuses on the city and site scale (Lu et al. 2020).

Despite a significant increase in participation level after visiting the UPEH, the value of the participation level remains at a relatively low level ($M = 2.05$), falling just slightly over the 'information' rung in the ladder of citizen participation. In addition, none of the social, personal and physical factors investigated in this study played a role in its change. Post-interviews with participants and fieldwork across different UPEHs in the PRD suggest several possible causes: (1) participants are provided with limited opportunities to express their needs and suggestions at the UPEHs, (2) the space provided for feedback is not in the main circulation route in the UPEH and therefore not easily discovered and (3) the public are not aware of and confident with their right to participate and they believe that any attempt to do so will be in vain. This suggests that there is room for improvement in public awareness and setup of the UPEHs for greater public engagement.

10.5 Conclusion

This study seeks to understand the role of the UPEH in planning communication and public participation by using the example of the Guangzhou UPEH. A repeated measures design approach was adopted to test the knowledge acquisition and level of involvement before and after participants' visits. The study has demonstrated the effectiveness of the UPEHs for raising public awareness of urban planning after their visits. The personal, social and physical factors generally did not prove to have a significant effect on changes in self-assessment and objective tests. However, participants' prior knowledge, education level and visit length were found to influence changes in specific dimensions of knowledge.

The findings call for the UPEHs to provide more opportunities for effective public involvement. The initiatives at the Hong Kong City Gallery may serve as an example for offering the public a higher level of interaction with urban matters, rather than just being informed about them. This includes providing a wide range of materials, consultations, seminars and workshops to make planning contents more accessible.

This study primarily focussed on whether individuals acquired a new or enhanced understanding of the facts and/or concepts regarding urban planning shortly after

spending time within the Guangzhou UPEH. Memory restoration consists of short-term, long-term and working memory (Cowan 2008). Short-term memory may be accompanied by temporal decay and chunk capacity limits. Therefore, future research could examine public perception of urban planning over a longer period of time. Furthermore, increased learning in the museum could have a wide range of potential outcomes, including gaining skills, developing interests, improving attitudes and emotions and changing behaviours (Hooper-Greenhill 1991). Future research could examine other dimensions of learning outcomes to get a holistic understanding of the effectiveness of the UPEHs.

Acknowledgements This research is supported by Nanjing Forestry University Metasequoia Talents Research Start-up Funding [No. 163120129], the Joint China Scholarship Council—University of Sheffield PhD programme [No. 201706090252]; IJURR Foundation Writing-up Grants 2021; and the Newton Fund/Engineering and Physical Sciences Research Council (EPSRC) as part of the Sustainable Deltas award [No. EP/R024979/1]. The Adaptive Urban Transformation research project is a collaborative project of Delft University of Technology (TU Delft), South China University of Technology and The University of Sheffield.

References

- Arnstein SR (1969) A ladder of citizen participation. *J Am Plann Assoc* 35(4):216–224. <https://doi.org/10.1080/01944366908977225>
- China Association of City Planning (2007) The professional committee of Chinese urban planning display was formally established. Wang Guangtao sent a letter to congratulate. Zhao Baojiang attended the inaugural meeting and made a speech. *Urban Planning Newsreport*, vol 24, p 6. Retrieved from <http://www.cnki.com.cn/Article/CJFDTotal-CSGT200724010.htm>
- Council of Europe (2004) European landscape convention. Retrieved from <https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/176>
- Council of Europe (2008) Guidelines for the implementation on the European landscape convention. Retrieved from <https://www.coe.int/en/web/landscape/guidelines-for-the-implementation-on-the-european-landscape-convention>
- Cowan N (2008) What are the differences between long-term, short-term, and working memory? *Prog Brain Res* 169:323–338. [https://doi.org/10.1016/S0079-6123\(07\)00020-9](https://doi.org/10.1016/S0079-6123(07)00020-9)
- De Jong M, Chen Y, Joss S, Lu H, Zhao M, Yang Q, Zhang C (2018) Explaining city branding practices in China's three mega-city regions: the role of ecological modernization. *J Clean Prod* 179:527–543. <https://doi.org/10.1016/j.jclepro.2018.01.098>
- Falk J, Storksdiack M (2005) Using the contextual model of learning to understand visitor learning from a science center exhibition. *Sci Educ* 89(5):744–778. <https://doi.org/10.1002/sc.20078>
- Falk JH, Dierking LD (2016) *The museum experience revisited*. Routledge
- Fan P (2014) Producing and consuming urban planning exhibition halls in contemporary China. *Urban Stud* 52(15):2890–2905. <https://doi.org/10.1177/0042098014536627>
- Farrell T (2014) The Farrell review of Architecture + the Built Environment. In: *Our future in place*, London. Retrieved from <http://www.farrellreview.co.uk/Downloads/TheFarrellreview.Pdf.1454326593>
- Field A (2013) *Discovering statistics using IBM SPSS statistics*. SAGE
- Geddes P (1915) *Cities in evolution: an introduction to the town planning movement and to the study of civics*. Williams, London

- Hooper-Greenhill E (1991) A new communication model for museums. In: Museum languages: objects and texts, pp 47–61
- Lai S-Y (2009) Museum as a representation of the city and an instrument of city image making Shanghai's urban planning exhibition centre. In: 2009 International conference on East Asian architectural culture, pp 225–237.
- Lu X, Hehl-Lange S, Lange E (2020) Landscape visualisation and visitor perception in the Guangzhou urban planning exhibition hall. *J Digital Landscape Archit* 5:330–339. <https://doi.org/10.14627/537690034>
- Tewdwr-Jones M, Sookhoo D, Freestone R (2020) From Geddes' city museum to Farrell's urban room: past, present, and future at the Newcastle city futures exhibition. *Plan Perspect* 35(2):277–297

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

