

Using Computer-Assisted Approach to Media Discourse Analysis on the Construction of City Image: Chengdu Park City as an Example

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Abstract: This study uses a computer-assisted corpus linguistic approach to analyzing news media coverage of Chengdu Park City for international communication. With a dataset of 60,080 word tokens of foreign-oriented news articles on the Park City of Chengdu, the study demonstrates how embedded computational techniques in corpus linguistic software can aid the quantitative analysis with reference to collocations, frequency and keyness, as well as qualitative analysis based on concordance lines and lexical networks. Taking Chengdu as an example, this study suggests a framework for adopting computer-powered statistical measures in analyzing the discursive construction of a city's image by pinpointing linguistic patterns of datasets, mainly in terms of collocations, frequencies, key clusters as well as their diachronic development.

1 INTRODUCTION

City image is the sum of beliefs, ideas, and impressions that people have of a city (Kotler, through mass media. The narratives of media thus play a significant role in agenda setting and framing the public's cognition of city image (Ke, Chen, Yu, 2012). The city image, under the scope of communication studies, has transcended such physical objects as geography, scenery, landscape to capture the mental conception held in common by those who are exposed to the reality constructed by mass media. The city of Chengdu boasts an affluent agricultural region and has long been known as the Land of Abundance. Such an impression is so ingrained all around the world that drastic changes in the city image of Chengdu are not discernible to the general public. In 2018, Chengdu became the first place where the Park City concept was officially mentioned in China, and after more than three years of exploration and practice, the Park City has become the most distinctive cultural label of the city of Chengdu. Despite Chengdu's great strides in building itself into a Park City, the image of which receives little recognition, if not at all, from the international community. Against such a backdrop, the presence of Park City-related content in Chinese international

Gertner, 2022). In reality, except for a small number of people who can directly see and feel a city, most of the international public has to imagine the city

communication reports for foreign-oriented publicity has increased over the past three years. According to Fairclough, discourses not only represent the world as it is (or rather is seen to be), they are also projective, imaginaries, representing possible worlds which are different from the actual world, and tied into projects to change the world in particular directions (Fairclough 2003). In this sense, international communication reports on Park City not only reflect but also construct the image of Chengdu, making it visible to the international community. No studies so far have probed into the discursive construction of Chengdu Park City in media reports. Given that, this study aims to analyze how Chengdu has attempted to discursively construct itself as a Park City and the effects of which on the construction of Chengdu Park City per se.

2 METHODOLOGY

Lexical items ranging from word tokens to multi-word phrases are prone to carry discursial traces. Nevertheless, only when linguistic elements are categorized into patterns can discursial phenomena be identified and interpreted. Patterns come with relatively large datasets which require computational methods to process for efficiency's sake. Against the tide of digital Social Science and Digital Humanities, digital methods are at disposal of communication scholars to undertake computer-powered research into the media discourse. However, the bar is high for those researchers without relevant technical expertise. Therefore, this study attempts at an alternative: combining corpus linguistics and discourse analysis, i.e., quantitative corpus-based research is employed to supplement the qualitative analysis of patterns of the language across texts as well as the social and cultural contexts. The advantages of merging corpus-based approaches and discourse analysis lie in varietal aspects. First, it reduces the cognitive biases of the researcher; second, it identifies the incremental effect of discourse presented in a large number of discourses; third, corpus linguistics advocates triangulation, in other words, utilization of multiple research methods and different forms of data to help check the validity of hypotheses and provide more robust interpretations and explanations to support the research results (Baker 2004). Corpus linguistics software tools have in-built statistical measures for automatic computation and thus are easy to use from a technical perspective.

3 RESEARCH DESIGN

3.1 Research Data

We retrieve our articles from the digital database Nexis Uni with "Chengdu Park City" or "Chengdu Garden City" as search terms, resulting in 185 texts spanning February 2018 to August 2021 and the former was the date when President Xi Jinping introduced the term Park City on a visit to Chengdu. Having been manually screened to remove duplicate texts, foreign media reports, and the news that merely mentioned Chengdu Park City without relevant contents, the corpus is reduced to 69 texts (60,080 word tokens), including reports in English published by China's media outlets, as well as the English version of press releases issued by Chengdu's

companies and organizations via foreign media channels.

3.2 Corpus Linguistic Software

Albeit the benefits discourse analysis can reap from computational assistance, the barrier remains high for scholars who lack programming expertise. In this study, we use corpus linguistic software called #LancsBox and it is a new-generation software package for the analysis of language data and corpora developed at Lancaster University. There are five modules in #LancsBox: KWIC, Whelk, GraphColl, Words and Text. First, KWIC generates concordance lines sorted alphabetically according to the surrounding text on the left or right. Second, Whelk shows the distribution of the search term across corpus files. Then, GraphColl identifies and builds visual networks of linguistic collocations. It is worth pointing out that GraphColl provides varietal statistical choices to identify collocations since there are no one definite sets of collocates. Next, The Words tool compiles frequency and/or keyword lists in terms of types, lemmas and POS categories. Last but not least, the Text tool enables in-depth analysis on the context of a search term. Given the above computer-aided functionalities, #LancsBox can be used for a combination of automated quantitative research (Whelk, GraphColl, Words) and qualitative research (KWIC, Text). The remainder of this article will demonstrate how communications researchers can harness the power of #LancsBox to conduct media discourse analysis and a potential workflow in this regard.

3.3 Workflow

3.3.1 Collocation Analysis

In this corpus-based study, Park or Garden is set as the node, and the span is set as 5 words to the left and 5 to the right. MI score is a measure of collocational strength, and a MI score of 3 or higher is proposed to be taken as evidence that two items are collocates (Hunston 2002). However, MI Score is affected strongly by frequency, and low-frequency words tend to reach a high MI score. To avoid such limitations, I also consider words with T-score of 2 or higher since which is normally considered to be statistically significant (McEnery, Xiao, Tono, 2006). This study draws on both cut-off points above mentioned as the benchmark for identifying statistically significant collocates.

Table 1. Statistically Significant Collocates of *Park* or *Garden*

Node word	Collocate	Freq.	Joint freq.	MI	T-score
park OR garden (total freq.441)	sino-french	32	20	6.42	4.42
	jincheng	17	10	6.34	3.12
	livable	41	24	6.33	4.84
	forest	28	16	6.29	3.95
	science	46	21	5.97	4.51
	mountain	32	14	5.91	3.68
	beautiful	60	26	5.90	5.01
	high-tech	53	22	5.83	4.61
	agriculture	53	19	5.62	4.27
	concept	59	21	5.61	4.49
	agricultural	74	21	5.28	4.47
	bureau	47	12	5.13	3.37
	central	52	12	4.99	3.35
	technology	94	20	4.87	4.32
	revitalization	49	10	4.81	3.05
	airport	63	11	4.58	3.18
	cultural	145	24	4.51	4.68
	industry	154	25	4.48	4.78
	rural	81	12	4.35	3.29
	first	124	18	4.32	4.03
	tianfu	333	48	4.31	6.58
	urban	200	26	4.16	4.81
	lake	85	11	4.15	3.13
	industrial	141	17	4.05	3.87
	ecological	136	16	4.01	3.75
	innovation	100	11	3.92	3.10
	greenway	113	12	3.87	3.23
	area	464	48	3.83	6.44
development	436	39	3.62	5.74	
green	137	12	3.59	3.18	
new	659	54	3.49	6.70	
international	282	19	3.21	3.89	

As is shown in Table 1, among the collocates, *tianfu*, *new*, *area* stand out and the three of them reveal in partnership the strategic position of Tianfu New Area. In February 2018, General Secretary Xi Jinping stated during his visit to Tianfu New Area that it is an important node for the Belt and Road initiative and the development of the Yangtze River Economic Belt, and it must be planned and built well, in particular, special attention should be paid to highlight the characteristics of Park City and ecological value should be taken into consideration so as to create new growth poles and build inland open economic highlands. And then, the word *first* indicates that Tianfu New Area is the starting point of the Park City discourse.

Also on the list are *development* and *concept* which point to the New Development Philosophy the

Park City initiative adheres to; *innovation*, *green*, and *ecological* are indicative of Chengdu’s being innovative and green while seeking Park City development; as for the aboutness of *international*, I explore its collocational network for further evidence. As can be seen from Figure 1, the construction of Park City in the new era focuses on creating an open international environment where Chengdu spreads to the world the development concept of opening up via cooperation and exchanges in domains such as trade, art, and sports.

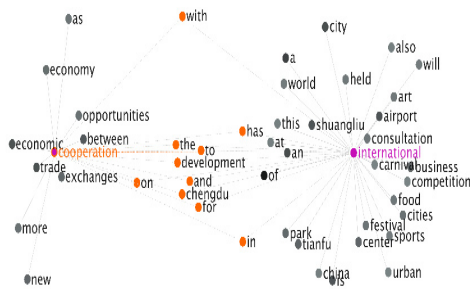


Figure 1 The collocational network of *international*

In addition, *rural* and *urban* are ranked similarly in Table 1 and such similarity in collocational strength indicates that Chengdu emphasizes coordinated urban-rural development while attempting to build a Park City. Also noteworthy is that *beautiful* and *livable* are ranked third and seventh respectively in Table 1, and the reason why they are both highly ranked is that Chengdu has pinpointed its strategic positioning as a beautiful and livable Park City.

To fully interpret the computed collocates above mentioned, the context relevant to Park City discourse has to be taken into consideration. Retrospectively, at the Fifth Plenary Session of the 18th CPC Central Committee, the New Development Philosophy featuring innovation, coordination, green shift, open and shared development, was put forward for the first time. Then, at the Fifth Plenary Session of the 19th CPC Central Committee, it was explicitly

required that the New Development Philosophy be implemented on all fronts.

Based on the above collocational analysis, it can be noted that the New Development Philosophy has permeated the Park City discourse and such philosophy has been collocationally realized in textual data with different representations.

3.3.2 Key Clusters Analysis

In order to investigate the diachronic changes in Park City discourse, I divide the corpus into three subcorpora by time: 2018, 2019, and 2020-2021 and merge the data of 2020 and 2021 into one subcorpus since there are only two relevant reports from 2021 at the time of data collection. Statistically, the sizes of the three subcorpora are 17,277 tokens, 26,216 tokens and 14,477 tokens respectively.

Keywords are items of unusual frequency in comparison with a reference of some suitable kind (Scott, Tribble, 2006). There is a significant difference in the frequency of occurrence of keywords in the study corpus compared with the reference corpus, i.e., the frequency in the former is significantly higher or lower than that in the latter. The reference corpus used in this study is the news subcorpora of Crown and Clob (Xu, Liang, 2013), which was co-built in 2012 by Professors Xu Jiajin and Liang Maocheng of The National Research Centre for Foreign Language Education (NRCFLE) attached to Beijing Foreign Studies University. An examination of the keywords that occur when two corpora are compared together should reveal the most significant lexical differences between them, in terms of aboutness and style (Baker 2006). Compared with individual keywords, key clusters are more informative as indicators of the aboutness of discourses. Thus, in this study, I focus on the top 10 five-word key clusters, as shown in Table 2.

Table 2. Key Clusters Related to Chengdu Park City

Key Clusters 2018	Keyness	Frequency	Key Clusters 2019	Keyness	Frequency	Key Clusters 2020-21	Keyness	Frequency
agricultural science and technology park	12.00	19	internet audio & video industry	4.38	9	summer world university games of Chengdu	5.15	6
sino-french agricultural science and technology	12.00	19	the belt and road initiative	4.38	9	2020 sino-european new economic online	4.45	5

the sino-french agricultural science and	7.95	12	of wangcong tianfu cultural industry	4.00	8	Chengdu new economic development commission	4.45	5
the belt and road initiative	6.20	9	overall planning and core area	4.00	8	issued the following news release	4.45	5
the park city construction bureau	5.05	7	wangcong tianfu cultural industry park	4.00	8	the Chengdu new economic development	4.45	5
between Sichuan province and France	4.47	6	Chengdu douban red international carnival	3.63	7	world university games Chengdu 2021	4.45	5
science and technology park project	4.47	6	planning and core area conceptual	3.63	7	base of giant panda breeding	3.76	4
a beautiful and livable park	3.89	5	the overall planning and core	3.63	7	Chengdu research base of giant	3.76	4
beautiful and livable park city	3.89	5	and core area conceptual scheme	3.25	6	new economic online cooperation conference	3.76	4
belt and road initiative and	3.89	5	chengdu municipal bureau of commerce	3.25	6	research base of giant panda	3.76	4

As is shown in Table 2, key clusters in the three time periods are both independent and related if taking into account the Park City discourse as a whole: *the belt and road initiative* indicates that the development of Park City in Chengdu has been deeply integrated into China’s belt and road initiative; *internet audio & video industry* and *the Chengdu new economic development* imply that the Park City initiative gives Chengdu momentum to attempting a new paradigm for the economic development; *agricultural science and technology park*, *sino-french agricultural science*, *sino-european new economic online*, *wangcong tianfu cultural industry park*, *base of giant panda breeding*, *summer world university games*, *douban red international carnival* are all unarguable evidences that Park City project coordinates the development in science and technology, international cooperation, culture, agriculture, ecology, as well as sports and music, the joint efforts of which lead Chengdu to a sustainable and all-round urban development.

3.3.3 Concordance Analysis

Then, while analyzed across time, the cooccurrence of 5-word key clusters within the same time span uncovers the sociohistorical contexts and primary concerns of that specific period. Through the top 10 key clusters in 2018, it can be noted that the lexical clusters related to Agricultural Science and Technology Park occur four times, i.e., *agricultural science and technology park*, *sino-french agricultural science and technology*, *the sino-french agricultural science*, *science and technology park project*. Background research shows that the Sino-French Agricultural Science and Technology Park covers an area of 18 square kilometers with a total planned investment of about 30 billion yuan. It was listed in the 2015 Global Climate Summit Plan and also as one of the 100 key projects in Sichuan Province in 2018. Below is the expanded version of a concordance line with *Sino-French Agricultural Science and Technology Park* being its node.

Extract (1): Sichuan Province, having been working in the spirit of General Secretary Xi Jinping, launched the Sino-French Agricultural Science and Technology Park Project, in order to carry out the strategy of park city for practical results.

Saliently, this extract argues that the Sino-French Agricultural Science and Technology Park is a solid example of turning the Park City vision into action and it sets a model for international cooperation in constructing the Park City.

Moving forward to 2019, it is evident from Table 2 that 6 out of the top 10 key clusters relate to Wangcong Tianfu Cultural Industry Park, i.e., *of wangcong tianfu cultural industry, wangcong tianfu cultural industry park, overall planning and core area, planning and core area conceptual, the overall planning and core, core area conceptual scheme*. The reason why lexical words related to Wangcong Tianfu Cultural Industry Park repeatedly occur in the 2019 Park City discourse is that the project solicited international consultation on the overall planning and core area conceptual scheme design at its preparation stage. As such, it spreads around the world the Park City concept as demonstrated in the following extract:

Extract (2) Wangcong Tianfu Cultural Industry Park is a key carrier for the district to create a world-renowned cultural and creative city and a central urban area of the park city that embodies the new development concept in an all-round way.

In the same vein, I also note that lexical words related to new economic development show marked frequency in the 2020-2021 Park City discourse, i.e., *new economy online, new economic development, and new economic online cooperation*. This can be explained by the influence on the city of Chengdu of the 2020 Sino-European New Economic Online Cooperation Conference hosted by the Chengdu new economic development commission. Taking into account the Dual Circulation development pattern and the normalization of epidemic prevention and control in China, this virtual conference reflects Chengdu's efforts in seeking alternative economic approaches to building a Park City. As is shown in the example below, Chengdu has been exploring novel ways to organically combine Park City construction and new economic development in a bid to build a more harmonious urban space featuring sustained economic development.

Extract (3) Building a so-called island for unicorns... is another ambitious initiative of the city to develop the new economy. To help advance the cause of the unicorn hub, the Chengdu government is seeking solutions to planning, building, and

managing models for the balanced development of industries, people, and nature in the garden city.

A diachronic analysis of key clusters helps map out the actions Chengdu has taken to implement the Park City initiative. From the above analysis, I can construe that Park City is discursively represented as a project carried out in a multitiered, phased, and focused manner, and in turn, the discursive function of Park City has been cumulatively enhanced as time proceeds.

4 ANALYSIS

In conclusion, this study draws on the methodological synergy of corpus linguistics and discourse analysis to explore how the Park City image is discursively constructed in international communication reports. I find, in a holistic view, Park City has been discursively represented as being a beautiful and livable city with humans at the center and with New Development Philosophy as guidelines. In sum, the discursive construction of Park City exhibits the following three features.

First, the discursive construction of Park City in international communication reports is a dynamic process, demonstrably being socially shaped as well as socially constitutive. Ever since the Park City initiative began in February 2018, Chengdu has been implementing the rural vitalization strategy and exploring the representation of Park City in rural Chengdu by establishing projects like the Sino-French Agricultural Science and Technology Park; with the release of the Three-Year Action Plan for the Construction of Three Cities and Three Capitals in Chengdu (Official Website of Chengdu Municipal People's Government, 2019), Chengdu has witnessed the building of Wangcong Tianfu Cultural Industrial Park imbued with ancient Shu culture; currently, under the combined impact of worldwide changes of a scale unseen in a century and the global coronavirus pandemic, Chengdu proactively develops the new economy to create positive momentum for Park City construction. To reiterate, the discursive construction of Park City at different periods is always amenable to social contexts and keeps abreast of China's development needs.

Second, the discursive construction of Park City in international communication reports features dialectical relations. On the one hand, the Park City discourses are representations of Park City practices that adhere to the New Development Philosophy and ensure harmony between humanity and nature. On the other hand, such representations enter and shape Park

City construction practices, leading to the establishment of such major ecological projects as Longquanshan Forest Park, Tianfu Greenway System, Jincheng Park, Sino-French Agricultural Science, and Technology Park, Chengdu Agricultural Highland Park, Airport Central Park, Wangcong Tianfu Cultural Industrial Park, etc.

Third, the discursive construction of Park City in international communication reports is an enactment of our country's mainstream ideology. As stated by Teun A. van Dijk, discourse plays a prominent role as the preferential site for the explicit, verbal formulation and the persuasive communication of ideological propositions (VanDijk 1995). In Park City media discourse, the New Development Philosophy has been expressed and reproduced in the context of the mass media. Conversely, such ideologically shaped media discourse may, in turn, affect the cognitive representations of the Park City of Chengdu on the part of the recipients.

5 CONCLUSION

In this study, I employ computer-assisted corpus linguistics analysis to examine the construction of Chengdu's city image in media reports for international communication. With the specific research question determined a priori, the workflow proceeds in a top-down manner, i.e., the data research starts with collocation analysis to frequency of key clusters for quantitative statistics and then lexical network graphs and concordance lines follow up to aid in the manual, qualitative analysis. Such an approach is an attempt at harnessing the synergy of computational technology and discourse analysis. Since communications research usually involves hundreds of thousands of texts, the methodological framework of this study can inform other research projects associated with discursive construction and communication of a city's image. At the same time, it would be desirable to further examine the extent to which computer-assisted corpus linguistic programs are able to contribute to media discourse analysis.

REFERENCES

- Baker, P. (2004). Querying Keywords: Questions of difference, frequency, and sense in keywords analysis. *Journal of English Linguistics*, 4, 346-359.
- Baker, P. (2006). *Using Corpora in Discourse Analysis*. London: Continuum, 10-17.

- Fairclough, N. (2003). *Analysing Discourse: Textual analysis for social research*. London: Routledge, 124.
- Hunston, S. (2002). *Corpora in Applied Linguistics*[M]. Cambridge: Cambridge University Press, 71.
- Ke, X., Xi Chen., & Mingyang Yu (2012). Can the World Expo change a city's image through foreign media reports? *Public Relations Review* 38:746-54.
- Kotler, P., and D. Gertner. (2002). Country as brand, product, and beyond: A place marketing and brand management perspective. *Journal of Brand Management* 9 (4):249-61.
- McEnery, T., Xiao, R. and Tono, Y. (2006) *Corpus-based Language Studies: An Advanced Resource Book*. New York: Routledge, 57.
- Official Website of Chengdu Municipal People's Government (2019). The release of the Three-Year Action Plan for the Construction of Three Cities and Three Capitals in Chengdu. Retrieved from http://www.chengdu.gov.cn/chengdu/home/2019-02/15/content_7559011846374b33ab32ae613a08e03f.shtml?share_token=b060ace2-ae7b-4ce2-b23d-e8b9121c43bc
- Scott, M. & C. Tribble. (2006). *Textual Patterns: Key Words and Corpus Analysis in Language Education*. Amsterdam/Philadelphia: John Benjamins Publishing Company, 55.
- VanDijk, T.A. (1995). Discourse analysis as ideology analysis. In C. Schäffner & A. Wenden (Eds.), *Language and Peace* . (pp. 17-33). Aldershot: Dartmouth Publishing, 1995.
- Xu, J. & M. Liang. (2013). A tale of two C's: Comparing English varieties with Crown and CLOB (The 2009 Brown family corpora). *ICAME Journal*, 1, 175-183.