



A CiteSpace-based Analysis of Study on the Urban Linguistic Landscape

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Abstract. This article uses the CNKI database of China National Knowledge Infrastructure (CNKI) as a platform, and takes relevant research on the theme of "urban linguistic landscape" from 2014 to 2024 as the basic data. Using Cite Space 6.2.R4 version scientific measurement software and statistical analysis methods, the article volume, keyword co-occurrence, and highly cited core literature of this basic data were analyzed. The research found that the overall development of research on urban linguistic landscape is on the rise, showing interdisciplinary characteristics, high cited literature is relatively concentrated, and research topics are relatively scattered. In the future, the domestic linguistic landscape needs to make further breakthroughs in enriching theoretical systems, expanding research perspectives, expanding research breadth and depth, and emphasizing the combination of qualitative and quantitative research.

Keywords: Cite Space, Scientific measurement, urban linguistic landscape

1 Introduction

Linguistic landscape refers to the overall collection of language symbols and characters presented in social space.[1] It includes various texts and symbols used in public areas such as urban streets, commercial advertisements, political propaganda, religious sites, as well as language symbols used in private areas such as personal residential doorplates, vehicle numbers, and personal email signatures.

The urban linguistic landscape constructs a new urban spatial discourse through the combination of social space, multimodal symbols, and social activities.[2] At present, linguistic landscape has become a hot topic in urban language research. One research field is to study the cultural connotations and symbolic meanings of urban linguistic landscapes. By analyzing slogans, place names, and store names in public places, we can study the cultural symbols, values, beliefs, historical heritage, etc. contained in the urban linguistic landscape of a specific field, region, or urban agglomeration; The second is to study the development history of urban linguistic landscapes, including the characteristics, changes, and evolution patterns of urban language landscapes in different historical periods; The third is the function and effect of urban linguistic

landscape, studying the impact of urban linguistic landscape on urban environment and people's behavior, including the function, cognitive effect, emotional effect, etc. of urban linguistic landscape. Urban development cannot be separated from language planning. The development of a city affects the discourse choices and usage of different groups in the city, and the use of urban language has a reciprocal effect on the development of the city's economy and culture.[3]

This article uses CiteSpace scientific measurement method to conduct a quantitative analysis of several dimensions, including the current development status and overall trend of urban language landscape research in recent years, co-occurrence analysis of thematic keywords, highly cited core documents, and research hotspots. The aim is to clarify the research dynamics and overall context of urban language landscape research, and provide useful references for future research expansion.

2 Data sources and research methods

2.1 Data sources

In this study on urban language landscape, the author selected the CNKI database of China National Knowledge Infrastructure (CNKI) to search for keywords such as "city" and "language landscape". The literature selection covered academic journals and papers, and the search was conducted on December 30, 2024. A total of 228 journal, paper, and conference papers were collected, and the author exported them in bulk for the analysis on CiteSpace, obtaining preliminary research results.

2.2 Research methods

This research mainly uses CiteSpace, a scientific literature analysis tool developed by Professor Chen Chaomei of the School of Information Science and Technology of Drexel University in 2004 based on JAVA Internet system language, to visually analyze the collected data. CiteSpace is an information visualization software for measuring and analyzing literature data, which can be used to draw knowledge on the development of research fields, display the overall information of the field, identify hot topics, important literature, and cutting-edge dynamics in this research field.[4]

This article converts the data information of 228 retrieved literature into Refworks format recognizable by CiteSpace, and uses CiteSpace V5.6.R1SE to visualize the research on urban linguistic landscape from Three dimensions: annual publication trends, co-occurrence analysis of thematic keywords, highly cited core literature and journals.

3 Research and Analysis of Urban Linguistic Landscape Based on CiteSpace

3.1 Annual publication trend of urban linguistic landscape

The number of papers published each year is an important indicator for measuring the development of a research field. By comprehensively analyzing literature and drawing corresponding time distribution curves, it is possible to clarify the development stage of the field, predict research trends and dynamics. Based on the data sources mentioned above, which are presented in years, 228 valid literature were plotted into a line chart of literature quantity as shown in Figure 1. China started relatively late in researching the linguistic landscape of urban areas, and in 2014, Feiyang Tian and Weijia Zhang wrote the first academic paper focusing on the research of urban linguistic landscape "Global Sociolinguistics: A New Theory of Language Landscape Research - Taking the Bilingual Public Sign on Xueyuan Road in Beijing as an Example".

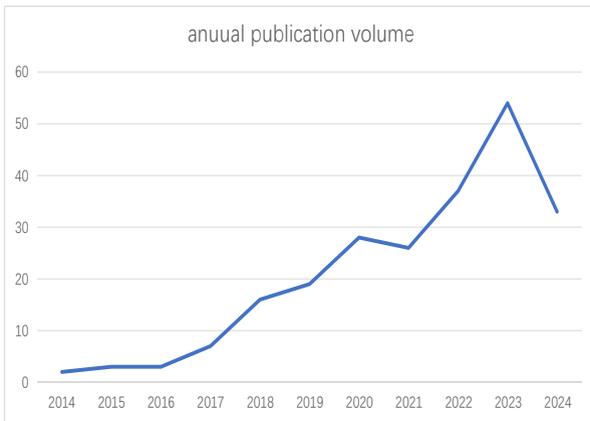


Figure 1 Annual publication trend of urban linguistic landscape research

From Fig.1, it can be seen that there has been relatively little and unsystematic research on urban language landscape from 2014 to 2017, with a total of 15 papers published during this period, accounting for only 6.57%. From 2018 to 2021, domestic scholars began to pay attention to the study of language landscapes, and the number of publications gradually increased. In 2020, the number of publications reached 28, accounting for 39% of the total. From 2022 to 2024, the research on language landscape in China has entered a period of vigorous development, with a rapid increase in the number of publications during this stage. In 2023, the number of publications reached its peak, with a total of 54 articles, accounting for a total of 54% of publications during this stage. But in 2024, the research on urban language landscape showed a downward trend, with a negative growth in publications, with only 33 articles.

Based on the annual publication quantity of existing literature, the research on urban linguistic landscape presents phased characteristics, namely the embryonic stage (2014-2017), the initial stage (2018-2021), the rapid development stage (2022-2023), and the stable development stage (2024-). In the embryonic stage, there are few published papers and a lack of theoretical guidance. The topics mainly focus on the preliminary exploration of urban linguistic landscape design and the current situation and problems of linguistic landscape translation. Afterwards, the research on urban linguistic landscape entered a development stage, with a steady increase in the number of papers and an expansion of research scope. Emerging topics such as multilingual phenomena, language services, power, language policies, and place semiotics continued to emerge.

3.2 Co-occurrence Analysis of Thematic Keywords

The keywords contain the core and main content that the article wants to convey, helping readers understand the research hotspots of urban linguistic landscape. Keywords can reveal the thematic information of a paper, and are the extraction and summary of the core content, ideas, viewpoints, and argumentation methods of the paper. Therefore, analyzing keywords is the most effective and direct way to grasp the core ideas of a paper.

Importing the selected 228 valid literature into Cite Space 6.2.R4 for analysis. The more times a keyword appears in a certain year, the larger the color area of that year. The thicker the connection between nodes, the more co-occurrence times it represents. Research on language landscape in China has mainly focused on various aspects such as language power, multimodality, language services, language policies, multilingual phenomena, and language and cultural identity.

Table I Frequency of “Keywords”

Rank Content	High frequency sorting	
	Keywords	Frequency
1	Linguistic landscape	213
2	multilingualism	144
3	translation	92
4	multimodality	74
5	identity	57
6	Language policy	32
7	Language sinage	20
8	Language services	15
9	Public sign	10
10	Language power	8

Table I shows that public space is the most significantly increased theme word, which helps to reveal the objective conditions for the existence of language landscapes. With the development of cognitive science and artificial intelligence, humans engage in cognition and thinking through their perception of space and understanding of symbols. Meanwhile, studying how space influences human behavior and thinking, as well as how symbols are understood and used by people, can help design better urban language landscapes and enhance the city's image.

Table II The keywords with the largest increase and decrease rate (2014-2024)

	Keywords	2014-2019	2020-2024
		Frequency	Frequency
The Largest increase rate	Multilingualism	23	121
	Bilingualism	12	88
	identity	4	53
	multimodality	5	69
	translation	9	83
The Largest decrease rate	Language ideology	25	23
	community	20	19
	handwriting	28	25
	nationalism	24	20
	globalization	20	19

Table II also shows that the five main themes of language ideology, community, writing, nationalism, and globalization have the largest declines. This indicates that in urban language landscape research, community space and written symbols are two very important aspects, but relying solely on these two aspects is far from enough. The study of urban language landscape needs to focus not only on the geographical space and linguistic symbols themselves, but also on their relationships with various aspects of urban society, culture, history, economy, etc. The urban language landscape is not only the expression of language and writing in urban space, but more importantly, it expresses the history, culture, and values of the city through language and cultural symbols.

Meanwhile, the themes of language landscape research in China are relatively scattered. In addition to review studies, research focuses mostly on multilingual phenomena, place semiotics, language services, language policies, language power, etc. However, from a centrality perspective, scholars' attention to the language landscape is far from sufficient, and the themes are relatively scattered. There is great potential for research in this field, and the breadth and depth of research urgently need to be expanded.

3.3 Highly cited Core Literature

The highly cited core literature in language landscape research can reflect the research hotspots, cutting-edge issues, and academic development trends in this field. These highly cited literature often represent the most important and influential research results and ideas in the field. By analyzing these literature, we can better understand the development history, main research directions, and research methods of this field.[5]

Firstly, highly cited core literature typically represents the main research directions and key issues in the field. By analyzing these literature, we can understand the current research hotspots and possible future development directions in this field. Secondly, highly cited core literature often contains advanced research methods and techniques, which have important application value in the field of research. By analyzing these literature, we can understand the main research methods and techniques currently used in this field, and explore their advantages, disadvantages, and improvement directions. Finally, highly cited core literature often represents the academic development process and milestone events in the field. By analyzing these literature, we can understand the academic development process of the field, as well as the evolution of academic ideas and achievements. Table 3 shows the highly cited core literature on language landscape research from 2014 to 2024.

Table III List of Highly Cited Literature on Urban Linguistic Landscape

Rank	Frequency	Paper title	Journal	Author	Time
1	161	The Language Use Status in the Urban Language Landscape of Ethnic Minority Areas: A Case Study of Gucheng District, Lijiang City	<i>Language Strategy Research</i>	Li Lisheng, Xia Na	2017
2	121	Progress and Prospects of Urban Language Landscape Research	<i>Human Geography</i>	Xu Ming, Lu Song	2015
3	87	Urban Language Planning Issues	<i>Journal of Tongji University</i>	Li Yuming	2021
4	67	Global Sociolinguistics: A New Theory of Lan-	<i>Applied Linguistics</i>	Tian Feiyang, Zhang Weijia	2014

		guage Landscape Research - Taking the Bilingual Public Sign on Xueyuan Road in Beijing as an Example			
5	66	The Multilingual Status of Macau in the Language Landscape	<i>Applied Linguistics</i>	Zhang Yuanyuan, Zhang Binhua	2016

4 Existing Problems in the Study of Urban Linguistic Landscape

Firstly, the theoretical foundation of urban linguistic landscape research is weak. As an important research direction in linguistics, language landscape has a relatively short research history and insufficient theoretical system. Therefore, related studies exhibit interdisciplinary and cross disciplinary characteristics, and research theories often rely on the joint construction of theories from other disciplines.

Secondly, the research methodology is too singular. Among the 228 selected literateurs, research on urban language landscapes is mostly conducted through photographs or field surveys, with a single source of information and a lack of standardization in most language materials. It is difficult to ensure that the collected language materials can truly and completely reflect the development of language landscapes in a certain region. The selection of materials for language landscape research should be diverse and diversified, which can truly reflect the situation of local linguistic landscape construction over a period of time.

Again, the research content is not in-depth enough. Research often focuses on conventional code selection and neglects the study of non linguistic texts. Research usually focuses more on the number of language codes and language usage, with insufficient attention paid to other modalities such as fonts and colors. Research usually focuses on tourist cities with high attention, while neglecting the settlements where most residents live. Most of the research focuses on tourist attractions, analyzing whether the language landscape is standardized and whether the information function meets the needs of tourists. These types of articles usually only focus on whether the linguistic landscape meets the needs of tourists and ignore the needs of local people who have been living here for a long time.

5 Research Insights and Future Prospects

This article takes urban language landscape as the research object, and uses the scientific measurement method software CiteSpace to expound and analyze 228 literature related to the study of urban linguistic landscape included in the CNKI database

from 2014 to 2024. The aim is to reveal the development process, hot literature, and topics in the field of linguistic landscape research, and to sort out the current research status and development context in the field of linguistic landscape. The following inspirations are obtained: (1) Enriching the theoretical framework. At present, the research on urban linguistic landscape in China is still in the stage of introducing foreign theories, with weak theoretical foundations and a lack of localized theoretical exploration and guidance. There are also no monographs published in this area; (2) Expanding the breadth and depth of research. Expanding the scope of research, such as combining language landscape research with education, multimodality, and online virtual space research; On the other hand, it is necessary to expand the depth of research and delve deeper into the underlying reasons behind the surface of language, in order to reveal the identity, meaning, and power relationships behind the linguistic landscape; (3) Optimizing research methods. Linguistic landscape research should combine quantitative research with qualitative research, descriptive research with interpretive research. It should not only focus on the number and proportion of various language signs, but also put forward constructive suggestions for language planning in a certain region, especially in countries and regions along the the Belt and Road.

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