



2395-2636 (Print);2321-3108 (online)

A Multimodal Metaphorical Analysis of Urban Public Space Signs in China based on Conceptual Blending Theory

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DOI: [10.33329/rjelal.13.3.315](https://doi.org/10.33329/rjelal.13.3.315)



Article info

Article Received: 23/07/2025
Article Accepted: 16/08/2025
Published online: 20/08/2025

Abstract

Urban public space signs play a significant role in guiding public behavior and conveying cultural information. Due to their combined characteristics of image, text, and sound, the multimodal metaphor phenomenon of these signs is worthy of in-depth study. This research collects pictures or videos of urban public space signs from various cities in China, and uses concepts such as input space, category space, and fusion space from the concept integration theory in cognitive linguistics to systematically analyze the multimodal elements and their metaphorical mapping relationships in the signs. The aim of this research is to, based on the concept integration theory in cognitive linguistics, analyze the cognitive mechanisms, cultural connotations, and social functions of the multimodal metaphor phenomena in Chinese urban public space signs. The study finds that the multimodal metaphors in urban public space signs present a rich variety of types and characteristics, such as the concreteification of abstract concepts and the transmission of cultural values through symbolic elements. These metaphors not only help improve the communication effect and attractiveness of the signs at the linguistic level, but also reflect the social cultural background and public cognitive psychology of China.

Key words: multimodal metaphor, conceptual blending theory, urban public space signs, cognitive linguistics, cultural semiotics.

1. Introduction

With the acceleration of urbanization, urban public spaces have become an indispensable part of people's daily lives. The language laws reflected in spatial language

prompt people to reflect on and adapt to the characteristics of modern and postmodern economies, politics, and cultures to accommodate the changes in social conditions (Lu & Chen, 2023). Urban public space signage

not only provides direction and functional explanations for people but also conveys the cultural connotations and social values of the city through its unique visual symbols and language expressions. However, traditional research on urban space signage has mostly focused on its functionality and practicality, while in cognitive linguistics aspect, the multimodal metaphorical phenomena in signage have rarely been deeply explored.

With the rise of multimodal research, the study of metaphor has also expanded from a single text analysis to the interaction and fusion of multiple modalities, such as visual and auditory. Forceville (2009) posited that the investigation of metaphors should transcend linguistic boundaries, encompassing a variety of media including visual imagery and auditory signals, leading to the conceptualization of multimodal metaphors. In the field of cognitive linguistics, Fauconnier and Turner's Conceptual Blending Theory provides a powerful theoretical framework for analyzing multimodal metaphors. As an important way of meaning construction in modern communication, multimodal metaphors can concretize abstract concepts and create rich cognitive associations and cultural implications through the integration of various symbols such as images, text, and colors. In recent years, research on multimodal metaphors based on conceptual blending has gradually attracted attention, especially demonstrating strong explanatory power in fields such as advertising, branding, and visual arts. However, its application to the study of urban public space signs remains unexplored. As a country with a rich cultural heritage, urban public space signs in China contain unique cultural metaphors and cognitive patterns in their design and use, which urgently need to be deeply explored.

This study takes Chinese urban public space signs as the research object, based on Conceptual Blending Theory, to explore how multimodal elements such as images, text, and colors in signs convey cultural meanings and

social norms through metaphorical mapping. This study aims to reveal the types of multimodal metaphors, cognitive mechanisms and cultural connotations in urban public space signage, providing theoretical support for optimizing signage design and enhancing the communication power of cities. At the same time, it offers new perspectives and methods for signage research in cross-cultural contexts.

2. Overview of Multimodal Metaphors Researches in Linguistics

Multi-modal metaphor refers to a metaphor in which the source domain or the target domain is constructed by two or more modalities at the same time (Zhao, 2011). The multimodal metaphor theory holds that metaphor is not merely a linguistic phenomenon, but a widespread cognitive and communicative phenomenon that can occur in various modalities. Forceville (1996) classified picture metaphors into four categories: Picture Metaphor Type 1 (MP1), Picture Metaphor Type 2 (MP2), Picture Analogy, and Visual-Pictorial Mixed Metaphor. This non-verbal metaphor theory broke the traditional limitation of metaphor research, which was confined to language, and expanded the research perspective to the non-verbal symbols, providing a new theoretical framework and analytical tools for metaphor research. In the interdisciplinary field of modern linguistics and cognitive science, multimodal metaphor has gradually become a research hotspot. Feng and O'Halloran (2013) proposed the theory of multimodal metaphorical visual representation based on Kress and van Leeuwen's visual grammar and Halliday's systemic functional linguistics. They hold that the meaning of visual images can be analyzed based on Halliday (1994)'s systemic functional linguistics. On this basis, Kress and van Leeuwen (2006) proposed that visual images can be analyzed from three aspects: representational meaning, interactive meaning and compositional meaning. Feng and O'Halloran (2013) further applied this analytical framework to the study of multimodal

metaphor, providing a systematic theoretical framework for understanding multimodal metaphor. Zhao (2022) combined ecological discourse analysis and multimodal cognitive criticism analysis to construct an ecological discourse analysis framework based on multimodal metaphor scenarios. Eleni's (2024) research, through a detailed analysis of contemporary art projects, explored the nature of multimodal metaphors in terms of their forms, concepts, and usage. Zang (2024)'s research, based on systemic functional linguistics as the theoretical foundation, explored the construction and interpretation patterns of multimodal metaphors. In summary, at the theoretical level, the expansion of multimodal metaphor research is always analyzed in combination with other theories.

The research paradigm of multimodal metaphor studies has been continuously deepened and optimized, not only in the improvement and integration of theories and methods, but also in the expansion of the scope of genres (Han, 2024). The exploration is conducted using corpora from various genres such as education, news, films, and advertisements. Zhao (2022) conducted an in-depth analysis of the multimodal metaphors present in 300 socialist core values posters from the perspective of social cognition. Feng, Wu, and Xiang (2022) studied the visual and multimodal metaphors in online public welfare advertisements, founded that most of the metaphors in these advertisements were designed to serve an overarching metaphor, such as "epidemic prevention work is war," as mentioned in the article. Chen (2022) studied the construction mechanism behind the metaphorical and metonymical elements in news cartoons, based on the concepts of metaphor theory and multimodal metaphor theory. Han (2024) has also indicated that in recent researches, theories and methods from multiple disciplines have been introduced into the study of multimodal metaphors, with the relevant theoretical tools and analytical

methods being deepened, expanded, and refined.

These studies have enriched the theoretical development and application research of multimodal metaphor. The study of multimodal metaphor provides us with a new perspective to understand and interpret complex social and cultural phenomena. However, there are no relevant applications in urban landscapes and public sign discourse. This research aims to analyze the multimodal metaphor in urban public space signs from this perspective.

3. Theoretical Basis and Research Design

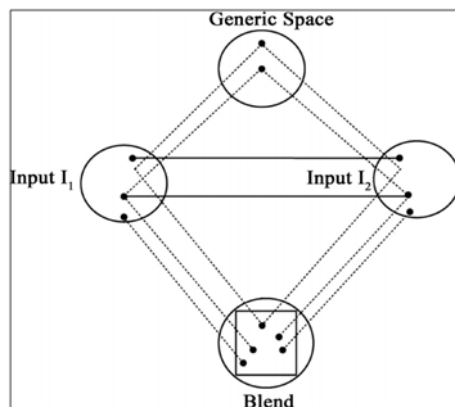
3.1 Conceptual Blending Theory

Conceptual Integration Theory, as a cognitive science theory, is often used to explain how humans integrate different ideas or pieces of information into a new coherent meaning. The model of Conceptual Integration Theory is frequently applied to the study of news and comics, and its application in the field of advertising is relatively less common. However, previous research has shown that Conceptual Integration Theory can be utilized to analyze the multimodal metaphors present in various subjects.

Conceptual Blending theory is based on mental space theory. Fauconnier (1985) published the book "Mental Space", which suggested that the information stored in mental space was continuously expanded with the development of discourse. This theory emphasizes the integration process of elements in different cognitive spaces, which can reveal the complex cognitive mechanisms and meaning construction processes behind multimodal symbols. Conceptual integration is a theoretical framework about discourse management. Conceptual blending theory is a theory based on cognitive psychology that explains human cognitive processes through the integration and connection between concepts.

Conceptual Blending Network

The Conceptual Blending Network refers to the cognitive process of blending disparate concepts or information sources into a unified framework, facilitating the comprehension of complex ideas and the resolution of intricate problems through cross-domain mapping and structural integration.



(Fauconnier 1997: 151)

The entire conceptual blending model is constituted by four cognitive spaces, namely Input Space I, Input Space II, the Generic Space, and the Integrated Space. The shared structures and common abstract information from the two Input Spaces are projected into the Generic Space. Simultaneously, selective mappings from both Input Spaces are mapped onto the Integrated Space. The Integrated Space draws upon partial structures from the two Input Spaces to form a structure of emergent blending. In this manner, a chain of mappings interlinks the four spaces, creating the conceptual integration network.

In Conceptual Integration Theory, there are four main types of integration networks. The first type is the Simplex Network, where Input Space I1 contains an abstract frame, and Input Space I2 provides elements to fill this frame. Through cross-space mapping, the elements are integrated into the frame. The second type is the Mirror Network, where both Input Spaces offer the same frame but with different elements, creating a mirrored mapping through integration. The third type is the One-scope Network, in which the two Input Spaces have

different frames, and one frame is projected into the Blended Space to continue its operation there. The fourth type is the Two-scope Network, where the organizational frames of both Input Spaces are projected onto the Blended Space and continue to operate there, forming a more complex integration structure. These integration types reflect the diversity and complexity of conceptual integration, playing a key role in human thought, language, and creative activities.

3.2 Connections between Multimodal Metaphors and Conceptual Blending Theory

In multimodal metaphors, the cognitive process of reifying abstractions enables the comprehension of conceptual entities, thus achieving the cognitive construction of meaning. Ding and Shi (2023) have noted that, in meaning construction, the emergence of innovative structures within conceptual blending theory is fundamentally akin to the semantic construction within multimodal metaphors. Therefore, the conceptual blending theory can be utilized to underpin the meaning-making process of multimodal metaphors. Yu and Xu (2023) also pointed out that Conceptual Integration Theory is an effective approach to elucidating the meaning-making process of multimodal metaphors.

Li (2015) studied the multimodal metaphors in "Desperate Housewives 1" from the perspective of Conceptual Integration Theory. She pointed out that the mapping of multimodal metaphors involves integration from multiple aspects, which is the result of conceptual integration. Ding and Shi (2023) verified the feasibility of Conceptual Integration Theory in the analysis of multimodal metaphors. In summary, while some scholars have explored the analysis of multimodal metaphors at the level of conceptual integration and have provided perspectives and approaches, there is still a lack of analysis on the conceptual blending model level in the context

of commercial advertising for multimodal metaphors.

4. Analysis of Multimodal Metaphors in the Advertisements of Urban Public Space Signs in China

4.1 Corpus Collection

The research corpus of this study mainly comes from online platforms, including tourism promotion websites of scenic spots in various cities across China, academic journals related to the research, social media, and online image libraries, etc. This approach ensures the diversity and representativeness of the corpus. However, in the analysis of the main text, considering the copyright of the images, the analysis in the main text is only presented through the language analysis and feature summary of each case.

This study collects pictures, videos and other corpora of public space signs in various cities across China, and uses concepts such as input space, generic space, and fusion space in the theory of conceptual integration to conduct a systematic analysis of the multimodal elements such as images, text, and colors in the signs and their metaphorical mapping relationships. This study aims to reveal the types, cognitive mechanisms, and cultural connotations of multimodal metaphors in public space signs in cities, provide theoretical support for optimizing sign design and enhancing the cultural dissemination power of cities, and at the same time offer new perspectives and methods for sign research in cross-cultural contexts.

4.2 Analysis of Multimodal Metaphors in Urban Public Space Signs

This part conducts a multimodal metaphor analysis of some urban space signs in China from three aspects: the innovation of traditional signs, the expression of urban

characteristics, and the expression of social culture. These public space slogans mainly convey meanings or notifications to viewers through the combination of special graphics or colors and language. This section will analyze the cognitive mechanisms embodied in the multimodal metaphors present in these signs, such as how the synergy of different modalities can activate people's existing knowledge and experience, and promote the integration and mapping of concepts.

4.2.1 Innovative Expressions of Traditional Signs from the Perspective of Multimodal Metaphor

In urban public areas, some traditional signs for reminders, notices or warnings, etc. have been designed and modified in terms of color and graphics, combined with instructive text, to convey corresponding meanings. This kind of metaphorical reinforcement also enhances the effect of the notice text. The following will explain through several more representative examples.

Example 1: The sign in the subway station stating "Do not crowd, maintain distance" uses the "water droplet ripple" graphic.

Input Space 1: Contains the schema of "A water droplet falling onto the water surface creates ripples": representing diffusion, fluctuation, influence range, and mutual interference.

Input Space 2: Crowded crowd: representing density, contact, potential crowding and the risk of stampede.

Generic Space: The water droplet ripple has gaps and fluctuations; the crowd will gather, be crowded, and there will be personal safety distance.

Blended Space: Each person is like a water droplet, needing to maintain a certain safe distance to avoid mutual interference or potential danger, jointly maintaining an orderly subway public environment.

The metaphor “crowd density” is metaphorically represented as “the degree of water surface fluctuation”; “safe distance” is metaphorically represented as “the radius of the ripple”. The ripple graphic is no longer just a physical phenomenon; it is integrated as a visualized expression and warning of the safe social distance. This design is more in line with people’s cognition than pure text and traditional water-saving signs.

Example 2: Water conservation symbol: The overall symbol is a large blue water droplet shape, with a water droplet being dragged above the hand inside, and the text below the hand indicates in Chinese and English: “Please conserve water”.

Input Space 1: The blue water droplet represents the purity and preciousness of water, and the hand symbolizes protection.

Input Space 2: The text “Conserve water” directly conveys a clear message, guiding people to adopt water conservation behaviors in daily life.

Generic Space: Protecting water resources.

Blending Space: Cherishing, protecting, and rational utilization of water resources, and conserving water.

The combination of the intuitiveness and emotionality of the graphics with the clarity and standardization of the text strengthens the promotional effect of water conservation. The graphics attract people’s attention and stimulate interest, while the text clearly specifies the specific behavioral requirements. Together, they complement each other, prompting people to understand and accept the concept of water conservation, and respond in action, raising people’s awareness and enthusiasm for water resource protection.

Example 3: Roadside bicycle parking signs in Shanghai: The tilted white chain graphic delineates multiple parking locations for bicycles, while the orange chain forms the shape of a “P”.

Input Space 1: The chain represents constraints and limitations.

Input Space 2: The designated parking points for bicycles as stipulated by the government.

Generic Space: The meaning of regulations and limitations, emphasizing a certain order.

Blending Space: Bicycles need to follow rules when parked at the designated spots; they cannot be parked randomly.

The addition of the chain pattern enhances the visual impact of the sign, symbolizing the emphasis on the bicycle parking area and the maintenance of order. It reminds pedestrians and other vehicles to avoid and also subconsciously guides them to park the bicycles in the prescribed positions, reflecting the importance placed on the order of the bicycle parking area.

4.2.2 Expressions of Characteristics of Cities from the Perspective of Multimodal Metaphor

In some cities, the public space signs are designed and beautified according to the characteristics and features of the city, aiming to promote the city’s culture and showcase its unique identity. In these signs, various elements such as local culture and the city’s historical buildings are usually incorporated.

Example 4: Wooden sign for the “Noise Reduction Initiative” at the Bell and Drum Towers in Beijing: The overall design is a wooden cloud-patterned plaque, with a solemn and serious connotation.

Input Space 1: The shape is a plaque with urban cultural characteristics, carrying a sense of solemnity and seriousness.

Input Space 2: Noise reduction is required near cultural heritage buildings.

Generic Space: Historical cultural heritage is serious and precious.

Blending Space: Respect for historical cultural heritage and relics, and reduction of noise.

The wooden plaque is in harmony with the historical and cultural connotations of Beijing. The wood and cloud patterns evoke associations with history and traditional culture, the cursive script text directly conveys information about cultural inheritance and behavioral norms, and the QR code symbolizes the convenience of modern information dissemination. Through this unique design, the reverence for history and culture and modern civilized behavioral norms are combined, conveying the importance of respecting, protecting and inheriting historical cultural heritage in Beijing.

Example 5: Panda-shaped Accessible Elevator Sign at Chengdu subway station: Combining the panda image with a wheelchair and noting the text: Accessible Elevator.

Input Space 1: Panda: Affable, friendly, representing Chengdu's affable city characteristics.

Input Space 2: Accessible Elevator Sign: Assistance, equality, help.

Generic Space: Friendly, providing help.

Blending Space: The panda's round body corresponds to the overall structure of the wheelchair. The panda's "friendly" trait corresponds to the accessibility of the facilities. The panda's city attribute corresponds to the attribute of the accessible facilities as "public service facilities of the city".

As a positive cultural symbol with regional characteristics, the panda is more affable compared to traditional signs without human touch. When paired with the accessible elevator sign and text, it better reflects the city's social progress and humanistic care. Moreover, this design can transform people's universal love for pandas into the inclusive concept that accessible facilities aim to convey.

Example 6: The signboard of the ancient city wall in Xi'an is set against an ancient city graphic background, accompanied by introductory text in both Chinese and English.

Input Space 1: The shape of the sign is the outline of a city tower, carrying connotations of antiquity, grandeur and cultural carrier.

Input Space 2: The introductory text in both Chinese and English emphasizes the cultural value of the ancient city wall.

Generic Space: The significance of the historical and cultural value of the ancient city wall.

Blending Space: The combination of the ancient city graphic and modern text (in Chinese and English), symbolizes a dialogue between history and modernity, indicating that the ancient city wall is not only a witness to history but also a part of modern urban life.

The introductory text in Chinese and English indicates the inheritance and dissemination of culture, and the use of English enables this cultural heritage to be understood and appreciated by a wider international audience. The combination of the ancient city graphic and text helps to build and strengthen Xi'an's identity as an ancient capital, emphasizing its unique cultural heritage and historical status.

4.2.3 Social-cultural Expressions from the Perspective of Multimodal Metaphor

The connotation of social culture encompasses the overall values, moral concepts and social concerns of a society. Some urban public signs convey these social cultural messages through multimodal metaphors, which guide public behavior and also reflect the ethos of a society.

Example 7: The design of the logo of the Love Seat featuring a red heart pattern on buses and subways.

Input Space 1: Two red hearts placed close together: representing positive emotions such as care, warmth, etc. Red itself has positive symbolic meanings in Chinese culture, such as auspiciousness, enthusiasm, and vitality.

Input Space 2: Seats provided for socially disadvantaged groups on public transportation

facilities, carrying the meanings of “care” and “assistance”.

Generic Space: Both the two adjacent red hearts and the Love Seats convey the meanings of attention and care.

Blending Space: The emotional significance of caring and protecting the disadvantaged groups in society.

On the logo of the Love Seat, there are usually words like “Special Seats for the Elderly, Weak, Sick, Disabled, and Pregnant” to explain. These words, combined with the graphic and color of the logo, further clarify the meaning of the logo, jointly constructing a complete metaphor system, guiding passengers to offer seats to those in need. This multimodal combination form further strengthens the warmth and care conveyed by the Love Seat, allowing the target group to feel the friendliness and support of society, and reinforcing the dissemination of the concept of social care.

Example 8: The sign in the park that reads “Advocating Civility and Building a Beautiful Community” is in the shape of an apple, with a red heart inside.

Input Space 1: The apple represents health and civility, while the red heart represents care.

Input Space 2: The concept of advocating civility and community building.

Generic Space: Love, growth, and care.

Blending Space: The combination of the heart and the red apple symbolizes caring and civilized behavior, which can promote the construction of a beautiful community.

Apples are often associated with knowledge, wisdom, and growth in Chinese cultures. The combination of the heart shape and the apple forms a unique visual symbol, conveying the idea of promoting civility and growth in the community through love and care. This sign, through specific actions and visual symbols, evokes emotions and a sense of responsibility in people.

Example 9: In urban parks, the sign promoting “frugality and thrift” is designed in the shape of two red bowls and a pair of red chopsticks. One of the bowls has a silhouette of two farmers tilling the land at the bottom.

Input Space 1: Bowls and chopsticks: the process of obtaining and consuming food. Farmers: the process of food production.

Input Space 2: The concept of frugality and thrift.

Generic Space: Labor achievements such as food are hard-won and need to be saved.

Blending Space: By combining the shapes of bowls and chopsticks with the silhouettes of farmers tilling the land, a new meaning space is constructed, implying that people need to respect labor achievements. The red color, being bright and warning, will also make people pay more attention to and strengthen this concept. This sign appearing in modern urban parks reminds modern people not to forget the essence of traditional farming culture while enjoying the convenience of urban life, integrating traditional values into modern life scenarios.

In this section, by analyzing the multimodal metaphors in the traditional signage that innovates, showcases urban characteristics, and represents social culture in public spaces, it can be observed that urban public space signage not only conveys information but also contains rich cognitive mechanisms and cultural connotations. These signages, through the integration of multimodal elements such as images, text, and colors, make abstract concepts concrete, enhancing the communication effect and appeal of the signage.

5. Conclusion

According to the above research, in the design of signs in some cities should refer to people’s metaphorical thinking characteristics and achieve the purpose of publicity or warning through a combination of graphics, colors and text. First of all, some commonly used signs can adopt relatively distinctive metaphorical

designs based on simplicity and clarity, such as graphic elements that are consistent with the text content, which can arouse the interest of passers-by. Moreover, the design of some signs can also be carried out by combining urban landmark elements and social cultural elements, in order to evoke people's resonance and attention to these signs.

This study conducted a multimodal metaphor analysis of some common and representative public spaces in Chinese cities based on the concept integration theory in cognitive linguistics. The research found that the multimodal metaphors in the urban public space signs are coordinated in terms of patterns, colors, and text to achieve the intended themes, purposes, and values. This study is of great significance in optimizing sign design, enhancing the cultural dissemination power of the city, and guiding social behaviors. The research results provide a new perspective for understanding urban public space signs. This study offers theoretical support for further optimizing the design of public space signs and enhancing the functionality and cultural quality of urban public spaces; it also provides new perspectives and methods for sign research in cross-cultural contexts.

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