

A Cross-Cultural Corpus-Based Study of “Hole” and “Dong (洞)” Metaphors in English and Chinese

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Abstract. As a common natural formation, the concept of “hole”—and its Chinese counterpart “dong (洞)” —stems from early human experience, particularly those related to cave dwelling and shelter seeking. Both lexical terms function as conceptual prototypes that have been extended metaphorically diverse languages. This study conducts a comparative analysis of the metaphorical extensions of “hole” in English and “dong” in Chinese, drawing on data from bilingual dictionaries and linguistic corpora, including Corpus of Contemporary American English (COCA) and Center for Chinese Linguistics (CCL) Corpus. The analysis reveals that, although both terms share similar cognitive origins in the imagery of primitive caves and human habitation, variations in geographical environments, historical development, and social-cultural practices have led to different metaphorical pathways. By studying the development of “hole/dong” metaphor, this research intends to provide an insightful case for cross-linguistic metaphor research.

Keywords: Metaphor, Cultural Cognition, “hole”, “dong (洞)”

1. Introduction

Metaphor is a fundamental cognitive and linguistic phenomenon that appears across virtually all human languages. According to Lakoff, metaphor is to understand and experience something through another type of thing [1]. Rooted in the early human movement, perception and culture, metaphor play a crucial role in shaping cognitive models and influencing the structure and schema of different languages. Previous research on metaphor has largely focused on domains closely linked to early human experience, such as the human body, time, and space. However, those metaphors related to external environment elements—such as “hole” or dong (洞)—have not received enough attention [2]. In fact, environmental metaphors not only suggest the attitude towards problems or difficult situations, but also provide cognitive foundation for other abstract concepts.

Lakoff points out that metaphor is not only a figure of speech but a fundamental mode of cognition. Since then, cognitive linguistic based on his Conceptual Metaphor Theory (CMT) framework developed rapidly. However, critics have pointed out that CMT-based studies often rely on isolated and selectively chosen examples, thus calling into question the empirical validity and generalizability of their research. In response, the 1990s saw the rise of corpora-based approaches in metaphor research, allowing scholars to analyze a large amount of naturally occurring linguistic data. As both the cognitive and corpora linguistics emphasize the importance of authentic language

use, this methodological shift proved effective. Consequently, cross-linguistic comparative studies flourished. However, most of these studies have emphasized metaphorical function rather than examining the underlying cognitive processes.

This study intends to investigate metaphors related to “hole” in English and “dong” in Chinese by analyzing their meaning-extension processes and metaphor projection mechanisms. Furthermore, it seeks to uncover the potential reason by explaining the culture elements behind.

2. Literature review

Metaphor has long been considered a key component of human cognition. American scholar Lakoff detailed the definition and classification of metaphor and metonymy in his work, and elaborated the cognitive basis of metaphor. Langacker and other researchers further enriched the CMT by improving the Image Schema Theory [3]. Sweetser pointed out that physical perception is the source of psychological phenomena and metaphors [4]. And Gibbs explored the relationship between metaphor, body, and culture, stating that "metaphor originates from our embodied experiences. Therefore, metaphor essentially has cultural significance" [5].

Yet, research related to external environment is insufficient. Hole is a common element in our daily life, which derives from the cave people live, and has deep connection with human cognition. For example, Cibulskienė points out that hole metaphor is often related to economy recession [6]. Li stated that the metaphor of "eye is a hole" usually related to negative experience [7]. However, the metaphor study of "dong (洞)" in Chinese is nearly blank, not to mention the comparison between the two languages. Thus, this research selects "hole/dong (洞)" as research objects.

This research adopts Lakoff's metaphorical concept and cognitive linguistics as the theoretical framework. To achieve exhaustiveness in metaphor collection, the main language materials are collected from the Corpus of Contemporary American English (COCA) and the Center for Chinese Linguistics (CCL) Corpus [8], as well as English and Chinese dictionaries. From the perspective of English-Chinese comparison, this research intends to analyze the commonalities, individualities, motivations, and metaphorical projection scope of the metaphorical concept of "hole/dong (洞)".

3. Data analysis

3.1. Corpus selection and retrieval methods

This research uses two major corpora: the CCL Corpus developed by the Center for Chinese Linguistic of Peking University and the COCA Corpus created by Mark Davies. Up to 2024, the CCL Corpus comprises approximately around 5.84 billion Chinese characters in total. According to its website, modern Chinese materials, which is the main focus of this research, contains 4.75 billion characters ranging from 1949 onward. COCA, on the other hand, is balanced one-billion-word corpus of American English, covering eight genres such as spoken, fiction, popular magazines, newspapers, academic texts, TV and movies subtitles, blogs, and other web pages.

The corpora are likely to be unequal in their size. It is difficult to find balanced corpora with similar scale in Chinese and English with clear genre composition, time periods, and repetition rate. The CCL corpus provides abundant collocation of "dong (洞)" in Chinese, which is benefit for the exhaustive search of relevant lexical metaphors. And COCA offers flexible search queries in fields of morphology, syntax and semantic. Hence, these two corpora is compared to indicate the metaphors of hole/dong (洞) in Chinese and English.

Metaphors that constitute proverbs have been excluded because the scope of the study is limited to lexical metaphors only.

3.2. Sense selection

Steen explored the relationship between dictionaries and metaphors through empirical research [9]. The author found through statistics that dictionaries provide clear descriptions of 99% of metaphorical meanings in natural language. This also indicates that dictionaries have strong explanatory power for metaphorical expressions. Therefore, this research would be based on the analysis of dictionary items.

To collect items as comprehensively as possible, several authoritative dictionaries will be chosen as the origin as they provide as much items including possible metaphors. The selected Chinese dictionaries are Hanyu Da Cidian (The Great Chinese Dictionary), Xinhua Dictionary, The Contemporary Chinese Dictionary and Handian. And the English dictionaries are Oxford Advanced Learner's Dictionary (OALD), Merriam-Webster's Collegiate Dictionary, Collins English Dictionary and Longman Dictionary of Contemporary English. According to componential analysis theories, the items that are mutually substitutable were merged, and those that can be further differentiated were split. Corpora were used to exhaustively search the relative items. The items of dong and hole in dictionaries are listed in Table 1.

The prototype meaning of dong in Chinese, indicating the huge rock cave with water flow and echoes. By analyzing the formation of Chinese character "洞", dong was usually created by a flow of water on the rock or other material, with fixed outwards direction. According to English dictionaries, the prototype meaning of hole in English is a three-dimensional cavity that perforates or indents an otherwise continuous surface, allowing objects or substances to enter or pass through it. It has the similar meaning of dong (洞) in Chinese, but has different extension pathway.

Table 1. The items of dong(洞) and hole

Category	Items of Dong (洞)		Items of Hole	
	Meaning	Tense	Meaning	Tense
Similarities	窟窿(hole)	n.	a space or opening on the surface of something	n.
	问题,漏洞(problem)		a fault or weakness in a plan	
	打洞(make holes)	v.	made holes in something buy guns or other weapons	v.
	洞穴(cavity)		an opening through something	
Differences	拱道(archway)	n.	the home of a small animal	
	口令中用以代替数目中的“零”(used in passwords to replace 'zero' in numbers)		the places on a golf course that the ball must drop into	
	幽深(deep and serene)		a wretched or dreary place	n.
	透彻(thoroughly)		a position of owing or losing money	
	清澈(clear, limpid)	adj.	an awkward position	
	敞开(openwide)		a place or position that needs to be filled because sb./sth. is no longer there	
	贯穿;通达(penetrate)	v.	hit the ball so that it goes into the hole	v.
	通晓;知悉(thoroughly understand)			

As is shown in Table 1, both dong and hole share the three similar meanings as "a hollow space in something solid or in the surface of something", "make a hole in something" and "a fault and weakness in a plan". While the other items diverged due to the different environmental and historical elements.

3.3. Metaphorical projection

3.3.1. Dong (洞) metaphor in Chinese

(1) Spatial domain:

洞天(fairyland), 洞府(abode of fairies and immortals), 洞房(bridal chamber): In these examples, dong remains its features of deep and serene, referring to secluded and secretive places. "洞天(fairyland)" and "洞府(abode of fairies and immortals)" indicates the quiet and remote place where the immortals live and cultivate their vital energy in Chinese myths. "洞房(bridal chamber)" derived from the deep stone chamber where the newly married couples lived. The serene and close characteristic was extracted from the original context to imply the close relationship between the couple.

黑洞(black hole), 虫洞(wormhole): The deep and penetrable characteristic was drawn from dong and applied to refer to the celestial body or conceptual structure in space.

(2) Consciousness domain:

漏洞(loophole): Derived from the leak on the roof, the penetrable characteristic of dong is abstracted and linked with the omission part of steps. Therefore, dong can be projected to the abstract domain, which refers to the flaw or weak points in the documents.

洞见(insight), 无底洞(a bottomless pit): The emergence of this extended meaning is related to the dynamic schema. In the dynamic schema, the cognitive subject can concretize abstract emotions through emotional power and similarity psychological associations. These associations provide emotional driving forces, leading to projection onto abstract concepts. The deep and penetrable features of dong is projected to mind and thoughts, meaning profound insight. While the feature of bottomlessness is projected to events and issues, indicating a difficult situation constantly consuming time, money or energy.

3.3.2. Hole metaphor in English

(1) Spatial domain

Rat hole, shit hole: The metaphor of hole in these expressions carries strong negative meaning which is associated with the solitary-confinement cell.

Black hole: This metaphor usually connects the certain features of hole with an abstract concept. The deep characteristic of hole was connected with celestial body, indicating its bottomless nature.

(2) Consciousness domain

Holes in story, plot holes: The metaphor of hole links "physical cavity" with "blank space of information or logic". It stems from holes on clothes or cracks on walls, and turns into the 'gaps' in stories, theories, and memories.

(3) Social relationship domain

In the hole, in a hole, rabbit hole, burn a hole in budget: The dilemma metaphor associates "falling into a physical hole" with "getting into trouble". It comes from the early experience of falling into a pit or trapped underground, and is applied to depict the "dilemma" of economic, emotional, and social situations.

4. Cognitive commonalities and differences in the metaphorical concept of "hole and dong"

At a macro level, the metaphorical conceptualizations of hole and dong exhibit considerable cognitive commonality. This similarity stems from shared physiological foundations, parallel experiences of the physical world, and comparable cognitive mechanisms. The human nervous system responds similarly to external stimuli across cultures, and both Chinese and Western societies rely on embodied cognition to conceptualize and structure environmental features. Consequently, "hole" in both English and Chinese has negative extensions such as problems, omissions, or gaps. People tend to organize the activities of the objective world through mental activities, conceptualize and structure them, and possess universal cognitive laws and logical reasoning methods.

However, differences in the geographical conditions, cultural experiences, and social structures have led to distinct meaning extension pathways.

In the spatial domain, the metaphorical extensions of "hole/dong" are deeply influenced by distinct climate characteristics. The original area of Chinese language is one of the areas with the richest underground river caves in the world, and thus possessed highly complicated river networks. Those caves with water flows determined the initial concept of caves in Chinese, which later evolved all the related items suggesting deep, clear, and thoroughly, etc. While in the initial Indo-European language area, a large number of natural caves, fallen logs, and underground caves are used as "natural roofs" in grassland-forest areas.

In the consciousness domain, the concept of "hole/dong" is closely related to social activities. In Chinese, the artificial surface defects such as wall holes, boat holes, and clothing holes make up large proportion in daily usage. The abstract meaning of dong, such as the extension to problems and omission, derives from the leak in roof or cloth. While in English, hole is closely related to business. Expressions like "in the hole," "burn a hole in budget" indicates the trade culture in English area.

5. Conclusion

In summary, this study has examined the metaphorical extensions of "dong(洞)" and "hole" within the framework of Conceptual Metaphor Theory (CMT) and corpus-based cognitive linguistics. By grounding the analysis in authoritative lexicographic materials and corpora, the research has demonstrated that both lexical items originate from a spatial prototype—an empty, penetrable cavity—yet diverge in their subsequent pathways under the influence of geography, culture, and socio-economic practices. In Chinese, dong is often projected to spatial and consciousness domain with neutral and slightly positive meaning. While in English, hole often related with difficulties and problems in natural environment, consciousness and social relationship, carrying a strong negative implication.

These differences corroborate the view that metaphor is not merely universal but also ecologically and culturally modulated; environmental affordances and habitual practices act as selection scheme. Consequently, the comparative analysis of “environmental metaphors” enriches the theoretical landscape of conceptual metaphor studies by integrating geographical determinacy and cultural specificity into the explanatory framework. The usage of corpus help to explore the frequency of metaphors, and the highlighted characteristics in certain domain.

The study suggests that future investigations should pay attention to environmental metaphors and their interactions with cultural factors. Comprehensive and authentic corpus can be applied to better examine the certain dominant metaphors of the original meaning, to identify the nuance

metaphorical expressions, and thereby help to construct a more comprehensive, cross-linguistic atlas of ecological metaphor.

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