

# A Literature Review of the Image Schema Theory and Concepts of Construction

Zhu Ziqi

**Abstract**—Cognitive Linguistics holds a view that linguistics forms are usage-based and motivation-based, especially on humans' embodied conceptualizations. The image schema theory, as a new attempt to make language learning both interesting and effectively, plays a key role in Cognitive Linguistics and Neurology, featuring strong generality and explanatory power. Thus, this paper aims to examine a review of the existing literature on image schema. Besides, applying schematic constructions in teaching has sparked heated discussion among the scholars in the field of Cognitive Linguistics. For example, how to make constructions on idioms and phrasal verbs has also been greatly discussed in L2 acquisition. However, there has been a scarcity of research on the teaching of schematic constructions. To achieve this, this paper also aims to provide some suggestions for teaching practice.

**Index Terms**—Image schemas, embodied experience, concepts of construction, cognitive linguistics

## I. INTRODUCTION

As a critical subset of linguistic theories, Cognitive Linguistics (CL) considers meaning as central to the study of language. The emphasis of meaning distinguishes Cognitive Linguistics from generative grammar. The generative theory views that language is determined by a rule system largely independent of meaning. In contrast, the CL theory argues that a certain linguistic expression is connected with a certain conceptualized situation. Langacker is of the opinion that language is a system consisting of symbolic units or constructions, including fixed, partially-fixed expressions and schematic constructions [1].

A schematic construction is a kind of constructions that enables learners to comprehend language knowledge more deeply, memorize it more easily, use it more flexibly, and acquire it more effectively instead of rigidly imbuing it by having perform repeated pattern drills. Besides, Cognitive Linguistics also supports that linguistics forms are not arbitrary, but usage-based and motivation-based, especially on humans' embodied conceptualizations.

Based on these key features, the image schema theory is a new attempt to make language learning both interesting and effectively. The image schema theory is initially a vital component in Cognitive Linguistics and Neurology. Featuring strong generality and explanatory power, image schema has riveted numerous researchers' attention and been practiced in the mental process of language behaviour interpretation and English teaching [2]. Thus, this paper aims to examine a review of the existing literature on image schema.

Manuscript received October 17, 2023; revised November 10, 2023; accepted November 30, 2023.

Zhu Ziqi is with School of Foreign Languages, Southeast University, Nanjing, China. E-mail: kaylallez@126.com

## II. BASIC UNDERSTANDING

Embodied experience provides implications for image schemas, which derive from sensory and perceptual experience as we live in the world. Johnson originally defines image schemas as schematic images developed from bodily experience and non-bodily, abstract experience and humans' thinking patterns, which function as dynamic recurring structures [3]. In fact, it is hard to define image schema within one or two sentences. Therefore, there are three additional insights for better understanding.

### A. Image Schemas Derive from Interaction with the World

To begin with, image schemas are emergent [4]. Given the experience is based on our interaction in the world, this experience is closely associated with our physical and mental development in the early stage of human development. So, it is obvious that image schemas are not deemed as innate knowledge structures. For example, infants usually learn to behave themselves in the physical world after repeatedly following the certain behaviour with their eyes.

### B. Image Schemas Encompass All Types of Sensory-Perceptual Experience

Second, sensory experience includes systems of vision, touch, hearing and movement. One thing we need to emphasize is that although the term "image" seems to be restricted to visual system, it has been broadened in Cognitive Linguistics. That is to say, image schemas cover all systems of sensory experience and image-schematic concepts are represented in our mind in a form of holistic sensory experiences instead of a memory of a simple physical experience.

There is an analogy for better illustration: when crossing a street, we should take cautious actions, including stopping and looking both left and right (to judge there are cars coming with our eyes and whether it is permitted to get a pass), and listening (to judge whether there are cars coming with our ears). Crossing a street successfully and safely cannot be achieved by simply memorizing the steps taught by traffic rules, but by interrelated and integrated sensory-motor routines. In a nutshell, image schemas, which derive from sensory experience, can be regarded as summaries of perceptual states recorded in memory.

Additionally, by way of another illustration, the image schema CONTAINER, which is clearly demonstrated in the following part, is a result of our recurrent and ubiquitous experiences with containers. For example, the following extract from Johnson's book presents us an ordinary day:

You wake *out of* a deep sleep and peer *out from* beneath the covers *into* your room. You gradually emerge *out of* your stupor, pull yourself *out from* under the covers, climb *into*

your robe, stretch *out* your limbs, and walk *in* a daze *out of* the bedroom and *into* the bathroom. You look *in* the mirror and see your face staring *out* at you. You reach *into* the medicine cabinet, take *out* the toothpaste, squeeze *out* some toothpaste, put the toothbrush *into* your mouth, brush your teeth in a hurry, and rinse *out* your mouth.

Therefore, to some certain degree, imagistic experience is equivalent of sensory experience in Cognitive Linguistics, which develops from our interaction with the physical environment. Mandler argues that why image schemas can structure lexical concepts in a complex way lies in that they make concepts consciously accessible.

*C. Image Schemas are Abstract in Nature and Present the Bare Essence*

Third, image schemas are not detailed concepts but abstract concepts, which emerge and extracted from repeated instances of embodied experience. For example, the word container, rather than the word cabinet, can provide richer schematic meanings. For better understanding, the prototype theory can be used to shed insight on the idea of the abstractness of image schemas. A category is fully conceptual and non-objectivist. That is, it is based on the things as we perceive or experience them and not the things themselves. A prototype is simply a concept that we conceive of as the best-fitting, or most typical member, of a given category. The prototype-based structure is mainly used in categorization. A crucial property of such networks is that they are structured around a central meaning. For example, the bare essence of the conceptual category CONTAINER includes elements interior, boundary and exterior, which represents the properties shared by all instances, like cabinet, and teacup.

III. KEY COMPONENTS

Given image schemas are complex and can give rise to specific concepts, there are naturally numerous types of image schema (see Table I), provided by Cienki [5], Gibbs and Colston, Johnson, Lakoff [6] and Lakoff and Turner [7]. This paper seeks to present three key components, which are CONTAINER, FORCE, and SOURCE-PATH-GOAL.

TABLE I. A PARTIAL LIST OF IMAGE SCHEMAS

SPACE	UP-DOWN, FRONT-BACK, LEFT-RIGHT, NEAR-FAR, CENTRE-PERIPHERY, CONTACT, STRAIGHT, VERTICALITY
CONTAINMENT	CONTAINER, IN-OUT, SURFACE, FULL-EMPTY, CONENNT
LOCOMOTION	MOMENTUM, SOURCE-PATH-GOAL
BALANCE	AXIS BALANCE, TWIN-PAN BALANCE, POINT BALANCE, EQUILIBRIUM
FORCE	COMPULSION, BLOCKAGE, COUNTERFORCE, DIVERSION, REMOVAL OF RESTRAINT, ENABLEMENT, ATTRACTION, RESISTANCE
UNITY/MULTIPLICITY	MERGING, GOLLECTION, SPLITTING, ITERATION, PART-WHOLE, COUNT-MASS, LINK
IDENTITY	MATCHING, SURPRIMPOSITION
EXISTENCE	REMOVAL, BOUNDED SPACE, CYCLE, OBJECT, PROCESS

A. CONTAINER Image Schema

Lakoff demonstrates that the basic structural elements of the CONTAINER schema include interior, boundary and exterior. The Landmark (LM) (see in Fig. 1) has two structural elements: the area within the boundary (the interior) and the boundary. The exterior is the area outside the landmark. The container refers to the landmark because the boundary and the exterior make it a figure of closure. The prepositions, like in and out, can be conceptualized in the CONTAINER schema. When encountering specific instances, image schemas may possess different degrees of schematicity. But all kinds of these different image schemas develop from the most basic schematic one, which is mentioned before.

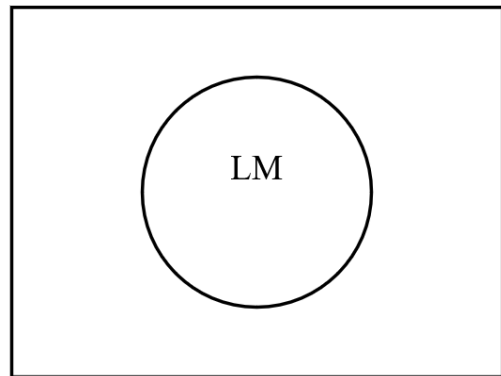


Fig. 1. CONTAINER image schema.

B. FORCE Image Schema

There are some shared characteristics of FORCE schemas: (1) they are experienced through interaction; (2) they involve a force vector, a single path of motion and degrees of intensity; (3) they have sources for the force and targets that are acted upon.

Moreover, FORCE image schemas give rise to many subsets of schemas, like the COMPULSION image schema, the BLOCKAGE image schema, the COUNTERFORCE image schema and the DIVERSION image schema (see Figs. 2–5). Therefore, image schemas can be rich in types and internally complicated.

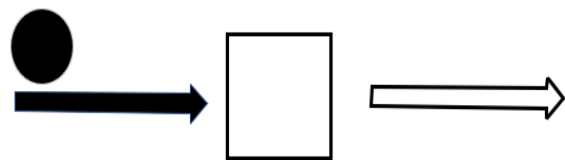


Fig. 2. The COMPULSION image schema.

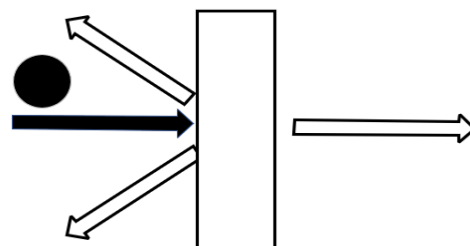


Fig. 3. The BLOCKAGE image schema.



Fig. 4. The COUNTERFORCE image schema.

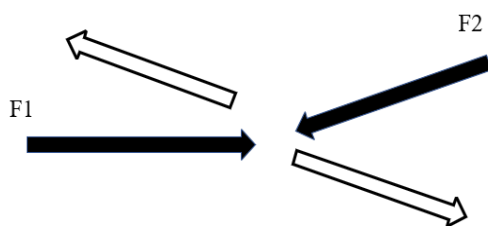


Fig. 5. The DIVERSION image schema.

### C. SOURCE-PATH-GOAL Image Schema

SOURCE-PATH-GOAL image schema can be simply called PATH schema (see in Fig. 6). A path is a means of moving from one location to another and it includes a starting point (SOURCE), a destination (GOAL) and perhaps some small locations between SOURCE and GOAL. For example:

- a. SOURCE: Mike left [England].
- b. GOAL: Mike travelled [to France]
- c. SOURCE-GOAL: Mike travelled [from England] [to France].
- d. PATH-GOAL: Mike travelled [through the Chunnel] [to France].
- e. SOURCE-PATH-GOAL: Mike travelled [from England] [through the Chunnel] [to France].



Fig. 6. PATH image schema.

## IV. DISCUSSION

To our knowledge, embodiment experience and concepts of instruction are closely related. For example, conceptual structures reflect embodied experience, which Johnson's theory demonstrates. Later, semantic structures reflect those conceptual structures, as Talmy's theory addresses, provide guidance for linguistic meanings. The relationship between these aspects is showed in Fig. 7.

### A. Significance of Image Schemas

#### 1) Image schemas can serve as the conceptual representation for linguistic meanings

As mentioned before, image schemas can structure lexical concepts in a complex way in that they can make concepts consciously accessible. So, image schemas are conducive to conceptually comprehending lexical items. For example, the FORCE schemas make us better understand the English modal auxiliary verbs (e.g., must). Johnson explains that the root meaning of must (physical necessity) derives from the COMPULSION schema, which is a subset of the FORCE

schemas. The COMULSION schema emerges from the experience of being moved by an external force, which is consistent with the linguistic meaning of must.

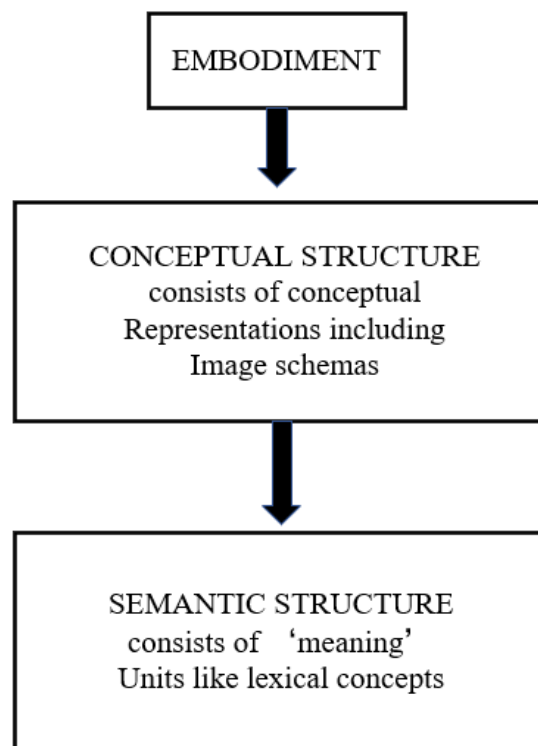


Fig. 7. From embodiment to linguistic meaning.

#### 2) Image schemas can provide basis for metaphoric mappings

Lakoff demonstrates that metaphor is a kind of thinking mode that offers a cross domain mapping in the conceptual system, enabling us to comprehend one conceptual domain in terms of another, regularly one based on our embodied experience.

The great significance of image schemas is that they can provide basis for these metaphoric mappings. For example, when we check the dictionary, we will find catapult means "hurl or launch something in a direction with a catapult". However, we could find another meaning presented in this sentence: I was catapulted into another world. The book amazed me. This sentence means that "I" enjoy reading the book. Here catapult means being suddenly positioned in someplace. It can be conceptualized by the UP-DOWN schema, in which UP tends to convey positive meanings, like surprise and amazement. Catapulting something is mainly on the upward tendency, which means positive meanings. Besides, an object can be thrown out, implying that it is light, not heavy, which is also consistent with positive meanings. It again proves that image schemas, which derive from sensory experience, are summaries of all kinds of sensory systems.

As mentioned before, the image schema theory is initially an integral part in Cognitive Linguistics and Neurology. Given its great contribution to linguistic meanings and metaphoric mappings, image schemas have caught more and more researchers' attention and gradually served as a useful tool in foreign language teaching, which will be discussed in the following part.

## *B. Implications for Language Pedagogy*

### *1) Image schemas enhance the acquisition of English prepositions*

Spatial prepositions in English have invariably been a challenging task for non-native speakers in second language acquisition. In essence, the spatial concept systems reflected in the linguistic level vary in different languages and the corresponding word is not completely consistent [8]. In addition, traditional grammar teaching places much emphasis on the rigid rules and fails to explain spatial prepositions. Therefore, it is difficult for learners to acquire language effectively in the cramming grammar teaching. The image schema view of English prepositions provides a new idea for the understanding and teaching of these prepositions. Compared with the traditional grammar teaching mode, the application of image schema in the teaching of spatial prepositions makes learners more actively participate in the teaching process and helps them to acquire spatial prepositions. This teaching model is helpful to improve learners' grammar learning and provides a good strategy for the design and implementation of spatial preposition teaching.

To be more specific, image schemas can be combined with graphics, categorization, metaphor and so on to explore the cognitive motivation of spatial prepositions and [9, 10]. Prepositions are originally lexical and grammatical means to represent the bare spatial essence and spatial relations. Image schema is dynamic representation of spatial relations and motions in space, which is consistent with the meaning of spatial prepositions. Image schemas can provide motivation for selecting proper propositions and weaken the influence of negative transfer of mother tongue. In addition, the teaching mode integrated with image schemas can arouse learners' enthusiasm and rivet their long-lasting attention. In a word, the application of image schema in English teaching can enhance the efficiency of the acquisition and use of spatial prepositions.

According to Tang and Lin, when the image schema theory is applied to the process of spatial preposition teaching, teachers should not only rely on the aid of corpus, but also enrich the approaches to representing the image schema of spatial prepositions, which are expected to be adjusted according to the needs of learners [11]. Besides, various kinds of flash dynamic graph representations should be added to make detailed explanation in the process of spatial prepositions with other methods. By doing so, the preposition teaching may not fall into a complex and boring cycle of image schema presentations. At the same time, the differentiation and accuracy of image schema representations of spatial prepositions should be strengthened so as to arouse learners' attention to the context in which spatial prepositions locate.

### *2) Image schemas shed insight on the acquisition of phrasal verbs*

Phrasal Verbs (PVs) are formed from a combination of verbs and adverb particles, and together with verbs and prepositions, verbs and PVs and other verb structures form one of the proverbial expressions whose meanings are relatively undecomposable in multi-word constructions. Phrasal verbs are composed of action verbs and a number of particles with spatial meanings. For example, go plus in, off,

about, across, along, on, out, down, over, up can form different phrasal verbs to express rich and complex lexical meanings.

In the semantic processing of phrasal verbs, the semantic contribution of particle words in phrasal verbs should not be ignored, although the traditional linguistics consider that phrasal verbs are an arbitrarily constituted language structure and semantics are not decomposable. On the contrary, Cognitive Linguistics argue that phrasal verb semantics are decomposable, and particles, especially prepositions and adverbs that present spatial meanings, obviously have their own semantic expression, which is a highly condensed mapping of spatial structure to specific conception. It is a dynamic cognitive structure that combines the perception of the objective environment with the physical experience and keeps reappearing, which is then developed as image schemas. Therefore, the semantic complexity of adverb particles is related to its own image schema. As mentioned before, image schema is the link between concrete experience and abstract concept, which is constantly strengthened through the unique expression concerning spatial meanings of adverb particles in the process of language use. There is no doubt that the inference of different meanings based on image schemas of adverb particles can make significant semantic contribution to the interpretation of phrasal verbs.

According to the research of Zhang and Wang, image schemas of adverb particles are not significantly affected by semantic transparency and semantic familiarity, suggesting that learners extract phrasal verbs and also activates the semantics of image schemas related to lexical meanings of adverb particles [12]. The research also reveals that if the image schema is consistent with the lexical meaning of adverb particle, semantic overlapping promotes the extraction and activation process. However, when the semantic conflict arises between image schemas and adverb particles, image schemas may hinder the processing of particles' meanings and then cause the image schema effect.

### *3) Image schemas give rise to the application of thinking visualization*

In terms of foreign language teaching, one of the biggest problems is that learners cannot be provided with sufficient foreign language experience, practice and construction of the bridge between the two languages. Image schemas can potentially solve this problem in that they can help individuals perceive and experience similar specific examples, with the help of visualization tools [13]. It is beneficial for students to learn the scattered words structured, to make explicit thinking and to achieve abstract knowledge visualization. Visualization that appears in the form of graphic to present complex visual thinking process will reveal the thinking that cannot be perceived and viewed via the visual graphics display. Visualization is more conducive to understanding and memorizing information, promotes learners to reflect on the process of thought, and visual results of thinking can also provide valuable feedbacks. Common visualization techniques include mind mapping, concept mapping, and thinking diagrams. Language acquisition is an interactive process of socialization, which requires expression, understanding and sharing by all members. The purpose of thinking visualization is to provide a visual means of information processing for learners, whose effectiveness

largely depends on learners' own knowledge storage. If learners do not have the corresponding knowledge to understand the logical relationship between graphics, the purpose of thinking visualization cannot be achieved.

#### V. CONCLUSION

Applying schematic constructions in teaching is one of the hot issues in Cognitive Linguistics. The concept of constructions has been greatly researched in L2 acquisition. Besides, how to make constructions on idioms and phrasal verbs has also been discussed in much research. However, there has not been much research on the teaching of schematic constructions. To achieve this, the image schema theory should be comprehended and applied in the teaching practice. The attempts to acquire prepositions and phrasal verbs with the aid of image schemas have been made by many researchers and have achieved certain success [14]. Moreover, thinking visualization has gradually applied so as to help SLA learners acquire knowledge and help teachers update their teaching strategies. It is a promising direction to develop the image schema theory.

In further studies, one thing needed to mention is that, in addition to prepositions and phrasal verbs, some other linguistic concepts that can be fostered by image schemas can be more studied. Besides, since the teaching mode integrated with image schemas can greatly arouse learners' interest, the long-lasting knowledge storage the flexible application in language practice should be highlighted.

#### ACKNOWLEDGMENT

The authors wish to thank Professor Liu Dilin and Professor Liu Ping.

#### CONFLICT OF INTEREST

The author declares no conflict of interest.

#### REFERENCES

- [1] R. Langacker, *Foundations of Cognitive Grammar*, Stanford, CA: Stanford University Press, 1991, vol. II.
- [2] R. W. Gibbs and H. Colston, "The cognitive psychological reality of image schemas and their transformations," *Cognitive Linguistics*, vol. 6, no. 4, pp. 347–378, 1995.
- [3] M. Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason*, Chicago: Chicago Press, 1987.
- [4] J. Mandler, *The Foundation of Mind: Origins of Conceptual Thought*, Oxford: Oxford University Press, 2004.
- [5] A. Cienki, "STRAIGHT: An image schema and its metaphorical extensions," *Cognitive Linguistics*, vol. 9, no. 2, pp. 107–150, 1998.
- [6] G. Lakoff, "The contemporary theory of metaphor," in *Metaphor and Thought*, A. Ortony, Ed. Cambridge: Cambridge University Press, 1993, pp. 202–251.
- [7] G. Lakoff and M. Turner, *More than Cool Reason: A Field Guide to Poetic Metaphor*, Chicago: University of Chicago Press, 1989.
- [8] A. Tyler, "Spatial language, polysemy, and crosslinguistic semantic mismatches: Cognitive linguistics insights into challenges for second language learners," *Spatial Cognition and Computation*, vol. 12, pp. 305–335, 2012.
- [9] M. Brenda, *The Cognitive Perspective on the Polysemy of the English Spatial Preposition Over*, Newcastle upon Tyne: Cambridge Scholars Publishing, 2014.
- [10] H. Ming, "A analysis of motivation in the meaning extension of "on" as spatial preposition," *Journal of Foreign Languages*, vol. 4, pp. 87–91, 2015. (in Chinese)
- [11] W. Tang and Z. Lin, "An application of image schema view in English spatial preposition teaching," *Frontiers of Foreign Language Education Research*, vol. 2, pp. 28–34+91, 2020. (in Chinese)
- [12] P. Zhang and X. Wang, "Semantic Effects and image schema in the sentence processing of polysemous phrasal verbs," *Journal of the University of Foreign Chinese (Shanghai Wai Chinese University)*, vol. 2, pp. 27–36, 2022. (in Chinese)
- [13] S. Sha, X. Gao, and H. Hu, "Image schema: An important method for the application of the discipline of thinking visualization technology," *Journal of Southwest University (Natural Science Edition)*, vol. 6, pp. 37–48, 2022. (in Chinese)
- [14] D. Liu and Q. Mo, "Conceptual metaphors and image schemas: A corpus analysis of the development of the on track off track idiom pair," *Journal of English Linguistics*, vol. 2, 2020.

Copyright © 2023 by the authors. This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited ([CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)).