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# A BNC Corpus-Based Study on the Image Schema Transformation of the Preposition TO

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## Abstract

**The polysemy TO has many meanings which confuse many EFL learners. The word class of TO can be divided into three categories, that are, preposition, infinitive marker, and adverb. The discussion in this article focuses on TO as a preposition as prepositions are the most multi-meaning in English words. As Taylor (2001) states that: "Amongst the most polysemous words in English, and in other languages are the prepositions" (p. 109). As an infinitive marker, it can be analyzed from different image schema transformations. Lakoff (1987) outlines four basic transformations: 'path focus to end-point focus', 'trajectory', 'superimposition', and 'multiplex to mass'. Embodiment is one of the most fundamental concepts in Cognitive Linguistics in that it underlies the guiding principles and theoretical assumptions for both cognitive semantics and cognitive approaches to grammar (Xu Wen & Taylor, 2021). The paper strives to find out the deeply cognitive and embodied origins of different meanings of TO. The paper reveals that the multi-meanings of TO can be demonstrated by various image schemas and embodiment theory helps EFL learners to clearly understand the root causes of a raft of multiple meanings of TO in light of the corpus analysis method. It is of fundamental significance to explore the polysemy TO's meaning related to our cognitive model concerning the image schemas based on embodiment. The paper is committed to providing useful enlightenments in pedagogical polysemy instruction and learning.**

## Keywords

**Polysemy TO; Image schema; Image schema transformations; Embodiment; Preposition; Infinitive marker.**

## 1. INTRODUCTION

Teachers and scholars are all in agreement that preposition learning poses a grave challenge to English learners. One reason for this is that the semantics of prepositions are notoriously difficult to characterize. Thanks to the complexity of their collocation and flexibility, people can use prepositions to express both spatial meaning and abstract complicated relation between numerous things in the world (Do, 2013). Additionally, prepositions tend to develop a complex set of extended meanings (Tyler, Mueller, & Ho, 2011). Traditionally, linguists take the meanings of prepositions as arbitrarily distributed. However, cognitive linguistics (CL) provides a novel perspective, indicating that the many distinct meanings associated with a particular preposition are related in systematic, principled ways (Andrea Tyler, 2003; Dewell, 1994). Our conceptual structures stemming from our sensorimotor interaction with the world can be more explained by imagistic models. Image-schematic structures are "constantly operating in our perception, bodily movement through space, and physical manipulation of objects" (Johnson, 1987). Much of our conceptual structure and then the way we talk, we think and cognition of preposition are shaped by our external experience with the world. Numerous meanings of prepositions are

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extended from theirprototypical sense to non-prototypical sense to shape a radial network. While such semantic extensions of prepositions are accomplished through image schema. The process enables image schema of spatial domain onto that of non-spatial or more abstract target domain. To sum up, image schema is indeed a derivative of embodiment,the article attempts to take image schema in cognitive linguistics to investigate the preposition TO's meaning comprehension. In contrast to traditional preposition teaching and learning, which is dependent on rote memory to acquire language knowledge. Language learning based on image schemas of cognitive linguistics may provide new insights into the understanding of multiple meanings of preposition. As instructed in traditional research, various meanings of prepositions are arbitrarilyrelated or even not related as all. CL linguists probe prepositions from our bodily embodiment as they hold the view that conceptual structures derive from our interactionwith the physical world. We would like to probe into the image schema instruction functions in term of BNC corpus researching and theory description to postulate the meanings of preposition TO. We begin with an overview of CL image schema theory which are central to English prepositions comprehension. Next the corpus basedexperiment will be adopted to find out the preposition usage of TO followed by discussion. We end with our ultimate conclusions and a few of the paper's limitations and future directions for experimental works on the traditionally different learning method focusing on image schemas as physical interaction as foci.

## 2. ANALYTICAL FRAMEWORK

"It goes without saying that polysemy must never be postulated lightly, and that it hasalways to be justified on language-internal grounds; but to reject polysemy in adogmatic and a priori fashion is just as foolish as to postulate it without justification" (Wierzbicka, 1985). "Polysemy arises from the fact the there are systematic relationships between different cognitive models and between elements of the same model" (Lakoff, 1987). The same word is often used for elements that stand in such cognitive relations to one another" (p.13). According to CL, a preposition is polysemous—one word having different, yet systematically related and motivated senses. The spatial preposition carries a core sense that is derived from our interaction with physical entities in the world and based on our sensory perception of our surroundings (Langacker, 2008). One of the most fundamental phenomena observed in language is the existence of a diversity of related meanings expressed by the same word-form (Lewandowska-Tomaszczyk, 2007). However, those polysemous words especially preposition such as TO have confused many language learners. Image schema was put forward firstly by Lakoff and Johnson in their famous book *Metaphors We Lived by*. Afterwards, the theory has been applied and studied in many fields. Johnson (1987) added that image schemas are embodied and shaped from our everyday experience with the world. Langacker in his cognitive grammar proposed that image schemas are composed of trajectory, landmark, and path which are asymmetry between trajectory and landmark (Langacker, 1987). Image schemas are meta-tools which help EFL learners to understand semantic structures of word clearly and deeply. Space metaphor is image schema metaphor (Lakoff & Turner, 2009). The invariance principle (Lakoff, 1990) in particular states that metaphorical mappings preserve the image- schematic structure of the source domain in a way that is consistent with the inherent structure of the target domain. What makes image schemas 'imagistic' is the fact that they are mental representations abstracted from experiences across different sensory modalities—auditory, visual, olfactory, gustatory, haptic, and so on. Image schemas are relatively abstract conceptual representations that arise directly from our everyday interaction with and observation of the world around us. That is, they are concepts arising from embodied experience (Evans & Green, 2006). Talmy (2000) argued that one of the ways that language encodes conceptual representation is by providing structural meaning, also known as schematic meaning and schematic meaning is directly related to fundamental aspects of embodied cognition, and can be divided into a

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number of distinct semantic systems, each of which provides a distinct type of meaning that is closely associated with a particular kind of embodied experience (Talmy, 2000). "Cognitive linguists share the belief that language is based on our experience ofthe world" (Ungerer, 2001). Therefore, as we can see, our cognition derives from our embodied experience that play a significant role in assisting us to know the world.

## 3. LITERATURE REVIEW ON IMAGE SCHEMAS OF PREPOSITIONS

### 3.1. Literature Review on Image Schemas of Prepositions Abroad

A number of studies in cognitive linguistics (Johnson, 1987; Tyler & Evans, 2003) have highlighted the significance of embodied experience and cognitive process to the analysis of English prepositions. In Lakoff's (1987: 444) words: "The naturalness of these [image-schema] transformations relative to our visual experience suggests that image-schema transformations and the Schemas they relate are not propositional in character. Rather, they are truly imagistic in character" Researchers in cognitive linguistics claim that not only a specific part of the brain, but rather the whole human cognitive system, influences the structure of language. Practitioners of cognitive linguistics thus try to construct a model of the human language system by looking at language and its connections with human sensory and perceptual experience in the world. These researchers (Johnson, 1987; Lakoff & Johnson, 1999; Langacker, 2008) have considered the model to be a collection of patterns that provide a rich basis for learning language. These abstract patterns, called image schemas, are mental representations merged with everyday sensory and perceptual experiences of physical objects. Brugman (1988) followed by Lakoff (1987), showed that OVER can be analyzed as a chained System of senses using Image Schemas and natural image- schema transformations (Dewell, 1994). A study of a polysemous lexical item—the English word "over"—paying specific attention to the character of the relations amongits senses (Brugman & Lakoff, 1988). Evans & Tyler (2004) examined prepositions such as TO and through are associated with spatial properties in addition to functional elements. They argued that the functional element arises as a consequence of our daily interaction with the spatial-configuration associated with the particular preposition. While TO is associated with a spatial-configuration in which a TR (trajectory) is oriented in the direction of a LM (landmark), its functional element is that of the LM constituting the TR's goal. The English preposition from is a symbolic structure whosesemantic component has been schematized so as to be extendable across a wide range of conceptual domains. Specifically, the meaning of this preposition issues from the image-schematic component SOURCE in a SOURCE-PATH-GOAL schema, thereby allowing it to function as an 'elaboration site' for orienting attention to an entity (Oakley,2007). Image schemas structure our experience independently of language. For example, we experience many things as containers- boxes, cups, baskets, our mouths, rooms, and so on (Dodge & Lakoff, 2008). The embodiment of TPR (total physical response) effects on learners' performance and retention has been conducted (Kuo, Hsu, Fang, & Chen, 2014). The study reviewed that traditional TPR and embodiment-based TPR's learners have no significant difference in learning performance but the experiment group has higher retention maintenance since body and mind are inseparable in the constitution of cognition. Many of the meanings of prepositions are derived from our bodily experience and conceptualization of the spatial-physical world (Mahpeykar, 2018).

### 3.2. Literature Review on Image Schemas of Prepositions at Home

By analyzing the image schemas of at, in, on, Luo (2003) concluded that imageschemas are foundation of conceptual metaphor and iconicity is cognitive basis of metaphors. Linguistics deem that metaphors can be functioned as assistance to aid people to have cognition of the world while the bridge helping us transfer from the source domain to the target domain is the image schema. Because of the similar cognitive model between the source domain and the

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target domain, image schemas areabstracted cognition in terms of bodily experience which assist metaphors to achieve their mission. Prepositions can be extended into a multiple meanings network by means of stretching from spatial concepts into a more abstract metaphorical reflection domain.Li (2007) put forward that image schemas have been frequently studied in polysemy words especially in prepositions. Wang (2007) probed into prepositions such as at, on, in and took them as a micro system including point, line, and side. Their prototypes can be extended into time, space, and action domain so that their metaphorical meanings appeared. Wang (2009) examined the image schema of over from the perspective of cross-linguistic translation. The writer proved that the image schemas of over are capable of complete its reflection in cross-linguistic translation. Ma and Wei (2009) introduced from image schema and conceptual metaphors in case of into. They found that the preposition can shift from its spatial domain to time domain so that image schema transformations would be accomplished, which are carriers of metaphorical meanings through transformations. Sun (2009) explored basic spatial meanings of prepositions aiming to focus the relationships of their separately image schemas and their cognitive rules. Ming (2009) also studied in a similar path, who made a research on image schemas role in spatial concepts of over and put forth that the multiple meanings of over in that image schemas can be transformed in spatial domain. Xu andYang (2013) researched prepositions such as above, over, on in depth proposing that spatial concepts are cognitive models taking image schemas as basis. We have discussed the image schema transformations of prepositions in from the spatial domainto other abstract domains. A number of scholars intend to enhance preposition educationquality in light of exploring the underlying cognitive model of prepositions as they have always been annoying EFL learners. The preposition on and before and other prepositions in English and Chinese has been probed to find out their underlying cognition (Fan, 2016; Wang & Yang, 2017; Zhang & Sun, 2017). English teaching of prepositions should emphasize image schemas role in prepositions spatial meanings and their metaphorical extending meanings (Xia, 2020; Tang & Lin, 2020). Zhao et al., (2020) investigate the English prepositions instruction by means of examine theefficacy of schematic diagramed tutoring. Besides, numerous researchers pay attentionto comparative studies on prepositions in terms of cognitive standing. Li (2021) made comparative research on Over in Chinese, English, and French from five dimensions including time, space, state, number, and social relations.

Based on previous research, the paper attempts to incorporate image schema transformations of To into analyzing its multiple meanings and those transformations in nature deriving from our body experience of the world. According to (Johnson, 1987)“an image schema is a recurring dynamic pattern of our perceptual interaction and motor programs that gives coherence and structure to our experience.” Image schemasare abstract cognitive structure stemming from our bodily interaction with the world. some of them are prototype originating from spatial domain, while some others are extending patterns in terms of extending those spatial image schemas into more abstractdomains such as time, emotion, and social relations etc. Due to numerous meanings ofprepositions, as traditional linguistics take those networks as arbitrary distribution, cognitive linguistics, however, initiates an unprecedented new page for languageteaching especially for the most polysemous word prepositions. Nevertheless, many a preposition have been explored such as at, in, on, behind and the like, few experimental investigations on preposition To have been explored. To, as a particular word, has threekinds of word classes including preposition, infinitive maker, and adverb and has beenused frequently. The article, bridging such a gap, will pay attention to its one classes- preposition to demonstrate its most complexed meanings and dig out its underlying cognitive model from the perspective of image schemas. This article lays out the fundamentals of a CL analysis of the semantics of English prepositions and reports ona BNC corpus experiment to show spatial networks and their metaphorical image schemas namely image schema transformations.

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# 4. BNC CORPUS-BASED EXPERIMENT

## 4.1. The Primary Meanings of To Analyzed from Major Image Schema Prototype

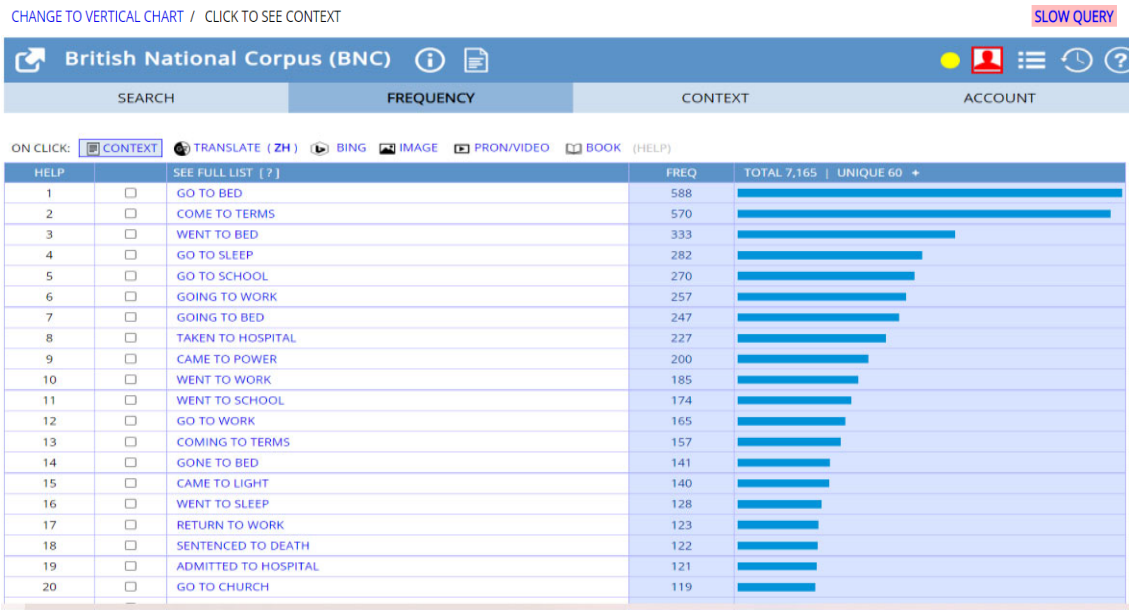
Yang (2021) probed into prepositions frequency in CLEC (Chinese LearnersEnglish Corpus) and BNC (Britain National Corpus) and found that the use frequency of the preposition To accounts up the largest percentage in two corpuses. The primary meaning of To can be comprehended from spatial standing. as is knownto all, we human beings are masters in the world, humans' comprehension is from surficial to inner essence. The understanding of To, as well, its major meaning is the path-focus-to-end-point image schema. Langacker (1987) proposed that imageschemas are composed of three parts including trajectory, landmark, and path. Thepath may be static or dynamic based on the focus on the path or the endpoint. As illustrated in the following examples derived from BNC corpus:

1a. I went to bed at eleven o'clock.

1b. I'm afraid he was sentenced to death yesterday.

In the example 1a, I as the TR (trajectory) must take movement to the direction of bed LM (landmark), so the process can be assumed as dynamic. The path from other places to the bed can be analyzed by path-focus-to-end-point image schema. In example 1b, he (TR) has been prisoned in a jail (LM), and the ruling process are dynamic, however, the final judgement result-he was sentenced to death, the path is static. Evans and Tyler (2004) argued that a particular Trajector (TR) can, in conjunction with a particular Landmark (LM), affect the interpretation of a preposition. However, the precise interpretation assigned to the prepositions is constrained and delimited by the sentential context, including the TR noun phrase,LM noun phrase, and verb which occur in the utterance.

A verb plus To and followed by a noun, the frequency words has been researched in BNC corpus, the results are illustrated in following graphs:




To as a preposition, the most collocation words are movement verbs: go, come, take, and return, sentenced, and admitted.

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| To's collocations | Frequency | Percentage% | Total Frequency |
|---|---|---|---|
| Go and its variant | 3202 | 44.69 | 7165 |
| Come and its variant | 1455 | 20.31 | |
| Return and its variant | 517 | 7.22 | |
| Take and its variant | 340 | 4.75 | |
| Sentenced | 122 | 1.70 | |
| Admitted | 121 | 1.69 | |
| Get | 117 | 1.63 | |

As we can see in the chart, To's prototype meaning is from one place to another, namely Johnson's path-focus or end-focus. To's usage is widespread, while its multiple word classes and various preposition meanings have complexed numerous learners. As demonstrated by Tyler and Evans (2004), the proto-scene of To is toward a direction. To is associated with a spatial configuration in which a TR is oriented in the direction of a LM, its functional element is that of the LM constituting the TR's goal (Evans & Tyler, 2004). Preposition To relates to orientation and goal, the LM constitutes TR direction and its ultimate goal.

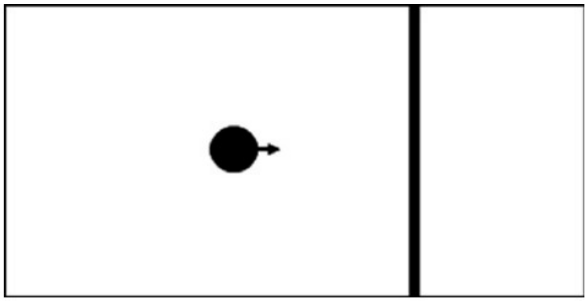

**Figure 1.** The proto-scene for to according to Tyler and Evans (2004, p. 265)

### 4.2. The Metaphorical Meanings of To Analyzed from Image Schema Transformations

4.2.1 Reaching a Particular State

2a. Hence dependence, not interdependence, characterizes the relationship of the South to the North.

2b. We come to the conclusion that we would like to live here forever, knowing that nothing will stop us.

2c. It frightened me to death!

2d. Why charismatic leaders come to power.

All those examples derive from BNC corpus retrieval, in order to analyzing metaphorical meanings of To, we can further explain how the meaning is transformed from its proto-scene to more extended senses. As demonstrated in 2a, we can understand that To in this context constitutes orientation meaning. In such contexts, To is devoid of goal meaning, instead, it entails something is situated in a particular condition. Come to the conclusion embraces meanings that after grave struggle people stop at a static point while it is not a physical point but a metaphorical point.

In 2c, frightened to death entails that something pushes someone to an extreme point which exist in mental zone. In 2d, come to power gives a sense that a person from low point climbs to a higher point which is the metaphorical meaning of a higher point. The transference of from a point to a particular state, whatever direction, agreement, mental state, or a powerful place,

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those meanings are extended from image schema transformation of To. As illustrated in figure 1, TR through path comes to the LM, however, we human beings can only perceive visible goal such as one point or a container as they are spatial image schemas. Multiple meanings of To can be extended by various image schema transformations by means of extending from spatial physical domain to more abstract such as mental, state, or social relation domains.

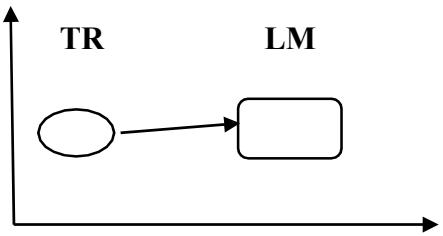


**Figure 2.** Transference to a state (Trajectory image schema)

4.2.2 The End or Limit of a Range or Period of Time

3a. You worked it out from beginning to end.

3b. As they crawl, they wave their heads from side to side. 3c. A drop profits from $105 million to around $75 million.

The preposition phrase from a point to next point is the most frequently used in English, however, the movement of location differs from movement verbs, but those various senses of preposition To are all derivatives of proto-meaning. The three examples irrespective a range or a period of time embrace meanings of path from one side to another, and the preposition To entails the distance to the goal. The TR must get through a particular path which we can name conduit image schema to describe the meaning extension. Following graph will demonstrate the relation felicitously.

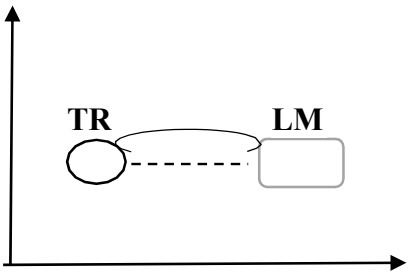


**Figure 3.** Range or period of time (near-far image schema)

4.2.3 The Linkage of Two Things

4a. Attach this rope to the front of the car.

4b. First connect the printer to the computer.

The TR rope has been connected to the front of the car (LM), the linkage between the two things will be constructed. The following example, the function can be operated by connect the printer with the computer. Preposition To in this context plays a role of connecting things so as to achieve some certain goals of humans. Therefore, the metaphorical meaning of To constitutes linkage image schema.

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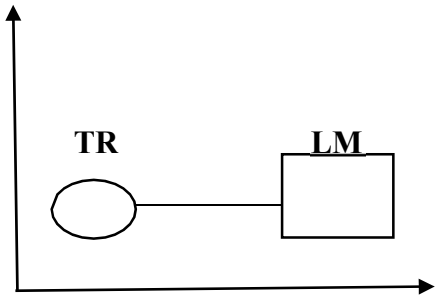


**Figure 4.** Linkage image schema

4.2.4 The Meaning of Belongings

5a. The key to the door.

5b. The solution to the problem.

Trajectors such as the key or the solution in these contexts belong to the landmark. In 5a, the key can only play its part in face of the door. The solution can be gotten after a series of discussions to solve the problem while the connections between the key and the door, the solution and the problem are linked by the preposition To. Hence, the belonging relation can be explained by the preposition To's image schema transformations

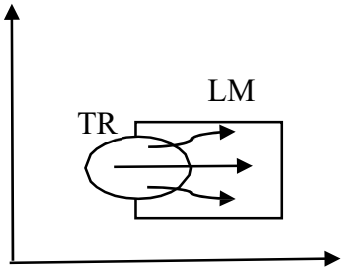


**Figure 5.** Merging image schema

4.2.5 The Comparative Meaning

6a. I prefer walking to climbing.

6b. We won by six goals to three.

In this part, preposition To has been entitled a new sense. Walking and climbing mediated through the emotion verb prefer, while the comparison relation is adjusted by To. As shown in 6b, the winning result gaining can be estimated by the comparison of scores which the trajectory and landmark situate in the two edges and their relation are

linked by To. The meaning of it is completely devoid of path or orientation in such cases, in contrary, its sense in metaphorical mapping shapes center-periphery image schema which pushes the favorite or more privileged side into center stage and weaken the role of underprivileged one.

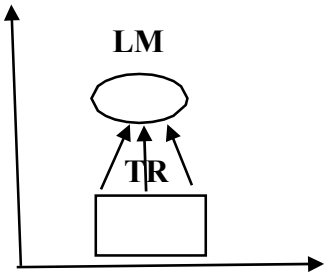


**Figure 6.** Center-periphery image schema

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4.2.6 The Number and Ratio

7a. There are 2.54 centimeters to an inch.

7b. This car does 30 miles to the gallon.

The number equivalence in 7a and 7b are in place through the mediation of To. The trajectory and landmark are in the same level but in different forms. The image schema act as a bridge to balance two kinds of descriptions so that various things may arrive at a balanced point.

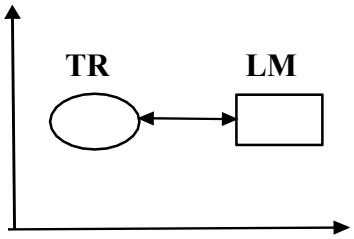


**Figure 7.** Balanced image schema

4.2.7 In Honor of someone/something

8a. A monument to the soldiers who died in the war.

An orientation toward the direction of the soldiers example whereas the relation is not in spatial meanings but being built in the mind. The enhancement of respect to the soldiers can be reported by just one and concrete word To which express our honor to things or people succinctly.

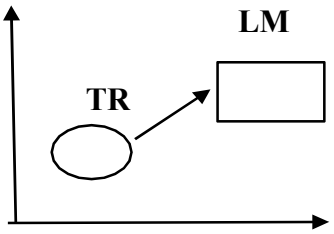


**Figure 8.** Attraction image schema

4.2.8 The Accompaniment of something else is Happening

9a. He left the stage to prolonged applause.

9b. He left the stage in the process of prolonged applause.

The preposition To contains meanings of accompaniment and something happens during the process of another thing so the trajectory is included in landmark, in which the former actions occurs in the course of the latter thing. Therefore, this tie can be demonstrated by containment image schema which not just implies common meaning but also has implicit connotations.

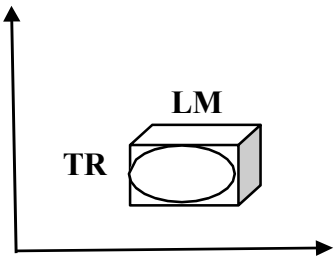


**Figure 9.** Containment image schema

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4.2.9 Someone's Attitude or Reaction to something

10a. It sounds like crying to me.

10b. His music isn't really to my taste.

Something is suitable or not suitable to one's taste.

This extending meaning of To is from path to goal and such relation can be extended into a more metaphorical domain. The trajectory such as it or his music get through a path and get to my mind and then arouse distinct reactions. Meanwhile, our reaction to something also acts as a reflection of their quality. Therefore, the fitness or inadequacy are mirrored by both sides interation.

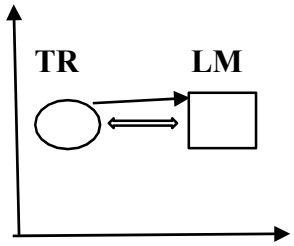


**Figure 10.** Interation image schema

## 5. CONCLUSION

A number of cognitive linguistics such as Brugman, Lakoff and Johnson analyzed that a preposition encodes a spatial relation between two entities: the focuselement termed trajector, and the background element termed landmark, and the spatial relations are best represented by idealized and abstract representations namely image schemas (Lakoff and Johnso, 1987). These researchers further argued that the various, multiple meanings associated with a preposition could be accounted for as deriving from the primary image-schema through a set of image- schematic transformations, metaphors and similarity links (e.g., Lakoff, 1987). Thus, the multiple meanings associated with each preposition were conceived as forming a polysemy network[3] in which more peripheral meanings are organized around a central image schema (Evans & Tyler, 2005). In conclusion, we are in agreement with cognitive linguistics instead of traditional linguistic in that CL provide a new perspective to help EFL learners to grasp the semantic network of prepositions by means of linguistic origin. CL has provided systematic methods indemonstrating how the semantics of words are shaped and pointed out that our bodily embodiment in the spatial domain forming the basic senses of language. Human beings, with the cognitive ability, are capable of better comprehend semantic networks of polysemous words such as prepositions through our cognition processing. Therefore, it is relatively straightforward for learners to make perception of preposition through image schema and its transformations leading tobetter acquisition of English learning.

As we have discussed in previous study, the preposition To has proto-scene meaning which is toward a goal or a direction. The paper also illustrates other nine extended meanings of To from the perspective of image schema transformations including state, distance, belongings, comparison, ratio, honor, accompaniment, and reaction. The article makes a raft of image schema transformations in which trajectory, near-far, linkage, merging, center-periphery, balanced, attraction, containment, and interation image schema are listed aiming to make a detailed explanation of To's understanding. Compared to traditional prepositions' learning, the article proceeding from cognitive linguistics' standing provide new insights into the learning and teaching of prepositions. EFL learners are entitled to build a polysemous network to comprehend language from metacognition. Wang (2021) in his embodied cognitive linguistics proposed that language's form stems from human beings' embodiment and mental processing.

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Our cognitions are established from our daily interaction with the spatial world, for example, our cognition of library will be fully deepened if we step into it and its image will impose profound impression on our body and mind, we pick up a book from shelves and put back to its original location, all actions occur in the whole library containment and its specific containments. Henceforth, our comprehension of English preposition whose meanings are extended by our bodily cognition. Image schemas shaped in the process of our bodily experience function as bridges to complement English prepositions' learning so the traditionally arbitrariness and irregularity of prepositions fade away. Hopefully, the article as a reference promotes the research of preposition To in widespread manner since studies on other prepositions such as over, at, in, on are abundant whereas probing into To is limited. Furthermore, our paper is able to provide implications for both English prepositions' learners and teachers as we start from human cognition to interpret preposition To and initiate our study in the same standing of learners to read the language. In sum, the article commencing with bodily experienced image schematic comprehension of the most polysemous prepositions has significant potential to fuel further researches on To and make contributions for language leaning.

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