The Spatial Cognitive Meaning of *Across*

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Abstract

Spatial relation is a basic existent relation in the objective world, and in English, prepositions are the important spatial terms to describe spatial relations people perceive. Using Langacker's trajector-landmark theory from cognitive grammar, this paper attempts to analyze the cognitive process of the six main spatial meaning of English preposition *across* based on the entries collected by the Collins Dictionary, with data from the the Leeds Collection of Internet Corpora. The findings can be concluded: (1) The use of *across* should include at least a tr and a lm, and the lm cannot be covert. (2) The spatial relations *across* contains could be divided into simple atemporal relation and complex atemporal relation. (3) The tr in some dynamic relation of *across* sometimes will represent some kind of schema, such as source-path-goal schema.

Keywords: cognitive grammar, spatial words, *across*, trajector, landmark

1. Introduction

Originated from the study of perceptual cognition in psychology, the concept of space has been drawing a lot of attention not only from the cognitive linguistics field, but also from the field of anthropology, brain science and some other fields (Tyler & Evans, 2003). The perception of space such as [PLACE] and [DIRECTION] is primitive and ontological (Jackendoff, 1993), which means that human beings' conception of space is the basis of the perception of the physical world, and the perception of time and other things is based on the perception of space.

As for the conceptualization of space, there are spatial words such as prepositions which are used to describe the spatial relations holding between two or more entities in the world. As human beings, we encounter and construe spatial relations in everyday life, Taylor (2007) considers that English is a preposition-focus language and prepositions contain a lot of information, which is worth further and careful study. According to cognitive grammar, in any relation, the relevant participants may gain different prominence cognitively, one of which will be singled out as the prominent focus of attention, which calls figure or trajector, and the other gains secondary focus, which calls ground or landmark (Langacker, 1987). I believe that the trajector-landmark principle could provide a new and reasonable cognitive perspective to the construal of spatial prepositions.

In this thesis, I am going to use the trajector-landmark principle to try to analyze the influence of the English preposition "across" on the spatial meaning of tr and lm and its cognitive process based on its main six different entries of meanings collected by the Collins Dictionary, and the examples used for analyzing is from the Leeds Collection of Internet Corpora. The reason why choosing the preposition "across" is that some information about the geometry of the figure seems to be encoded in the spatial prepositions "across" (Jackendoff & Landau, 1991), the use of which depends on the orientation of the linear axis of the Figure (Feist, 2000). And since it has six types of meanings, this thesis tries to figure out the question that (1) could it be possible that these meanings can be classified into different categories according to their different representation of spatial relations; and (2) do every tr and lm every sense of *across* represents the same pattern when profiling spatial configuration.

2. Literature Review

Since the 1950s, the study of spatial conceptualization has emerged and developed in many fields. In linguistic field, the concept of space is always connected with human beings' cognition for both of them deal with the relationship and connection between human and the physical world. In construing the spatial relation, some cognitive linguists have adopted different theories and give different explanations from their respective perspectives. For example, Talmy (1978) utilizes the Gestalt principles from psychology to the study of spatial

cognition, and points out that within the conceptualization of a relation, the more prominent entity is the Figure, which gains primary focus of attention, and the secondary-focused entity becomes the Ground, and both the terminology are borrowed from Gestalt psychology. Similar to Talmy's figure-ground principle, Langacker uses another pair of terminology to describe this relation, that is Trajectory and Landmark. Levinson (1996) has put forward that there are three particularly important frames of spatial reference found in language, namely relative reference, intrinsic reference, and absolute reference. Brugman (1981) considers that the different spatial meanings a preposition contains is stored as a category of distinct polysemous senses, or in other words, represents a radical category, which includes a central and prototypical concept and some less prototypical concepts which are derived from the central one.

As a crucial part of spatial words profiling spatial relations, prepositions represent human beings' experience and understanding of the concept of space, the study of which could give a lot of implication in the cognitive process in construing and profiling spatial relations happen around us. So, there is no lack of scholars devoted in the study of prepositions from different perspectives. Lakoff (1987) uses the full-specification approach to the analysis of the English preposition *over* and finds that the senses associated with the preposition *over*, which is grounded in spatial experience, are structured in terms of an image schema combing both elements of *above* and *across*. Feist (2000) conducted a set of experiments to look at the ways how some particular attributes of a scene affect speakers' uses of the English prepositions *in* and *on*, and showed that geometry, function, and animacy of the figure and the ground all influence English speakers' choice between *in* and *on*. Lindstromber (2010) discusses over 90 different high frequency prepositions in English, especially those are polysemous, and describes how to use these prepositions to represent various spatial relationships both using the SUBJECT-LANDMARK principle and the SOURCE-PATH-GOAL image schema. Tao (2000) discusses the cognitive process of the spatial meaning of the English preposition *up* from the perspective of cognitive grammar, and then explores how the English prepositions *up* extends from its spatial cognition to the whole cognitive process of its metaphorical concept. Liu (2009) discusses covert and overt landmarks of English prepositions and explore the cognitive mechanism behind the overt LMs and found that about two thirds of English prepositions allow covert LMs, and these prepositions vary from their frequency of covert lm, what's more, if a preposition allows a covert/overt lm, so do its synonyms and antonyms.

The previous studies give insightful implications to the research of the spatial cognition of prepositions and also suggest that the spatial meaning of prepositions are worth further studying. However, most of them focus on the more frequent-used English prepositions such as *in*, *on*, *over*, *up* and so on, seldom has focued on the less frequent ones, such as *across*. And though *across* is not used as frequent as the most frequently ones, it is still an important and indispensable preposition for the native English speaker. What's more, *across* has six types of senses as we have mentioned above, which are used for a wide variety of spatial configurations, and some senses of which are not aware even by some native speakers, so a more thorough understanding of the meanings of it is necessary, so this paper will explore the different meanings of *across* working as a preposition and also try to discuss the spatial meaning and cognitive process of *across* by analyzing some examples from the corpora.

3. Theoretical Foundation

In this study, the spatial meaning of the preposition *across* is analyzed by using the trajector-landmark principle in cognitive grammar. Cognitive grammar divides words on the principle of profile. According to Taylor (2002), words can profile things and also profile relations. Relational profiles can be further divided into temporal profiles and atemporal profiles. And prepositions belong to atemporal profiles, which can be distinguished according to the properties of their tr and lm. According to Langacker (1987), participants in a relational predication gains different degrees of cognitive salience. If a component is cognitively prominent, it is characterized as the main figure in the relational predication and is usually suggest motion and describe physical activity, which is called trajector (tr), and other entities in a relational predication are referred to as landmarks (lm), which provide points of reference for locating the trajector. What's more, tr can presents static and dynamic relation with lm. For the analysis of the spatial relations of a preposition, we can investigate it from the perspective of cognition, using the trajector-landmark principle to elucidate the relation profile the preposition constructs.

For *across*, it is a complicated preposition, which requires their tr is a spatially extended entity or a multiplex entity (Langacker, 1987). To find out the multiple meanings of it would be helpful for us to understand the specific meaning of it in different contexts and also help us know more about the spatial and cognitive meanings.

4. The Spatial Cognitive Analysis of *Across*

In general, the English world *across* is a relational term which can work as both adverb and preposition. When it

works as a preposition, the frequent-used meaning is "from one side to the opposite side", and it is usually used to encode spatial relation between two entities, and it can also collocate with other words and sometimes may express different meanings such as "come across", "put across", "go across" and so on. According to the Collins Dictionary, it has eight meanings, and I conclude them into six main types and then classify them into two categories according to the spatial meaning they representing, namely the dynamic ones and the static ones, both of which include three different senses. In the following paragraphs, I am going to show some examples adopted from the corpora and discuss and analyze the eight spatial meanings of *across*.

4.1 The Dynamic Across

4.1.1 Go from One Side to the Other

If someone or something goes across a place or a boundary, they go from one side of it to the other, which is usually the opposite side. Here the use of *across* is usually referred to a path-like motion, in which has a starting point, a path and an end point. The path could be a straight line or not which extends for some distance on a surface, and prototypically, but not necessarily, in a horizontal way (Lindstromber, 2010). In this sense, the motion *across* represents a dynamic process in a two-dimensional space. Here are the examples:

① Recently forty protesters fled *across* the border, seeking asylum in neighbouring Malaysia.

② After meeting with the protesters, Beghe walked *across* the street to the Church of Scientology building...

In ①，the trajector (TR) is forty protesters, and the landmark (LM) is the border. In this context, the lm border is like a line, the starting point and the end point are not concrete that we only know both of them are in the different sides of the line (border) (see Figure 1). In ②，the trajector (TR) is Beghe (people), the landmark (LM) is the street and the end point is the church, though the starting point is not mentioned, we can infer that it is at the opposite of the end point, though maybe not from directly opposite (see Figure 2).
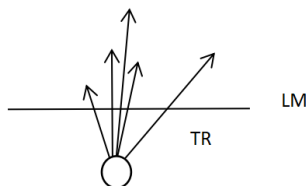

Figure 1. Bird's-eye view of Protesters fled *across* the border
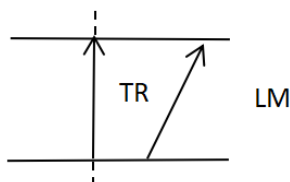

Figure 2. Bird's-eye view of Somebody walked *across* the street

Both the *across* in ① and ② represent the path of the tr from one side of the lm to another, showing the SOURCE-PATH-GOAL schema. It should be noticed that though *across* in ① and ② both profile the dynamic path of the trajector moving from one side to the other, there are some differences between the two. Firstly, though both the TRs are people, unlike ②, whose tr is only one person. While ① shows 40 people, whose paths may be alike but not be exactly the same. Secondly, for the LMs in the two examples, it seems that in our cognition, the border in ① is usually line-like, while the lm street in ② is usually abstracted as a surface in which has two parallel lines and in the middle between which has an in-between zone.

4.1.2 Stretched from One Side to the Other

If something is situated or stretched across something else, it is situated or stretched from one side of it to the other. Unlike the first meaning, which means someone or something goes from one side to the other, the second

one stresses the trajector's continuous state from one side stretch to the other side, to put it another way, the former emphasizes the dynamic spatial motion of the trajector goes across the landmark, while the latter emphasizes the result after some kind of action of the trajector, which could be a concrete motion or a fictive motion. Here are two examples:

③   The web stretched *across* a 200-yard section of a nature trail in the park, covering the ground, bushes and even seven sizeable trees.

④   It was like a shallow arc *across* the sky and descended down.

In ③, the trajector (TR) is the web, and the landmark (LM) is a trail. In this context, the tr web acts like an entity with continuity that stretches and spreads around, which has boundaries itself (see Figure 3). And the starting point and the end point are unknown, what we know is that the tr covers 200 yards with the lm inside its coverage scope, covering from one side of the trail to the other, and even broader. In this situation, the tr can cover part of the lm. Then, we can notice that the motion verbs *stretch* is used to describe the spatial relation between the static entities *the web* and *the nature trail*, which is a kind of special spatial motion event which called coextension or coverage paths fictive motion (Talmy, 1983).
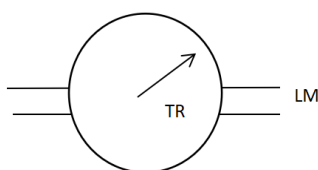

Figure 3. Bird's-eye view of The web stretched *across* a 200-yard section of a trail in the park

In ④, the trajector (TR) is *it*, an unknown object, and the landmark (LM) is the sky. In this context, the motion trail of the tr is like a parabola, which first flies into the sky and then descended down without a starting point and an end point. And here the use of *across* profile a dynamic spatial motion of the tr. Unlike ③, the tr in ④ is included by the lm sky, and then exit, so the lm here has boundaries.

4.1.3 Expression Shown on Someone's Face

You use *across* to say that a particular expression is shown on someone's face. The most different part of this sense of across from the above two meanings lies in the point of the view of the observer. In the first and second senses, the tr could be any subject including the observer himself/herself, or the cognitive subject, while the third sense, which the action takes place on someone's face and it's hard for the people who make expressions to notice unless he/she observing himself/herself in the mirror. So, the tr is usually observed by someone else. For example:

⑤   An enormous grin spread across his face.

The tr here is *an enormous grin*, unlike the other one, the tr used here is abstract, and the lm is *his face*. We can see that the motion is observed by anyone who sees the grin spread, which could not be he himself, but someone else. Then, the starting point and the end point of the tr is the face, and the motion would not last for a long time because the tr is usually expressions, which appear on the face for a short while and then disappear. And the *across* used here is not to indicate the tr takes place from one side of someone's face to the other, but spread out from the axis which centered on the nose and the mouth.

4.2 The Static Across

Unlike the dynamic ones, the static *across* does not emphasizes the dynamic process but stresses the static spatial relation between the tr and the lm.

4.2.1 Across vs. On

If something is lying across an object or place, it is resting on it and partly covering it. Unlike the first and the second meaning, it does not emphasize the dynamic process of *across*, it stresses the static spatial relation between the tr and the lm, the use of which is similar to the use of another English preposition *on*. The use of across here stresses the location of the tr, or more specifically, stresses the extent of the tr on the lm. In this sense, the tr and the lm are usually physically contacted. Here is an example:

⑥　But Moussaoui, 37, who was unrestrained by shackles and wearing a green jump suit labeled with the word "PRISONER" across the back…

In ⑥, the tr is the word "PRISONER", and the lm is the green jump suit. In this context, the spatial relation between the tr and the lm is static and they actually overlap. Though the tr is on the lm, the tr becomes part of the lm and becomes more prominent with the lm whose surface is bigger than the background.

4.2.2 Across vs. Opposite

Something that is across something such as a street, river, or area is on the other side of it. The use of *across* here usually describes in which two entities or people directly face each other, which is similar to the use of opposite. And it is naturally used to describe the spatial position in which the angle of the axis between the two is 90° (Lindstromber, 2010), though not necessarily. What's more, this sense of *across* implies that the tr and the lm could be exchanged to each other, that is, the tr could be the lm, and the lm could be the tr as the perspective changes. For example,

⑦　Olmert is currently a guest in the Blair House which is located across the street from the White House.

In ⑦，there are two trs, the first tr is *Olmert*, a person, and the second one is *the Blair House*, and the first tr is inside the second one. Our attention is first paid to the first tr, after the appearance of the preposition *in*, we realize the relation between the two, and then the second tr becomes the prominent entity. And there are also two LMs, the first one is *the street* and the second one is *the White House*. And the former one is the primary lm which is the main reference that makes the use of *across* possible, helping us locate the position of the tr and the secondary lm, that is both the Blair House and the White House is on either side of the street. While the secondary lm helps us determine the exact spatial relation between the tr and the secondary lm, that is the spatial relation between the Blair House and the White House, which is opposite to each other.

4.2.3 Across vs. Within

When something happens across a place or organization, it happens equally everywhere within it. The use of across of this sense generally has many trs and profiles such spatial relation that trs are within a lm, and additionally, the trs are normally dispersed with a lm without some kind of pattern, or a lm includes trs. And the lm usually has boundaries. For example,

⑧　The accident at 0:14 local time yesterday left debris strewn across a 600-metre radius.

In ⑧, the tr is *debris*, the lm is a scope, *a 600-metre radius*. In this context, we could say there are many trs in the lm, and the lm is a surface. *Across* in this example indicates that the debris strews the 600-metre radius of the floor. The trs here are smaller than the lm, and it may show some kind of continuity due to its characteristics (the debris of car or plane), so we can perceive the *debris* as trs more prominently according to the Gestalt principle of smallness and continuity.

5. Linguistic Representations of Spatial Cognition

Spatial orientation is a kind of physical relation, which is based on human cognition (Cui, 2002). People use spatial terms to encode the perceptual spatial concepts and talk about the spatial relations they perceive in the physical world, which in fact is dealing with the relations between cognition and the outside world with the help of language. While comparing to the infinite possible spatial relations two objects might exist, there are limited spatial words we can use to describe different spatial relations, so it is natural that one of these spatial words may have to contain more than one spatial meaning. And in different languages, are expressed in different ways. For example, in English, prepositions are prioritized to use to describe spatial relations. So English prepositions, as part of the spatial terms, are usually polysemous.

As the preposition *across* we discuss above, it has more than six meanings, anyone of which represents different spatial relations between two objects. When we try to describe a spatial relation, we usually find out a reference, or landmark firstly, and then using different spatial terms to profile the relations according to our spatial conception. That means that spatial cognition is subjective, even the same landmark will show different dimensional expressions according to the different cognitive ways and cognitive processes of people because they may have different viewpoints or different scanning methods for observation and expression of the scene, which is also true for people in the same language culture (Qi & Yan, 2015).

From the experience of human body movement and life observation, we know that when the tr move along a horizontal path line which runs perpendicularly from one edge to the other of a planar ground object bounded by two opposite parallel edges (Talmy, 2000), it forms a path-like schema. After observing the relevant phenomena happening in everyday life for countless times, we form the relevant paths and motion patterns in the cognitive

concepts in our minds, and then naturally indicate the final direction and position of the moving objects when expressing them in language (Qi & Yan, 2015).

6. Conclusion

Under the framework of cognitive grammar theory, we found that the relation between the trajector and the landmark with which the preposition is associated can be simple or complex. A simple relation is construed as a single configuration (Talmy, 2002), that is there is only one trajector corresponds to one landmark in a spatial relation. While a complex relation is one that profiles multiple relations (Talmy, 2002), such as there are more than one trajector in a relation, or the trajector has an extension property. The simple relations and complex relations are actually corresponding to the static state and dynamic state of *across* we mention above respectively.

After discussing the six main types of spatial meaning of the preposition *across*, we can make a brief conclusion (see Table 1):

Table 1. Conclusion

1. About the occurrence of the tr and the lm	since *across* describes the spatial relations between two objects, it should include at least a tr and a lm, and the lm cannot be covert.
2. About the form of occurrence	Both the tr and the lm could be abstract.
3. About the categories	the spatial relations *across* contains could be divided into two types, the static one and the dynamic one, or in other terminology, simple atemporal relation and complex atemporal relation.
4. About the contact between the tr and lm	the tr and the lm sometimes could be physically contacted (e.g., words across the suit) and sometimes not (e.g., a bridge across a river).
5. About the schema	the tr in some dynamic relation of *across* sometimes will represent some kind of schema, such as source-path-goal schema.

In short, we have discussed the six senses of the English preposition across and found that it can express other spatial meanings in different contexts. Analyzing the polysemous meaning of across from the perspective of cognitive grammar will help us to re-examine the traditional or prototypical concept and meaning of across, and also help us understand and recognize them more comprehensively in different contexts. For further study, the focus can be put on (1) the specific schema *across* represents; (2) the comparative study of the spatial meanings of *across* between English and other languages, especially in translation aspect; (3) the comparison between *across* and other preposition and so on.

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