

# A Study on Polysemy from the Cognitive Perspective: A Case Study of “Spring”

Huang Guhaoyue, Zhou Zhongjie, and Liu Jing

**Abstract**—Polysemy is a universal linguistic phenomenon, arising from the development of human society. Generally, there are three modes of meaning change: radiation type, chain type and synthetic type. *Spring* comes from the Old English *springan*, meaning a quick movement. The polysemy of the word “spring” is a good example of synthetic type, whose meanings are derived from the prototype meaning by metaphorical mapping. For English learners, only through constant input of vocabulary can they get a better grasp of English. However, in this process, due to the principle of linguistic economy, an English word possesses multiple meanings, i.e., polysemy. This poses a huge challenge for English learners. During this process, not only the students are supposed to be active, but the teachers should enhance their own cognitive abilities and guide students in comprehending the culture background of target language. Therefore, there is a need to find an efficient way to help English learners acquire polysemy.

**Index Terms**—Polysemy; *Spring*; conceptual metaphor; prototypical meaning; learning method.

## I. INTRODUCTION

With the development of society, economy and culture, human cognitive ability is constantly improving and languages are in the dynamic state of changing, resulting in polysemy. With the development of human society, economy and culture, some concepts will continue to expand and become more abstract, and some concepts will continue to shrink and become more specific, so old words are given new meanings, and then polysemy occurs [1]. Word is the most basic unit of a language. The word itself, as a huge corpus set, is in a dynamic state of development and requires the constant creation of new meanings, due to the unremitting development of society and the progress of human thought. Because of the influence of the principle of linguistic economy, people give new meanings to old words, which also promotes many linguists to analyze the generation of polysemy. This paper is divided into three parts. First, to clarify the basic connotation of polysemy; Second, to analyze the meanings of “spring” in the COCA Corpus and the CQP Corpus of Charles Dickens novels, and finally, to provide efficient methods for teaching and learning multiple meanings of polysemy.

## II. THE BASIC CONNOTATION OF POLYSEMY

### A. The Creation of Polysemy

“Polysemy refers to a linguistic phenomenon in which a

single linguistic form carries two or more meanings that are closely related to each other [2].” Words constitute language and embody the culture of a nation. As mentioned before, the word itself is already a huge collection in a dynamic state of development. As human cognitive ability and cognitive level increase, new words need to be created constantly to fill the gaps in expressions [3]. Influenced by the principle of linguistic economy, it is obviously inadvisable to expand the lexical base. According to cognitive linguistics, polysemy is the product of human cognition conceptualization and categorization [4]. The cognitive mechanism of conceptual metaphor is the mapping from the source domain to the target domain. The most distinctive feature of conceptual metaphors is that there is a certain similarity between the source domains and the target domains, so people usually express the new concept in terms of the old, known, or existed meaning items that have certain similarities with the new concept [5]: 118-123. For example, the eye can be likened to the eye of the needle, the eye of heaven, etc. Likewise, the head can refer to the head of government, the head office, etc. In this manner, people begin to understand the world from the cognition of the basic categories of entities.

With the continuous improvement of people’s thinking ability and the expansion of the things they see, more and more new language symbols are produced and used. Due to the constant creation of new language symbols, and in order to understand the unknown or abstract concepts better, people naturally produce new language symbolic meaning by cognitive mapping of a known entity into the unknown abstract concept [6], accordingly, the basic meaning of vocabulary is expanded, and then polysemy has been created.

Generally speaking, there are three main patterns of meaning change of words: radiation type (derived meaning radiates and expands from the original meaning); chain type (derived meaning derives new meaning, and the connection between new meaning and original meaning is weak); synthetic type (radiation type, chain type) [7].

### B. Polysemy from a Cognitive Perspective

Metaphor is a rhetorical device existing in every aspect of life and unconsciously used in daily speech as an important part of metaphor [4]: 3. Philosophers and cognitive linguists regard metaphor and metonymy as important tools for people to conceptualize the world and divide conceptual metaphor into structural metaphor, ontological metaphor, and orientation metaphor [8]. Conceptual metaphor theory is one of the important reasons for polysemous words. Under this theory, a word contains a core meaning, which is also called prototypical meaning. The prototypical meaning exists in people’s minds as image schema, forming conceptual metaphor. After that, people accept and promote the metaphorical mapping from prototypical meaning to the

Manuscript received January 11, 2022; revised July 21, 2022.

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extended meaning, which gradually becomes the new meaning of the word and becomes conventionalized, and finally becomes a part of the polysemy of a word [9]. For example: In the sentence “I can not make a rosy forecast”, the basic meaning of “rosy” comes from the color of roses. For human cognition, bright color symbolizes optimism and brightness. The metaphorical meaning of rosy in this sentence is optimistic. For another instance, “The athlete tested positive.” The basic meaning of “positive” is optimistic. After processing known information, the brain recognizes that positive is often used in medicine to explain the patient’s condition or to test the athlete. The metaphorical meaning of positive in this sentence is “positive”. Glass ceiling, in the special context, can be translated as an invisible barrier to women’s advancement in the workplace. The ceiling, as the highest point of the house structure, is an upward obstacle that cannot be easily broken through. When it is extended to working women, it generally means that working women often encounter obstacles on their way to promotion and it is not easy to break through them.

Due to the differences in geographical location, climate and eating habits vary among different ethnic cultures, different ethnic groups have different responses to the outside world, so there is a phenomenon that different cultures use different metaphors to express the same meaning. For example, the expression “black sheep” in English has the same metaphorical meaning as the Chinese idiom “a black horse in a flock”. The English expression “a lion in the way” is the same as the Chinese expression “a huge obstacle”. In European and American cultures, a lion is regarded as the king of beasts, symbolizing power and strength. In Chinese culture, a tiger is considered a symbol of power and strength [10].

There are also some differences in the expressions related to color between Chinese and English cultures. The Chinese call it “black tea” because of the red color of the tea when it is brewed. But in western countries, they call it “black tea” because “black tea” is black before it is brewed. Also, in Chinese culture, green generally symbolizes vitality, renewal, and hope, and most of them are positive and uplifting. Thus, there are expressions such as “green water and green mountains”. There is also a special meaning that refers to the cheating of a husband and wife to shame the other side of the expression cuckolded; In European and American cultures, green generally means inexperienced, novice, such as green hand, green as grass, and other expressions [11]. There are metaphorical differences between English and Chinese because there are differences in ways of thinking under different cultural backgrounds. Conceptual metaphor provides an effective theoretical basis for understanding the cultural connotation of vocabulary. In turn, the cultural connotation of vocabulary can also promote people’s understanding of conceptual metaphor [12].

### III. A CASE STUDY OF POLYSEMY “SPRING”

By referring to the Oxford Advanced English-Chinese Dictionary [13], we find a total of nine meanings of “spring”, which are listed as follows.

Noun:

① sudden jump

② season

③ twisted wire

④ water

⑤ cheerful quality

Verb:

⑥ jump/move suddenly

⑦ surprise

⑧ appear suddenly

⑨ free prisoners

Spring comes from the Old English springan, meaning a quick movement. Jumping is a rapid movement from the bottom up, so the meaning ①⑥ becomes the original or prototypical meaning. The other meanings are their extended meanings.

Meanings ③⑤⑧⑨ are the ontological metaphor of prototype meaning. The meanings ③⑧ are similar to the prototype meaning. Spring is a mechanical part with elasticity, by pressing the object, it can be made to jump, the characteristics of jumping are mapped to the object, thus the formation of meaning ③; We regards the place of detention as a container to rescue the detainee from the place of detention, that is, the detainee is rescued from the bottom up, thus forming meaning ⑨. Suddenly appearing in front of someone creates the meaning ⑧.

The meaning ⑦ is further metaphorically derived from the meaning ⑧. For example, she sprang a surprise by winning the tournament.

The meaning of ② and ④ is a metaphorical extension of the prototypical meaning. Because jumping is a rapid, bottom-up movement, and spring is one of the four seasons when everything revives and plants emerge from the earth, the meaning of spring is derived, which seems to be unrelated to the prototypic meaning but is related in nature; the meaning of ④ usually means spring. Springwater is the natural outcrop of groundwater, and in general, spring water is always flowing, and it also gushes out from the ground to form the surface, so the meaning of ④ is derived.

To trace the development of the extended meanings of spring from its prototypical meaning as mentioned above, we form a diagram of the polysemy of the word spring (in Fig. 1).

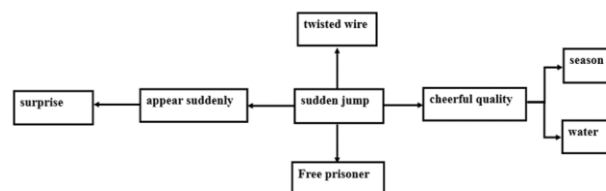


Fig. 1. Polysemy diagram of spring.

The polysemy of the word spring radiates outward from the prototypical meaning of jump. There are some similarities between the prototypical meaning and the derived meanings, and most of these derived meanings are extended by metaphor based on the similarity of their meanings to the prototypical meaning.

In order to better analyze the use frequency of polysemy and each meaning from a cognitive perspective, taking spring as an example, 30 sentences are sampled from the CQP

CORPUS of DICKENS Novels, as shown in Table I.

TABLE I: A SAMPLE COLLECTION OF THE MEANINGS OF “*SPRING*” IN DICKEN’S NOVELS

Meanings	Examples
Sudden jump	1. As if he would spring down and tear him limb from limb.
	2. As if he mistrusted that a couple of them might spring forth and clutch the document.
	3. It with such a sudden gesture, indicative of an intention to spring out of his hammock...
	4. ...but for seeing his uncle spring out of his own chair...
	5. How many times do you read of such as I who spring into the tide, and leave no living thing...
Season	6. Do not allow a trivial misunderstanding to wither the blossoms of spring, which, once put forth and blighted, cannot be renewed.
	7. Winter set in, for Geneva, and came back in the spring, their cordial greetings had a homely sound to me.
	8. As if the spring should be unwilling to depart when summer came.
	9. “An unusually cold spring,” says Mr. Dombey - to deceive the world.
	10. This world - of the immaterial part of my life, the spring and summer of my belief, my refuge from what is sordid.
	11. The pure air, and all the pleasure and beauties of spring, will restore you in a few days.
	12. It was not summer yet, but spring.
	13. and the whole of the following spring and summer, his labours were unceasingly prolonged.
	14. A charming creature to whom he had been married in the previous spring.
	15. One fine spring afternoon, the latter gentleman was seated on a tub of weekly...
	16. and snowy with hawthorn in the spring of the year, and tremulous with leaves...
	17. The last time was on a genial day in spring.
Twisted wire	18. He touched the spring of his repeater, to correct this most preposterous clock.
	19. Ladies like a figure in a Dutch clock, with a powerful spring in the middle of his body.
	20. I’ll have spring guns, that shall explode when you tread upon the wires...
	21. And remind me to have a board done about trespassers, and spring guns...
Water	22. ...if he’d favour him with a glass of cold spring water...
	23. the colours of the rainbow were discernible, not in floral spring...
Pouring out	24. In the Destroyer’s steps there spring up bright creations that defy his power...
	25. when fields of grain shall spring up from the offal in the bye-ways of our wicked cities...
	26. and love of children may be given many times, and will spring up in many places...
	27. I saw a great flaming light spring up.
	28. Some other novelty will spring up one day, and you will be released.
Appear suddenly	29. ...but the weeds which spring up round its base.
	30. Animosities spring up between floor and floor.

From Table I, we can see that the meaning of the season spring is widely used in Dickens’ novels, while the other derived meanings and prototypical meanings are less frequently used than this meaning. Why is the meaning of spring season used more frequently than other meanings in this literature? We guess there are several reasons. Firstly, when English beginners first encounter with spring, the first meaning they learn is not its prototypical meaning, but its derived meaning spring, and together with the other three

seasons that are summer, autumn and winter. Therefore, for English learners, the first thing that comes to their mind when spring is mentioned is the season spring. Secondly, spring, as one of the four seasons, has only one word to stand for it. For other meanings in Chinese language, such as “跳跃”, we can use the expression jump or skip; “涌出” can be expressed in gush; “突然出现” we can use the expression “pop up”, etc. To find more evidence, we searched 100 spring-related corpora from the COCA corpus and found that the frequency of the meaning of the season spring is as high as 80%, while the other meanings only account for 20%. Third, it is closely related to culture and customs. In general, second language learners are most likely to be influenced by the negative transfer of their mother tongue in the learning process, and they cannot express themselves in an authentic way either in oral expressions or written expressions, for example, in some textbooks, when a child is greeted with “How are you?” they often respond with “I am fine, and you?” but in fact, the native English speakers usually do not answer very long, usually one word “fine” will do.

The above analysis shows that the extension of the meaning of polysemy is the result of categorization by which the polysemy forms a system of polysemous categories that are inseparable from each other [14]. Metaphor and metonymy play an important role in the formation of polysemous words. The use of polysemous terms is subjectively and objectively influenced. The emergence of polysemous words also promotes the improvement of human cognitive level, so the two complement each other. When learning to understand the derived meanings of words, the understanding of the real-time context is also an indispensable step. The acquisition of multiple meanings of a word begins with learning the prototypical meaning of the polysemous word and then deriving other meanings from the prototypical meaning through other methods [1].

#### IV. IMPLICATIONS FOR VOCABULARY TEACHING AND LEARNING

Words have been created and used as basic units to form sentences and other language forms. As human civilizations progress and the level of cognition increases, new words and meanings are created, and multiple meanings of words continue to develop and grow. The traditional way to acquire English words is to memorize the multiple meanings of each word, which is obviously not desirable. The reason why students can not master polysemy well is because they do not understand the process of meaning expansion. Therefore, the explanation of the evolution process and semantic development trajectory of polysemy is helpful for students to quickly understand the meaning and form long-term memory [15]. Now, while teaching English words, teachers can teach multiple meanings of a word by using the conceptual metaphor theory.

##### A. Understanding the Prototypical Meanings of Words

For any word, no matter how rich its meanings are, its prototypical meaning does not change, and the other meanings are the product of the prototypical meaning as the center and radiating outward. First, students need to know the prototypical meaning of words. The acquisition of the

prototypical meaning of a word is the foundation, and only after having a basic mastery of it can the acquisition of multiple meanings of the word follow.

### *B. Teachers Give Active Guidance*

Second, after the understanding the prototypical meaning, teachers can create different contexts and employ various teaching methods for students to have a more in-depth understanding of other extended meanings, for instance, through the video, or mind mapping mode of teaching [16]. As mentioned above, each meaning of polysemy is not irrelevant, so mind mapping can help students find the relationship between each meaning more clearly. In order to achieve this, teachers need to improve their own cognitive level, accumulate and understand the metaphorical system of vocabulary and English cultural knowledge extensively, and let students transform from passive learning into active learning, so as to guide students to use conceptual metaphor theory to acquire polysemy of vocabulary better.

For instance, there are several meanings of the word “earth” in the Oxford Advanced English-Chinese Dictionary [13]: (a)the planet that we live on, (b)the ground, (c)the substance that plants grow in, (d)the hole where an animal live in, (e)a wire that connects an electric circuit with the ground and makes it safe. “Earth” comes from the Anglo-Saxon vocabulary, meaning ground or the substance that plants grow in which are the prototypical meanings of the word “earth”. So, firstly, when teaching this word, a teacher is supposed to introduce the origin and the prototypical meaning of it. Then, the teacher should guide students to find the connections between the extended meanings: our planet earth consists of so many substances, thus forming meaning (a); because the wire that connects an electric circuit has contact with the ground, so the meaning of (e) is derived; but the extended meaning (d) has a weak connection with the prototypical meaning. Through this way, students will have a better command of the polysemy of “earth”.

### *C. Students Empower Themselves as Active Learners*

As a Chinese saying put it, “it is better to teach a man to fish than to give a man fish”. All our purpose is to let students understand the inherent mechanism of the conceptual metaphor. With the improvement of learners' level, the representation intensity of some marginal meanings in the brain thesaurus increases, and the possibility of being activated and extracted increases with it. Polysemous semantic representation begins to gradually differentiate, while the representation of sub-prototypical meanings gradually strengthens, and prototypical meanings no longer have the feature of being preferentially extracted [17]. Therefore, for learners, they need to give full play to their subjective initiative and be good at discovering the internal metaphorical connections between meanings of words to improve the efficiency of vocabulary acquisition. A rich and large vocabulary can benefit learners significantly when they are expressing themselves in English. The diversity of vocabulary will be conducive to the beauty of English expressions. This is also the point that Chinese students need to pay attention to when using English for expression. Therefore, it is essential for English learners to make conscious efforts to learn polysemy.

## V. CONCLUSION

As a cognitive tool and rhetorical device, metaphor embodies the particularity of human thinking and reasoning mode [18]. The generation of polysemy is the product of social development and cognitive reification. This paper, based on the conceptual metaphor theory in cognitive linguistics, analyzes the polysemous word spring and finds some similarities between its extended meaning and prototypical meaning. The prototypical meaning “sudden jump” extends to multiple meanings: free prisoner, twisted wire, appear suddenly, season, water, surprise, cheerful quality. All the extended meanings share the sense of upward movement, but the extended meaning “free prisoner” has a weak connection with the prototypical meaning. Through the analysis of the frequency of the spring meaning in COCA, we conclude that the reason for the low frequency of the prototype meaning of spring is that the prototypical meaning is replaced by other more common words like skipping, jumping or popping up. Furthermore, this paper attempts to provide some efficient and effective methods for the acquisition and teaching of polysemy in English. However, there will be limitations owing to the small sampling and limited available materials. In future study and research, we will gain more insights into conceptual metaphor theory and other linguistic theories to improve our cognitive and research abilities.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## AUTHOR CONTRIBUTIONS

Huang Guhaoyue composed the original paper, conducted the research, combined the learning experience and made a final conclusion. Zhou Zhongjie did teaching practice, revise the paper and give the guidance. Liu Jing gave the introduction to linguistics and also helped to revise the paper.

## ACKNOWLEDGMENT

This research is sponsored by the project of Sichuan Foreign Language and Literature Research Center in 2020, “Comparative Study of Causative Construction Semantics in English and Chinese under Dynamic Force Model” (Project No.: SCWY20-20).

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