

Application of Radial Categories to the Second Language Learning of Chinese Learners

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Abstract—As a relatively new discipline which raised in the 20th century Cognitive linguistics has gradually become the mainstream in the development of recent decades. In cognitive linguistics some major theories related with language teaching and learning are construal, categorization, encyclopedic knowledge, symbol, metaphor, and metonymy. In this paper being based on the theory of radial categories the author turns attention to second language learning to explore implications of performance of vocabulary, morphemes, grammar rules, phonology, and intonation in radial categories in the second language learning.

Index Terms—cognitive linguistics, radial categories, second language learning

I. INTRODUCTION

Categorization is an important field in cognitive linguistics. Making academic research is a relatively new view from the perspective of categorization. In this paper being based on the theory of radial categories and regarding the second language learners as the research object the author explores the radial categories applied in the second language learning. The necessity of applying radial categories in the second language learning is introduced firstly, then the mechanism of radial categories is introduced. Third some factors in the process of radial categories and the performing of the radial category in vocabulary, morpheme, grammar rules, phonology, and intonation are illustrated, and in this part the author uses the example and inductive method mainly discussed implications of applying these aspects in radial categories to the second language learners. are learners with a second language of the most important information. Compared with traditional teaching methods that this new teaching method of radial categories has a better effect for promoting the learning of the second language learner is suggested. In the future this new teaching method can be tried.

II. THE NECESSITY OF APPLYING RADIAL CATEGORIES TO THE SECOND LANGUAGE LEARNING

As an important domain in cognitive linguistics categorization has gradually attracted the attention of many researches in recent decades. Some researchers turn attention to this field. In china some researchers did some research to this field. Such as *Effect of reference categorization on use of English preposition "in" of Chinese learners* of Xu Qin li, Liu Zhengqian, and Cai Jinting.(2014). In *A New Horizon of Legal Terminology Studies—the Categorizational Approaches* of Zhang Jianrong(2009) the author explores the formation and development of legal terminology from the perspective of prototype categorization and hierarchy. In *The Effect of Phonological Categorization Perception of Mandarin on English Learning* of Li min, and Liu Guizhi(1997) authors discuss that due to the differences of phonological categorization between English and mother tongue it leads to effect of a fixed mother tongue's phoneme system on English speaking. In *A Contrastive Study on the Different Effects of Decategorization on British English and American English* of Zheng Danyang(2011) on the basis of functions and features of decategorization the author takes "given" a example to elaborate the performing of decategorization in semantics and syntactics. In *Generative Grammar Perspective of Imperative Categorization Marks* of Ma Hongcheng, and Xong wen(2009) the author instructs Imperative Categorization labeled with different characteristic and distribution signature only appears in three sensitive positions of a sentence. In *Effect of Prototype Theory on English Polysemy Acquisition* of Li ning, Qi xue, and Wu Chun hong(2009) the author carries out a detailed explanation of the prototype theory, approve empirically that applying it in university vocabulary teaching is very beneficial for polysemy teaching and is good for students' vocabulary learning. In *Implications of Prototype Theory to English Polysemy Teaching* of Sun Nailing, and Yu Xiaoqing(2009) the author shows that if applying prototype theory to English learning, students can be able to infer meaning of the word in context by grasping a central meaning through the techniques of metaphor and metonymy, and it will be a good way to learn polysemies. Summarizing the above studies we found that these researchers explore the preposition, legal terminology, phonological categorization perception of mandarin, decategorization, Imperative categorization marks, scope of from different angles , to the categorization, imperative marker, polysemy and other aspects related to the scope of the study. Some of these studies also discussed the scope of the implication of the theory applied to language learning, but only on category theory is applied to unilateral conduct research, not applied to more comprehensive and detailed category theory to explore more aspects of teaching and learning to make. In abroad, there are many shortcomings about the study of the application of radial categories in the second language teaching and learning. In chapter three of book "*Applying Cognitive Linguistics to Second Language Learning and Teaching*" of J. Littlemore (2011). Therefore, on the

basis of J. Littlemore's study of radial categories the author illustrates the important implications of applying radial categories in vocabulary, grammar, pronunciation, and intonation so as to explore ways to promote better second language learning. It is very necessary.

III. THEORY REVIEW OF RADIAL CATEGORIES

Radial category is an important concept of cognitive linguistics. According to J. Littlemore categorization is the first thing to do when we see things firstly, that is categorization. Only in this way we can make the world that we live in meaningful. (J. Littlemore, 2011) when we are children, we unconsciously categorize things when facing with things. We would think that things in front of us can be eaten, drunk, or played, and then categorizing things according to our own judgment so as to take advantage of the value of things. When we are adults, we still can not avoid categorizing the things. When faced with unfamiliar things we will want to categorize things. Only in this way can we understand things, and understand the world. Radial category is a concept of categorization. In cognitive linguistics the meaning of each word is considered to form radial categories. The most fundamental meaning is in the center of the radial category, but figurative meaning toward the edge of areas of radial categories (Taylor, 2002). In one such mechanism of radial categories the basic meaning is highly similar, but the marginalized meaning is different. Native speakers are more inclined to use the meaning of edge in radial categories. But non-native speakers generally avoid using the sense of edge in radial categories, and they are more accustomed to using the basic meaning. Perhaps because non-native speakers are lack of confidence in using the meaning of edge in radial categories. Perhaps because there is lack of environment that they are in contact with native speakers and communicate with them. For speakers who are accustomed to communicating with people in native language they have more opportunities to use the meaning of edge in radial categories. So their knowledge about the meaning of edge in radial categories is very adequate. While non-native speakers about knowledge in this area is relatively scarce. The basic meaning in center of radial categories is easier to grasp, while the meaning of edge in radial categories is growing and changing over time. So making knowledge of radial categories perfect is our mission in lifetime, and we need to continue to learn and accumulate.

IV. APPLICATION OF RADIAL CATEGORIES TO THE SECOND LANGUAGE LEARNING

Application of radial categories in the second language learning has an important implication for second language learners. When applying radial categories in vocabulary, because of different focus of construal of events and phenomena in different languages we have to pay attention to that the performance of radial categories in the vocabulary of these different languages is also different. And when the meaning of the word at the edge of radial categories occurs in the sentence, it is often accompanied by a fixed phrase. When radial categories are applied in morpheme we should pay attention to that some meanings at the edge of radial categories sometimes are very abstract, so we need to trace them. While understanding the figurative meaning at the edge of radial categories we need to use our encyclopedic knowledge to understand it. Above all we should know that not all words and morphemes can be embodied in radial categories, and there are some exceptions. When radial categories are applied in grammar we should pay attention to that some words experience the process of grammaticalization over time, and this leads to a big change in their meaning. The change of the words' position in radial categories is caused by the change in meaning of words. That is, the position is shifted from the center toward the edge. The use of some words in the sentence is incompatible with certain rules of grammar, but if they are used in a particular context or they can be the use of a word collocation, they can be used. The use of this word belongs to the process of the mode narrowing. The pattern of these uses of the mode narrowing is on the brink of radial categories. Conventional usage is at the center of radial categories. When applying radial categories in the area of phonology, we have to pay attention to that because of the influence of the entrenchment of the phonology of the first language, we do not notice some phonemes in the second language. So sometimes we could not hear the content of the phonology teacher clearly in the second language learning. It requires us to become familiar with the phonological systems in the first language and the second language and to understand methods of distinguishing the sound between native speakers and second language learners. Thereby facilitating our ability to pay attention to second language learning. When applying radial categories in aspect of the tone we need to understand the distribution of the significance of the tone in radial categories, we also need to understand that different tones represent different meaning and express different emotion. We understand that different meaning and emotion that these tones represent, and it is full of implications to achieve language communicative function and improve language skills for us.

A. *Application of Words in the Form of Radial Categories to the Second Language Learning*

We pay more attention to the meaning of words rather than the form of words in cognitive Linguistics. Radial categories are mainly manifested in the meaning of words in terms of words. The basic meaning of the word is in the center of radial categories, but the more abstract and figurative meanings are radiated out from the center of radial categories. These abstract meanings are in the edge of radial categories, and these meanings are often realized through the technique of metaphor or metonymy. Different meanings of a word can be used to test the vocabulary depth of a word, which is an important aspect of language learning. Taking the word "hand" as an example, hand refers to the part

of the body. Because of different contexts there will be different meaning of the word “hand”. In addition the word “hand” refers to the part of the body, sometimes it refers to a portion of certain objects through the technique of metaphor and metonymy. For example, we can also speak “hands of a clock” or “hands of a compass”. The same the word “hand” also can be used in such fixed phrases as “hand sb a pen” or “give sb a hand” by the technique of metonymy, and the meaning of the word “hand” is not same. Although the meaning in the edge of radial categories changes, they are around the basic meaning of the word. We link these abstract meaning with basic meaning, and we will find some similarities. But each abstract meaning sometimes makes a big difference. If there is no the prototype of the basic meaning, it is difficult for us to divide these meaning into one ethnic group. The way of the construal of different language to phenomenon and events is different, so radial categories of the meaning of the same words in different languages are also different. Taking “thread” as an example, in English corpus manner-of-movement verb “to tread” is often used as a transitive verb and it can be used to describe a football player “threading” a pass between several opponents. It can be used to describe the road “threading their way through a forest”. It can also be used to describe a very abstract sense in literature such as “threading the nostalgia with reflections on friendship and cruelty, innocence, memory”. While in Spanish “hilar”, that is the word “to thread” and it has such usage such as “to thread very finely”, which means that “to do things carefully”. In Spanish the word hilar (“to thread”) is often used to refer to connections between events or actions which occurs one after another. This usage is rare in English. In the study of Littlemore and MacArthur (2007), J. Littlemore found that a fixed usage is often included in the abstract meaning at the edge of radial categories. When we describe an immobile object such as “road”, we can describe it as a moving object. It often can increase the sense of beauty of the article and increase the atmosphere of the sentence. Especially in literature works techniques of describing the immobile object as a moving object are used to attract the readers’ interest in reading. We also can extend the sentence “the river threaded its way through the hills” to more abstract aspect such as “slavery threaded its way as an issue, a concern, and eventually a threatening problem through the fabric of American democracy”. The above two usages are included in this fixed phrase “thread its way”. In terms of the other two abstract usages one is used with the word “together”, the other is used with the passive voice; such as “He manages to thread his ideas together”; “Threading two words together”. “The novel is threaded with the effects of slavery”; “Threaded into the book is the sense that ...”. The above usage is the usage of meaning in the edge of radial categories, and the meaning is linked with the fixed usage. It has important implications for language teaching and learning.

B. Application of Morphemes in the Form of Radial Categories to the Second Language Learning

Morpheme is the smallest meaningful unit of language (Liu Runqing, 2006). Now that it makes sense, so the meaning of the morpheme can be expressed in radial categories. Taking the Japanese morpheme “hon” as an example, the basic meaning of the morpheme “hon” refers to long and thin object. Lakoff (2007) lists some objects with the meaning of long and thin and these objects are demonstrated in sketch map of radial categories. From the chart we can clearly see that the pencil is in the center of radial categories, because the pencil is the most typical thing representing long and thin things. While some other things can only be attributed to a class of long and thin things through the technique of metaphor or metonymy. Considering these things as long and thin things we must not only think of other things linked with these things closely so as to find out the law of the existence of meaning from the contact but also we even need to trace the historical origin of some meaning. It is due to the figurative meaning in the edge of radial categories is more abstract than the basic meaning in the center of radial categories. Because the meaning in the edge of radial categories is sometimes very free and complex, and even we lack encyclopedic knowledge. So sometimes it is difficult to grasp these meaning for us. But this is only for second language learners. Native speakers often use the meaning in the edge of radial categories in their daily communication and language use, so they have already been accustomed to using the meaning in the edge of radial categories. Even if the second language learners of senior levels will also avoid using the meaning in the edge of radial categories. Even these advanced second language learners live in the same environment with native speakers and they can hear the native speakers’ use of meaning in the edge of radial categories every day, and they also avoid using it. This may be an example of learning attention. Even the second language speakers are often exposed to environment of native language, but they do not pay attention to the use of meaning in the edge of radial categories. That is, when these meaning is inputted to them they do not pay their attention. Here it should be mentioned that Taylor (2008) questions the view that the meaning of all words can be expressed as radial categories. Taking the word “long” as an example, the basic meaning of the word “long” is long, but the word “long” can not only mean that space is “long” but also mean that time is “long”. Therefore, which meaning of the word “long” should be in the center of radial categories, and it should be performed in one radial category or in two radial categories. These are questions. For the second language learners it is a big challenge, but such words after all is a special case. After all many words still can be able to be performed as radial categories. On the whole the second language learners grasp words in radial categories well, it is necessary to learn different knowledge in the first language and the second language and accumulate encyclopedic knowledge. At the same time it is necessary for us to improve our language skills in using the technique of metaphor and metonymy. In the second language learning we need to cultivate our ability of learning attention and pay more attention to the language use of native speakers so as to find disadvantages in the communication environment and improve the ability to use language continuously. Further it is necessary for us to think the exception behind the conventional language use, and we can focus on the main and large aspects of language. As a second language learner on the one hand we need to look at exceptions in language objectively and know the existence

of exceptions, on the other hand our own learning and use of language should not be impeded because of the existence of exceptions.

C. *Application of Grammar Rules in the Form of Radial Categories to the Second Language Learning*

Cognitive linguists believe that the concept of radial categories also operates at the level of “grammar”. On the one hand it can be expressed in the vocabulary grammar, on the other hand it can be expressed in the syntax. Some content-words originally had a specific, and fixed meaning. But as time goes on these words have experienced the process of grammaticalization, and they become a function word. That is, the original meaning of these words becomes a grammatical meaning. Grammatical meaning is different from the original meaning (See Hopper and Traugott, 2003). For example, in English the original meaning of “going to” refers to movement and travel (Heine et al., 1991). However, as time goes on, the original meaning of “going to” becomes more grammatical meaning. “going to” is used to refer to the future action, and it is used in the sentence to show future tense. The meaning of content-words is in the center of radial categories, while grammatical meaning is in the edge of radial categories. The next let’s look at the following four examples (1) Jack pushed the vase off the table (2) Sue squeezed her head through the neck of the jumper (3) She ordered Jack out of the meeting (4) Jamie sneezed the napkin off the table. The word “sneeze” is not used as a transitive verb, but in the above example (4) it is used as a transitive verb. The using of the word “sneeze” in above example (1) is in the center of radial categories, while the using of the word “sneeze” in example (2) (3) (4) is in the edge of radial categories. Let’s look at another example of applying radial categories in grammatical rules. There are following examples written by Lakoff’s (Lakoff, 1970). The transitive verb is considered to have three characteristics: First it can be nominalized, such as the word “teach” can become the word “teacher”, the word “drive” can become the word “driver”, and the word “write” can become the word “writer”. Second the transitive verb can be added suffix, for example, readable, countable, manageable and so on. Third most of transitive verbs can be passivalization such as following sentences “her great uncle was eaten by cannibals”, “nothing has been delivered yet”, and “the proposal was attacked by the unions”(Bank of English Examples). In English the meaning of the transitive verb with above three characteristics is at the center of the radial categories, because its meaning is seen as basic, and concrete meaning. Not all transitive verbs possess above three characteristics, but some transitive words without above three characteristics are used in some sentences. As in following examples (5) “John was the knower of that fact”. (Lakoff, 1970, P.20) (6) “The lighthouse is spottable”. (Lakoff, 1970, P.32) (6) “Two pounds are owed by John”. (Lakoff, 1970, P.19). In English the use of three transitive verbs “know” “spot” “owe” in above three sentences. Generally people do not use like this, but transitive verbs like this are used in the corpus. If transitive verbs are used in the corpus, they have restricted meaning. These usages are generally used in particular contexts or areas and connected with certain things. Or the transitive verb that is incompatible with grammatical rules is used in a sentence together with a fixed word so as to form the fixed usage. For example, if a transitive verb “know” is used as the form “knower” in a sentence, in most cases it is usually associated with religion or philosophy, and sometimes it is linked with the business world, education, as well as descriptive grammar. This is the so-called pattern of narrowing. This term is proposed by the relevant theorists (Wilson and Sperber, 2004). So the meaning of pattern of narrowing is different from the basic meaning. The meaning influenced by pattern of narrowing is on the edge of radial categories. If applying the method of radial categories in teaching grammar, I predict that this approach will be more effective than the traditional grammar-teaching approach. The teacher will set out grammatical rules and speak them in traditional grammar-teaching approach. If the teacher encounters that some usage of grammar is incompatible with conventional grammar usage, he/she will put this usage as an exception to emphasize so as to attract the attention of students. If the grammar is spoken in accordance with the approach of radial categories, on the one hand students will be able to improve the creativity and association ability under the leadership of our teachers. On the other hand, under this method students can put the grammar system to form a whole, and learn links between them from each other. If possible, we can also draw a schema of radial categories to enable students to feel the sense of extending fundamental meaning from the center of radial categories to the edge of radial categories, thereby enhancing their impression on grammar knowledge. Compared with the traditional grammar-teaching method, this method is significantly more interesting. It will give students a fun when they learn boring grammar knowledge. Of course, this is only a prediction to the teaching method, and its effectiveness also needs empirical research to prove.

D. *Application of Phonology in the Form of Radial Categories to the Second Language Learning*

The principle of radial categories also operates at the level of phonology. A phoneme is particularly prominent in a given language, and the similar phoneme may be understood as a peer as the prototype of phoneme. The extent to distinguish phonology categorization for people who speak different languages is different. Due to structural organization of phonology categorization the distinction between certain sounds in some languages is obvious, while the distinction in other languages is not. Teachers sometimes complain that their students do not seem to understand what they speak. To a large extent, the difficulties experienced by adult learners are not sensory but attentional (Werker and Tees, 1984). Because the second language learners are often unfamiliar with phonological system of the second language when learning the second language, they don’t have a clear psychological basis for phoneme. They pay more attention to special features of phonemes when learning, while ignoring some of the other features of phonemes. It also requires us to pay attention to those easily overlooked characteristics of phonemes while learning the second language.

When we learn the second language, construal of things and phenomena between mother tongue and second language are very different. We have formed a mind-set of the mother tongue in our minds, and the more firmly this mindset, the more profound influence to second language learning. There is a mother tongue migration. The same the phonological system in mother tongue will have an impact on the phonological system in the second language learners. Migration is not the only factor influencing the phonological system acquisition in the second language. There are other factors affecting the acquisition of phonological system in the second language such as the amount of exposure in the second language, one's ability of concept learning, one's attitude to the second phonological learning. (Rost, 2002). The study found that if some sounds in the first language are similar to some sounds in the second language, it is very difficult for second language learners to learn these sounds. This is consistent with the speech learning model proposed by Flege, and in this speech learning model the more similar the sound in the second language and the sound in the first language, the harder to learn sound. In our early English learning two sounds impressed us, which often appear in our sound learning. We are often told by teachers that {i} is a long sound, and {I} is a short sound, so when we pronounce these two sounds, we need to pull the sound {i} more longer than the sound {I}, short point to another. These two sound will be distinguished by the length of the sound. As second language learners we distinguish sound like this, and the method of distinguishing sound is simple and convenient. We follow our own method to distinguish two similar tones. But native speakers of second language distinguish sounds different with us. Native speakers distinguish sound according to different sound nature, and they pay more attention to aspect of sound duration. This is a good strategy used by second language learners when learning phonemes. From above all points, it is necessary for us to have a clear understanding to the system of the second language phonology when we learn phonology in radial categories. It is important for us to distinguish similar sound between the first language and the second language and try not to be influenced by entrenchment of phonemes in the first language. We need to cultivate our ability of learning attention so as to note some special phonemic features in the second language clearly. Categorization of a kind of phonemes once be fixed, and it is not easy to speak another language purely. For Chinese-speaking English learners, if their master of the Chinese phonemic system is not very good, their Mandarin sometimes is not very standard, which will also affect the standard of pronunciation of the second language. However, learning more knowledge of phonemes, and being familiar with the phonemic system of the native and foreign language is beneficial to learn foreign language. It is even more important especially for people shouldering the task of education and being engaged in foreign language teaching. At the same time we need to have a good attitude toward second language phoneme learning. Only in this way can we learn phonemic knowledge well so as to lay a solid foundation for our English oral learning.

E. Application of Tones in the Form of Radial Categories to the Second Language Learning

Radial categories can operate not only on the level of words, morphemes, grammars, and phonemes but also on the level of tones. Different tones represent different meanings, and these meanings are associated with tones. For example, Cruttenden (1981, quoted in Taylor, 2003) looks at different meanings linked with the rising tone and the falling tone, and finds that the rising tone and the falling tone respectively represent a range of different meanings, but there is a clear correlation among these meanings. The falling tone generally indicates the meaning of the statement, the end, and the assurance, while rising tone indicates the meaning of the questioning, the beginning, and the conciliatoriness. In radial categories the meaning of "the end" represented by the falling tone is a basic meaning, which is in the center of radial categories. Other meanings represented by the falling tone are on the edge of radial categories. The same the meaning of "the questioning" represented by the rising tone is the basic meaning, which is in the center of radial categories. Other meanings represented by the rising tone are on the edge of radial categories. We understand manifestations of the tone in radial categories not to make a clear division of association of meanings represented by tones but to pay attention to implications of these different but related meanings in one radial category. At the beginning of teaching tones teachers demonstrate the tone system of the first language and the second language in the form of radial categories to the learner clearly so that students learn tones from two tone systems with contrasting method. Learners can notice different meanings of different tones in the mother tongue and the second language, which will has a great benefit for students' learning of tones in the second language.

V. CONCLUSION

In this thesis exemplifying and inductive approaches are used to explore implications of words, morphemes, grammatical rules, phonemes, and tones in radial categories to the second language learning. From this we can understand that language is constantly changing, so knowledge of radial categories needs us to continue to accumulate in a lifetime. The radial category is a key concept in cognitive linguistics, and it is very beneficial for our second language learning. It not only enables students to take the initiative but also enables them to stimulate interest of language learners more. Compared with the previous traditional language teaching method application of radial categories in language learning is a good method for language learners, so the research to it is also necessary for us. Although many researchers apply the concept of radial categories to the aspect of language teaching and learning to discuss, the discussion to it is not very comprehensive and detailed. Therefore, a comprehensive analysis of application of radial categories in the second language in this thesis more or less makes up for previous deficiencies. In future it needs us to turn our attention to language classrooms and textbooks and conduct empirical research to the effectiveness

of applying radial categories to second language learning and efficiency of memorizing this knowledge in later period. It is also an aspect very worthy of study for second language teaching and learning.

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