

The Derivation of Verb-copying Sentence in Mandarin Chinese

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Abstract—The verb-copying sentence is a special sentence in Chinese and has received extensive attention from the academic circles. Under the framework of Distributed Morphology and MP, the article makes a modified adjustment to the structure derived by phase from the narrow syntax through the post-syntactic “Feature Copying” operation, which is simply the ornamental adjustment to the resulting syntactic structure, to better explain the verb-copying sentence. This analysis does not require a specific syntactic structural hierarchy and is more natural in theory. It is also consistent with mainstream ideas such as lexical array and derivation by phase under the framework of MP.

Index Terms—verb-copying sentence, distributed morphology, MP, feature copying, lexical array, derivation by phase

I. INTRODUCTION

Verb-copying sentence is a special sentence pattern in Chinese. It means that two identical verbs appear in the same sentence. The two same verbs have an object and a complement respectively. They are represented by the symbol $S+V_1O+V_2C$, S is the subject. V_1 and V_2 are repeated verbs, O is an object, and C is a complement.

(1) Lisi qima qide henlei.

Lisi ride a horse ride very tired

Lisi was very tired to ride a horse.

(2) Zhangsan changge chang-le sanxiaoshi.

Zhangsan sing songs sing-past three hours

Zhang San has sung for three hours.

The basic characteristics of the modern Chinese verb-copying sentence are as follows:

A. Of the two verbs, only the second verb is a qualified finite verb, which can be marked with an aspect marker and can be modified by a negative word and various adverbs.

(3) a) Zhangsan changge chang-le sanxiaoshi.

Zhangsan sing songs sing-past three hours

Zhangsan has sung for three hours.

b) * Zhangsan chang-le ge chang sanxiaoshi

Zhangsan sing-past songs sing three hours

Zhangsan sang the song sing for three hours.

B. The positions between verb-object and verb-complement are fixed and cannot be reversed.

(4) a) Lisi qima qide henlei.

Lisi ride a horse ride very tired

Lisi was very tired to ride a horse.

b) * Lisi qide henlei qima.

Lisi ride very tired ride a horse

C. Objects and complements are essential.

(5) a) ta hejiu hezui le.

he drink wine drink drunk

He was drunk while drinking.

b) * ta he hezui le.

He drink drunk.

* ta hejiu he le.

he drink wine drink-past

D. The object is usually a generic term, not a nonreferential (Li&Thompson1987).

(6) a) ta hejiu hezui le.

he drink wine drink drunk

He was drunk while drinking.

b) * ta he naping jiu hezui le.

he drink that bottle wine drink drunk
 He was drunk while drinking that bottle of wine.

E. The verb-object phrase can be inserted at the beginning and in the middle of the sentence, and then ‘ah/yah’ can be inserted.

- (7) a) Lisi qima (ah/yah) qide henlei.
 Lisi ride a horse (ah/yah) ride very tired
 Lisi was very tired to ride a horse.
 b) qima (ah/yah) Lisi qide henlei.
 ride a horse (ah/ah) Lisi ride very tired

Li & Shi (1997) argue that the verb copy structure is a very young syntactic format with only about two or three hundred years of history. They discuss the grammaticalization process of this structure, and believe that the generation of the verb-copy structure is the result of the highly developed verb-complement structure, so that the object can no longer be inserted between the verb and the complement, resulting in the disappearance of the “V *de* OC” structure. In addition to using the “*de*” clause and the topic structure, the other method is to use the verb copying to express the function of “V *de* OC”.

Up to now, the researchers are still expressing their own opinions on the syntactic generation mechanism of Chinese verb-copying sentence, and have not yet reached a consensus. This paper intends to re-examine the existing related researches, pointing out their existing problems, and then, using the post-syntactic “Feature Copying” operation in DM (Embick & Noyer, 2007) to analyze the derivation of verb-copying sentence and trying to find a more reasonable solution.

II. RELATED RESEARCHES

Scholars have made the study of the Chinese verb-copying sentences from the perspective of generative grammar extensively, such as Huang (1982), Cao Fengfu (2005), Zhang Xiaorong (2009), Yang Daran, Cheng Gong (2013) and Xu Xingsheng (2013).

A. Phrase Structure Constraint (PSC)

Huang Zhengde (1982) proposed the Chinese “Phrase Structure Constraint” in the light of the X-bar theory, which stipulates that the head is only allowed to branch to the left once. If a verb carries a complementary term, it must be repeated to satisfy PSC. According to this restriction, the following example (8a) is ungrammatical because the head of the bottom projection and intermediate verbs projection are all on the left. In order to meet the PSC, the verb “ride” can only be copied, thus forming a verb-copying sentence in example (8b).

- (8) a) wo qima de henlei.
 I ride a horse very tired
 *I’m tired of riding.
 b) wo qima qide henlei.
 I ride a horse ride very tired
 I am very tired to ride a horse.

The PSC has the demerit because it cannot explain the legitimacy of sentences such as (9). In this type of sentence, there are two adjacent components after the verb, the heads of the verb projection at the bottom and in the middle are all to the left, the verb is not copied but the whole sentence is grammatical.

- (9) a) ta quguo Beijing wuci.
 he go-tense Beijing five times
 He has been to Beijing for five times.
 b) ta song wo yiben shu.
 he send me a book
 He sent me a book.

What is more, the X-bar theory has been abandoned under the framework of the MP (Chomsky 1995). In the MP framework, the syntactic analysis of the verb-copying sentence must select new theoretical tools.

B. Topic Structure Theory

Cao Fengfu (2005) and Zhang Xiaorong (2009) think that V_1 in verb-copying sentence loses the verb feature, and its object constitutes a nominal auxiliary topic, because this structure can be followed by some modal particles such as “ah” “ne” “ma” and the like to separate from other components. There may also be brief pauses, as shown in (9):

- (10) a. Ta shuohua-ba/shuo-de hen qingchu.
 he speak speak very clearly
 He speaks / very clearly.
 b. Ta chifan-a / chi-le yige xiaoshi.
 he eat meal eat an hour
 He eats / for an hour.

Li&Shi (1997) argues that the formal source of the verb-copying sentence is a topic structure. VP₁ and VP₂ have different syntactic status in the verb-copying sentence. VP₁ is a nonfinite verb that can act as the subject of the verb-copying sentence, while VP₂ is a finite verb, which keeps the number agreement with the subject. Si Fuzhen(2009) draws on “double-spec” to parse the verb-copying sentence on the basis of Li&Shi (1997). Si (2009) maintains that VP₁ is regarded as the specifier of VP₂.

C. *Linear Correspondence Axiom (LCA) and Morphological Fusion*

Yang Daran, Cheng Gong (2013) pointed out that the repetition of verbs in verb-copying sentence looks like a counterexample of the LCA proposed by Kayne (1994). According to LCA, in the same segment, a term and its "copy" cannot be simultaneously achieved in the phonological form, otherwise it will not be able to form a linear arrangement, causing the representation to collapse at the phonological level. However, the study finds that the reason why both verbs can be achieved in phonetics and form a legitimate linear output is that the fusion of the first verb and its object are sent to the phonological system after syntactic derivation. LCA treats the two as a linear alignment of a term item and other terms, which ensures that verb-copying sentence becomes a legitimate phonological expression.

D. *Derivation by Phase*

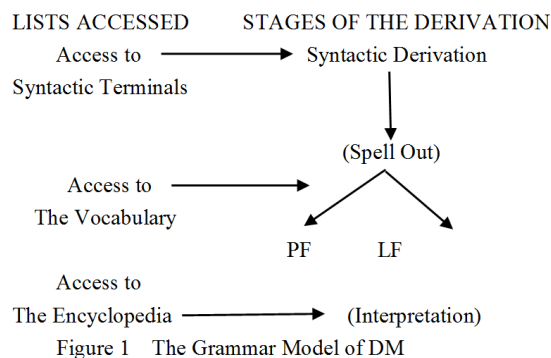
Xu Xingsheng (2013) used the Phase theory to analyze the generation of verb-copying sentence. Xu maintains that the information projection inside the verb-copying sentence should be IP << Top P << Focus P << v P on the basis of Rizzi (1997) and Belletti (2004). Xu believes that the verb-object structure in verb-copying sentence is in effect an internal topic or focus of the sentence. In order to assign the (-Top/-Focus) feature, the verb is first moved from V to v* and then moved to Spec-TopP/FocusP position and then merged with its object. However, when the verb-object structure is used as the topic or focus of the sentence, whether the verb has the (-Top /-Focus) feature is very debatable.

III. THEORETICAL FRAMEWORK

The important premise of studying the verb-copying sentence is the judgment of its attribution as a syntactic phenomenon or a morphological phenomenon. In this regard, our view is that the verb-copying sentence conforms to various standards of morphological phenomena. For example, it has undergone a certain historical evolution process. According to the study of Li Ne and Shi Yuzhi (1997), the generation and development of Chinese verb-copying sentence is the last two or three hundred years. It did not appear until the Qing Dynasty's “Dream of Red Mansions” era, and then slowly stabilized and has been used until now. The word “de” is not necessary for semantics and syntax and so on. Therefore, the verb-copying sentence is not a syntactic phenomenon, but mainly related to the morphology. Thus, this article takes Distributed Morphology (DM for short) as the main theoretical framework, mainly using one post-syntactic operations: Feature Copying. At the same time, it incorporates the MP idea and attempts to propose a new interpretation scheme for Chinese verb-copying sentences.

A. *Distributed Morphology*

Distributed Morphology (DM for short); (Halle & Marantz, 1993); (Embick & Noyer, 2001, 2007) is highly consistent with the MP in the basic architecture, but there is a unique insight into the relationship between syntax and shape. For the purposes of this paper, it has two core claims that can be adopted. One is “single engine hypothesis” i.e. the rules of morphology are the same as the rules of the syntax, and words and phrases are generated by basic operations such as merge and move. The second is “distributed morphology”. The biggest difference between DM and the MP is that it eliminates the Lexicon that contains the individual nature of all the vocabulary in the MP and splits the Lexicon into three lists. List 1 is called the “Syntactic Terminals”, including roots and abstract morphemes. List 2 is the “Vocabulary” whose purpose is to provide phonological content for abstract morphemes and roots. List 3 is the “Encyclopedia”, located in the end of the derivation, which is responsible for providing the final semantic interpretation. Correspondingly, the morphological correlation operation is not in the Lexicon as assumed by the classic MP once for all. The one-time completion is done in two parts. The first part starts from the syntactic terminals and ends with the Spell-Out operation, belonging to part of the narrow syntax. Pure syntactic rules are used here, namely merge and move. The second part happens during the derivation from Spell-Out to PF, where the language computational system accesses the Vocabulary and fills the most matching Vocabulary Items into the syntactic structure according to the relevant rules. This is the “Late Insertion” operation. The grammar model of DM can be represented as Figure 1.



B. Feature Copying

In the DM framework, the result of the syntactic derivation can be adjusted limitedly by Feature Copying in the process of the Spell-Out to the PF. This is an important entry point for our analysis. Below we introduce this operation.

Embick and Noyer (2007) points out that syntactic derivation generates a hierarchical structure, and the hierarchical structure enters the PF after the Spell-Out operation. Further morphological operations will be carried out in order to derive linear order of each node. Feature Copying is one of the morphological operations, among others.

(11) Feature Copying: A feature is present on a node X in the narrow syntax is copied onto another node Y at PF.

Feature Copying is an operation of features already existed in the syntactic structure, so it is a relatively economic operation. It seems that Feature Copying operations violate the Inclusiveness Condition (Chomsky 1995, 2000, 2004), a principle intended to prevent the introduction of novel material in the course of a derivation:

(12) The Inclusiveness Condition: No new features are introduced by C_{HL} .

Chomsky further expounds that a “perfect language” should meet the condition of inclusiveness: any structure formed by the computation (in particular, π and λ [i.e. PF/LF, de/rn]) is constituted of elements already present in the lexical items selected for N [the numeration de/rn]; no new objects are added in the course of computation apart from rearrangements of lexical properties...Let us assume that this condition holds (virtually) of the computation from N to LF... standard theories take it to be radically false for the computation to PF (Chomsky 1995).

As Chomsky notes, it is ordinarily assumed that various morphophonological operations, such as those relating to syllabification, prosodic structure, and a great deal of the phonology, introduce elements not present in lexical items. In addition, the addition of phonological features to nodes at PF (Late Insertion) violates this condition as well. While it appears that PF must violate Inclusiveness in at least some respects, it is also clear that PF does not have the power to add absolutely any type of feature. While all morphemes and interpretable features are present at PF, not all morphemes that are found at PF are present in the syntactic derivation. Specifically, depending on language-specific well-formedness requirements, certain morphemes are added at PF. Such morphemes are never essential to semantic interpretation, since the derivation diverges onto PF and LF branches prior to the insertion of these morphemes. Thus, we speak of the reflexes of any morphemes inserted at PF as being ornamental: they merely introduce syntactico-semantically unmotivated structure and features which ‘ornament’ the syntactic representation. These violations of Inclusiveness and other principles are perhaps forced by properties of the interface, i.e. imposed by requirements ‘external’ to language: this information is forced by the requirements of the articulatory-perceptual interface: language has a serial interface, and this requires a unique linear ordering. As such, this complication to the simplest picture has an external motivation (Embick & Noyer 2007).

IV. OUR ANALYSIS

Our research adopts the viewpoint of topic structure theory and believes that the VP_1 “qima” (ride a horse) is the topic. Adopting the integration Feature Copying in DM and derivation by phase (Chomsky, 2001, 2008) in MP (Chomsky, 1995), a unified theoretical explanation of the generation of verb-copying sentence is made.

A. Derivation Tools and Models

The DM theory and the MP are consistent in the basic structure, and the basic operation of derivation is the same, that is, merge. Therefore, although our analysis is based on the DM theoretical framework, it also consistent with the lexical array and derivation by phase under the framework of MP.

A lexical array, also called a collection of lexical items, is the starting point for syntactic derivation. It refers to the set of terms required to generate a syntactic structure. The system of syntactic derivation cannot arbitrarily and directly select words from the lexicon to form sentences. Words can only be taken from the lexical array, and the syntactic derivation is completed when the lexical items are exhausted. The lexical array not only makes it possible to eliminate the D-structure of the GB theory, but also better reflects the Economy Principle of the Universal Grammar. On the one hand, it reduces the burden of structure generation on the required memory, etc., making the derivation more economical; on the other hand, it provides a reference set for comparison that makes the Economy Principle operational.

With the continuous development of the MP, the lexical array gradually evolves the concept of lexical subarray. The way of the sentence derivation becomes the derivation by phase from the whole sentence derivation. Similar to the concept of the lexical array, derivation by phase is also an embodiment of Economy Principle. It makes it only necessary to calculate the lexical items required for a phase when the derivation proceeds and it is not necessary to take into account of other terms in the lexical array. It goes to the next phase derivation process after a phase is completely finished, and the loop is repeated until the derivation ends. In this way, it not only reduces the burden of working memory, but also greatly reduces the computational complexity of the language system, which better reflects the computability, economy and efficiency of the language system.

When generating a sentence, the language computational system first selects the abstract morphemes and roots required for the operation from the Syntactic Terminals to form an lexical array. Then, the computational system selects the terminals needed for the first phase from the lexical array to form a lexical subarray. After the terminal in the sub-array is used up, the terminals needed to generate the next phase is extracted from the array, and the loop is repeated until the entire sentence is derived. When a phase derivation is finished, the spell-out pushes the generated syntax structure to PF and LF respectively. In the process from spell-out to PF, the computational system visits the Vocabulary, inserts the phonological material conforming to the insertion condition into the syntactic structure through the Late Insertion, and determines the linear order of the various phonological forms in the syntactic structure. In this process, language-specific well-formedness requirements are introduced through Feature Copying. The operation finitely modifies the syntactic structure, resulting in a sound/form mismatch in the language. When the syntactic structure reaches PF and LF, the Encyclopedia is intervened, so that the derivation is interpreted on both interfaces.

B. Generation Mechanism of Verb-copying Sentence

The detailed derivation of verb-copying sentence is as follows:

The first step is to extract the required roots and abstract features from the syntactic terminals to form an lexical array:

LA={ta (he), ma (horse), qi (ride), de, henlei (very tired), v, T, C }

In the second step, the components extracted from the lexical array to generate the first phase P and form the lexical sub-array LA1:

LA1={ta (he), ma (horse), qi (ride), de, henlei (very tired)}

In the third step, the VP is generated according to the conceptual structure, after the details are omitted, as shown in (7):

(13) [_{VP} [_{DP} ma (horse)] [_{V'} [_V qi (ride)] [_{RP} de henlei (very tired)]]]

The fourth step is to generate the first phase P:

(14) [_{VP} [_{PRON} ta (he)] [_{V'} [_V], [_{VP} [_{DP} ma (horse)] [_{V'} [_V qi (ride)] [_{RP} de henlei (very tired)]]]]]

In the fifth step, the derivation (8) is derived to the LF and PF respectively, and further operations are carried out on the way to the PF.

The Feature Copying operation involves to copy the predicate “qi (ride)” between the agent “ta (he)” and the patient “ma (horse)” and forms a verb copying sentence:

(15) [_{VP} [_{PRON} ta (he)] [_{V'} [_V qi (ride)], [_{VP} [_{DP} ma (horse)] [_{V'} [_V qi (ride)] [_{RP} de henlei (very tired)]]]]]

The seventh step is to extract the lexical sub-array LA2 from the lexical array.

(16) LA2={T, C }

Generating a second phase CP, deriving to the PF and LF, and then obtain the final semantic interpretation through the Encyclopedia, the derivation comes to an end.

(17) [_{CP} C [_{TP} _{PRON} ta (he)] [_{T'} T [_{VP} _{PRON} ~~ta (he)~~] [_{V'} [_V qi (ride)] [_{VP} [_{DP} ma (horse)] [_{V'} [_V qi (ride)] [_{RP} de henlei (very tired)]]]]]]]

V. CONCLUSION

This study uses a combination of operations in DM and MP, adopting the idea of adding morphemes between the Spell-Out and PF in DM. At the same time the core concepts such as lexical array and derivation by phase in the MP are taken as well. All morphemes and interpretable features in the process of syntactic derivation appear in the phonological form, but not all morphemes and traits of the phonological form are the result of syntactic derivation. Some of the morphemes or features can be introduced in the phonological form to satisfy the phonetic or grammatical idiosyncrasy of a particular language. It should be emphasized that since the operation of the branch of PF occurs after spell-out, it is independent of the LF, therefore, the features or morphemes added in the PF should not affect the semantic interpretation. They simply make some “ornamental adjustment” to the structure derived from the syntax. The basic assumption of this study is that the copied verb in the verb copying sentence is added in the post-syntactic operation by Feature Copying. The PF will add certain morphemes depending on the legitimacy requirements that vary from language to language. It's useless to the semantic interpretation of these morphemes because before the insertion of these morphemes, the derivation has split into two parts: PF and LF. This study can explain the phenomenon of mismatching between the form and the meaning for the verb-copying sentence in a more reasonable way.

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