

# Symmetries and Asymmetries in Movement

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**Abstract:** Symmetric and asymmetric phenomena are prevalent in linguistics. Recently, two famous approaches have been put forward to analyze the symmetry and asymmetry in grammar: Kayne's Linear Correspondence Axiom (LCA)<sup>[1]</sup> and Ackema and Neeleman's human parser<sup>[2]</sup>. Both of them prove that there is only leftward movement in human's spoken languages. Kayne's theory proves it from a linguistically syntactic perspective while Ackema and Neeleman testify the leftward movement through a mechanic approach. Though these two analyses are quite popular with linguists, exceptions still exist in many languages. In this paper, I will apply two linguists' analysis on CPs' movement to show that rightward-movement explanation for moved CPs is better than leftward movement. Then, the traditional point of view that human grammar is asymmetric because of the unique leftward movement will be proved to be wrong. From the demonstration of CP's rightward movement, we will see our grammar is symmetric because both leftward movement and rightward movement exist.

**Keywords:** Symmetry; Asymmetry; Leftward movement; Rightward movement

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## 1. Introduction

Cross-linguistically, there are many symmetric and asymmetric phenomena in grammar. Word order has been mentioned frequently by linguists in recent years. Symmetry in word order means when categories A and B are found productively in A+B and B+A order across languages. Take verbs and objects as an example, both Verb+Object (VO) and Object+Verb (OV) are productive. Asymmetry occurs when only A+B is attested or is significantly preferred. The symmetric and asymmetric analyses of movement have been a controversial topic in the linguistic area for many years. Although much evidence has proved that there seems to be only leftward movement in spoken languages such as Kayne's LCA and Ackema and Neeleman's human parser, I will prove rightward movement are better explained with the help of CP's movement.

This paper is organized as follows: Section 2 will explain Kayne's LCA and Ackema and Neeleman's human parser respectively. In section 3, I will introduce two movement about CPs. One is the popular leftward movement by Moulton and another is the rightward movement analysis by Bruening. Sections 4 gives the comparison of these two analyses from two perspectives: syntactic categories and binding facts. Finally, section 5 will conclude this paper.

## 2. LCA and Human Parser

One the one hand, symmetric evidence can be found from Chomsky. He claimed symmetric grammar allows all four orders of specifiers, heads and complements. On the other hand, there are some linguists, such as Kayne. He thinks asymmetric grammar derives all orders from an underlying specifier, head, complement order. Based on a notion of asymmetric c-command, he puts forward his LCA. The crux of this theory is that hierarchical structure in natural language maps universally onto a particular surface linearization, namely specifier-head-complement branching order<sup>[1]</sup>. Kayne hypothesizes that all phrases whose surface order is not specifier-head-complement have undergone movements that disrupt this underlying order. Subsequently, there have also been attempts at deriving specifier-complement-head as the basic word order.

However, this is not the main topic of this paper. The reason why I introduce different opinions about word order is that it is related to syntactic movements: leftward movement and rightward movement. In the asymmetric analysis of word order, Kayne's LCA is quite popular. According to LCA, linearization of syntactic structure follows strictly from asymmetric c-command<sup>[1]</sup>:

(1) A word  $x$  precedes a word  $y$  if and only if a node  $X$  dominating  $x$  asymmetrically c-command a node  $Y$  dominating  $y$ .

From the theory LCA, Kayne derives some assumptions. The one which is related to this paper is that all elements that have to undergo movements move to a c-command position. Following his assumption, we can easily draw a conclusion that movements must be leftward since rightward movements imply downward in syntactic trees.

What is more, Ackema and Neeleman<sup>[2]</sup> proved the ban on rightward movement from a different perspective. They proposed that there is an innate parser in our brain for processing sentence structure. Grammar is the base and essential knowledge during parsing. The syntactic

representation during sentence processing is basically linear, in another word, left-to-right. And this process involves both storage and computation. Firstly, whether people hear a sentence or utter a sentence, he or she can only start from left to right rather than the other way around because of the temporal reason. Secondly, there are severe limitations on holding unstructured linguistic material in short-term memory, which means the parser has limited look-ahead capacity. Consequently, it causes that the parser can only postulate a trace (which indicates the base position of a moved element) after it hypothesizes that some element it encounters has been moved. However, rightward movement requires the insertion of a trace in an already partially analyzed string. This is incompatible with the so-called human parser. Therefore, we can get the same conclusion that only leftward movement in spoken languages is possible.

Either Kayne's LCA or Ackema and Neeleman's mechanic approach proves that there is only leftward movement in spoken languages. This seems to be in favor of the asymmetric view in human languages. If their approaches were right, our grammar would be asymmetric. However, this is not always right. In the following, I will show you that the analysis of rightward movement might be more appropriate on some structures, especially CPs.

### 3. Two Analyses on CPs' Movement

Two analyses mentioned above prove that there is only leftward movement in spoken languages. If these two approaches were true, syntax which defines our word order is by no means asymmetric. However, there are exceptions. The debate on the movement of CPs is a counterexample. Moulton proposes that CPs move leftward<sup>[3]</sup> while Breuning and other linguists are in favor of rightward movement<sup>[4]</sup>. The following two subsections show how CPs move leftward or rightward.

#### 3.1 The Leftward Movement Analysis

In many languages, including English, CP arguments and adjuncts prefer to occupy peripheral positions. Complement clauses, in particular, prefer to appear as far to the right as possible, following all other clause-mate material. Initially, the movement of the CP was analyzed as rightward. However, several recent publications argued that CPs move leftward instead. The analyses of this idea have been proposed by Moulton<sup>[3]</sup>. Moulton illustrates leftward movement through a sentence:

- (2) John explained to Bill that pigs do fly.  
 a. [John explain [that pigs do fly]<sup>[CP]</sup> to Bill.]<sup>[AspP]</sup>  
 b. [John explained to Bill [that pigs do fly]<sup>[CP]</sup>.]<sup>[AspP]</sup>

Initially, the word order is "John explain [that pigs do fly] to Bill". If the CP moves leftward, at least two different landing sites will be needed for the whole movement. Firstly, only the CP moves leftward, leaving the remnant phrase which is claimed as AspP. Then, the remnant AspP crosses over the CP and moves to its left side. Finally, we can get the surface structure as "John explained to Bill [that pigs do fly]".

#### 3.2 The Rightward Movement Analysis

The leftward movement analysis admits that, in order to get the right surface structure, two steps have to undergo and at least two different landing sites for CP and movement of remnant phrases across the CP. Comparably, the traditional rightward movement of CPs analyzed and others illustrates that, in fact, only one step is needed for the right surface structure. They assume the external argument is projected by VoiceP, while the internal arguments are projected with the CP closest to the verb. The verb moves from V to Voice. The external argument typically moves to the surface subject position, SpecTP. Breuning<sup>[4]</sup> adopted a dynamic approach to phasehood, where only the topmost of the relevant node is actually the phrasal node. And he assumes that rightward movement targets phrasal nodes like VoiceP and CP in the following example:

- (3) [You must disclose [...] <sup>[CP]</sup> to the auditors in writing [that you have had financial dealings with these companies] <sup>[CP]</sup>.] <sup>[VoiceP]</sup>

The CP crosses over two adjuncts and moves to the rightmost position. According to Breuning, the reason why the CP moves to that position is that only the highest VoiceP counts as a phrasal node. Of course, the moved CP may end up not immediately dominated by a phrasal node if another phrase XP also moves.

## 4. The Comparison between Two Movements

In the following, the rightward movement and the leftward movement will be compared from two perspectives: syntactic category and binding facts. After researching these two aspects concerning movements, my own statement will be given. Then, I will show whether our grammar is symmetric or asymmetric.

### 4.1 Syntactic Categories

Previous literature has shown that CPs displaced to the left can only be related to positions where NPs are allowed. For example, leftward-displaced CPs are ungrammatical with verbs that only permit CPs, like "boast" and "hope", but are grammatical with verbs or preposi-

tions that only permit NPs:

- (4) a. \*That she won the Pulitzer Prize, she is boasting.  
(Cf. She is boasting (\*the fact) that she will win the Pulitzer Prize.)  
b. \*That she will win, she is hoping.  
(Cf. She is hoping (\*the fact) that she will win.)
- (5) a. That nouns and verbs are not distinct, we absolutely reject.  
(Cf. We absolutely reject (\*the claim) that nouns and verbs are not distinct.)  
b. That she will win, we are all hoping for.

Moulton also makes the same assumption as previous literature. He claims that CPs that are displaced to the left have to be related to NP argument positions, while CPs displaced to the right may be related to CP argument positions. In Moulton's version of the leftward movement analysis, the CP moves just above AspP and must move this high. The leftward displacement of CPs is only possible from positions that allow NPs.

However, Breuning argues that CPs, actually, move rightward, not leftward. To explain this clearly, Binding theory will be needed. It identifies the syntactic relationship that can or must hold between a given pronoun or noun and its antecedent. There are three conditions within its framework. Binding Condition C will be related in this paper:

- (6) Condition C: an R-expression cannot have an antecedent that c-commands it.

With the help of Binding Condition C, we can say “\* He<sub>i</sub> asked Mary to wash John<sub>i</sub>” is unacceptable because the R-expression “John” has the same index as “he” and “he” c-commands the R-expression. He illustrates that if CPs move leftward, it will bleed condition C. But, if CPs move rightward, no violation appears.

Breuning proves that, in English, there are a class of adjuncts that are high on the right, outside of the binding domain of an object. With the help of constituency tests, he proposes people can locate these adjuncts very high, at least as high as TP and they are not in the domain of the pronoun within VP. Here are some examples with high adjuncts:

- (7) a. So many people wrote to him<sub>i</sub> that Brando<sub>i</sub> couldn't answer them all.  
b. Rosa won't like him<sub>i</sub>, anymore, with Baul<sub>i</sub>'s mother hanging around all the time.

If Bruening's analysis is right, people can add CPs to the right side of the high adjuncts. This has been verified with native speakers. The following sentences with CPs on the rightmost side are grammatical:

- (8) a. Marissa wouldn't say to her fiancé with her mother hanging around that she loved him.  
b. No one would boast with their mother hanging around that they had been tormenting the neighborhood children.

Therefore, movement of a CP above one of those high adjuncts bleeds Condition C. Since it is no longer in the binding domain of the pronoun, it has to move to a high position, the right side as high as VoiceP.

Compared Moulton's leftward movement analysis with Breuning's rightward movement analysis, it is obvious that Moulton's explanation is quite problematic. He argues there is only one landing site which is the NP position for the moved CP. And if the CP moves truly leftward, it also violates Binding Condition C. On the contrary, Breuning's rightward movement does not come across conflicts. As a matter of fact, the rightward movement analysis seems economic since it only needs one step of movement. After the comparison, Breuning's rightward movement proposal seems more persuasive.

## 4.2 Binding Facts

As has been mentioned in the argument of syntactic categories, binding domain is a crucial fact to analyze the distinction between leftward movement and rightward movement. And binding facts have also been claimed to provide support for a leftward movement analysis. We can find concrete evidence from both SVO and SOV languages. The following German examples show a clear contrast between Binding Condition C and binding of a pronoun by a quantifier:

- (9) a. weil der Direktor [jeder Putzfrau]<sub>i</sub> persönlich mitteilte [dass sie<sub>i</sub> entlassen sei].

because the director each cleaning. lady personally told that she fired was '... because the director told each cleaning lady<sub>i</sub> personally that she<sub>i</sub> was fired.'

- b. weil der Direktor ihr<sub>i</sub> persönlich mitteilte [dass [die Putzfrau]<sub>i</sub> entlassen sei].

because the director her personally told that the cleaning. Lady<sub>i</sub> fired was '... because the director told each cleaning lady<sub>i</sub> personally that she<sub>i</sub> was fired.'

If the dative NP is a quantifier binding a pronoun in the extraposed CP, it is grammatical while if the NP is a pronoun, it gives rises to a

Condition C effect when coindexed with an NP within the CP. According to these binding effects, the leftward movement supporters propose that if the CP had moved rightward, it would necessarily be outside the command domain of NPs within the VP. If movement is always upward and binding depends on the relation of c-command, then movement of the CP should bleed binding, contrary to fact.

However, Breuning proposes another structural relation which can be used to analyze binding. He thinks binding actually depends on the structural relation of precede-and-command, not c-command. Precede-and-command is the conjunction of two structural relations, precedence and phase-command.

All in all, the leftward movement approaches are not so theoretical in analyzing CPs' displacement. It is possible to amend those approaches so that they are compatible with the facts, but then there is no positive argument in favor of a leftward movement analysis, and such approaches are more complicated and stipulative than the rightward movement analysis.

## 5. Conclusion

Empirically speaking, the reason why we have right-displaced CPs is that these CPs are too long. And placing them after verbs will cause difficulty to process the whole sentence. Therefore, people extrapose them to the rightmost position. Consequently, arguments about CPs' movement show up. The trend of rightward movement brings challenge to the mainstream approach. Two contradictory proposals about the movement of CPs by Moulton and Breuning show exactly what has been happening recently. Obviously, Breuning's rightward movement analysis is simpler. If it is the right way, then asymmetric grammar becomes symmetric again because the possibility of rightward movement in human spoken languages.

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## References

- [1] Kayne, R. 2005. Antisymmetry and Japanese. In *Movement and silence*, 215–240. Oxford: Oxford University Press.
- [2] Ackema, P. & A. Neeleman. 2002. Effects of short-term storage in processing rightward movement. In *Storage and computation in the language faculty*, 219–256. Dordrecht: Kluwer.
- [3] Moulton, K. 2015. CPs: Copies and compositionality. *Linguistic Inquiry* 46: 305–342.
- [4] Bruening, B. 2001. QR obeys Superiority: Frozen scope and ACD. *Linguistic Inquiry* 32: 233-273.