Merge Symmetry and Coordination/Subordination Distinction*

YUSUKE YODA
Toyo Gakuen University
yusuke.yoda@tyg.jp

Abstract: In this paper, introducing novel facts in Japanese that the superficially coordination and adjunction are identical in the juxtaposed structure, I will argue the relevant factor is not the semantic distinction (Culicover and Jackendoff 1997) but the syntactic distinction, that is whether coordinated elements are introduced to the derivation cyclically or acyclically.

1. Introduction

This paper investigates the nature of conjuncts within Coordination. Coordination is divided into two types, one is sensitive to the Coordinate Structure Constraint and the other is not sensitive to the constraint. The most linguistic literatures have been investigating the nature of the former type of coordination, and thus the number of literature investigating the latter type is very limited. Thus, in this paper, I will point out the characteristics of the CSC insensitive coordination and provide a new look for the coordination within the current minimalist tenet.

The organization of this paper is as follows: In section 2, I will quickly review the nature of Coordinate Structure Constraint. In section 3, I will review the semantic approaches to CSC insensitive coordination. Then, in section 4, I will again review another analysis of CSC insensitive Coordination by Culicover and Jackendff toward CSC insensitive coordination. In section 5, I will provide the intermediate summary of existing analyses. Then in section 6, I will briefly look at the problem of current analysis of adjunct and provide a new way to look at adjunct structure. In section 7, I will provide new look toward the CSC-insensitive Coordination. Finally, in section 8, I will conclude this paper.

2. Coordinate Structure Constraint

Coordinate Structure Constraint is one of the best-known constraints proposed by Ross (1967). The constraint bars the movement of item from one of the conjuncts.

> "In a coordinate structure, no conjunction may be moved, nor may any element contained in a conjunct be moved out of that conjunct"

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The constraint proposed by Ross (1967) properly predicts the following asymmetry illustrated in (1) and (2).

(1) a. John liked apples and oranges.
b. * What did John like apples and *t*?

(2) a. John drank wine and eat cheese.
b. * What did John drank wine and eat *t*?

Moreover, Ross also points out the cases where the extraction is, in fact, possible, only if the extraction takes place from each conjunct as illustrated in (3) and he calls this fashion of extraction as A(cross)-t(he)-B(oard) movement (a.k.a. ATB-movement).

(3) a. Mary sent a letter on Monday and received a letter on Wednesday.
b. What did Mary send *t* and receive *t* on Wednesday?

However, Grosu further argues the asymmetry in (1) and (2), and further claims that we can decompose the Coordinate Structure Constraint into two parts, the conjunct constraint and the element constraint. Roughly speaking, Grosu claims that the ungrammaticality illustrated in (1a) is a result of "Null Conjunct Condition" and the one in (2) is a result of CSC, providing following cases where anyway extraction exhibits ungrammaticality.

(4) * What books did Bob read *t* and *t*?

In (4), ungrammaticality is derived by the null conjunct and it is derived by independent constraint, that "a conjunct may not be phonetically null." Based on these arguments, most of linguistic literature assumes, without any doubts, *and* is a coordinator and the extraction of one of the conjuncts induces ungrammatical sentences.

3. CSC-insensitive Coordination and its Semantics

However, this observation is challenged by Lakoff (1986), where he provides several CSC-insensitive coordination. According to Lakoff, prototypical CSC-insensitive coordination is classified into three sub-groups based on their meanings. The first type includes coordination where the first and the second conjuncts express an "and-then" relation. The second type includes coordination where the first and the second conjuncts express "despite" relation. The third type includes the coordination where the first and the second conjuncts express "cause-result" relation. The instances of each case are illustrated in (5) respectively.

(5) a. What did Harry [go to the store] and [buy *t*]?
b. How much can you [drink *t*] and [stay sober]?
c. That's the stuff that the guys in the Caucasus [drink *t*] and [live to be hundred].

Lakoff's (1986) observation is motivated by the following contrasts. In (6a), two conjuncts form "and-then" relation, and therefore extraction from the first conjunct yields ungrammatical sentence, but in (6b), two conjuncts form "despite" relation, and therefore the same extraction does not yield ungrammatical sentence. The only difference between (6a, b) is semantic relation between two conjuncts. Thus, he claims that the CSC-insensitivity is brought by semantics.

(6) a. * How a big meal did he [eat t] and [feel satisfied]? <and-then>
b. How a small meal did he [eat t] and [feel satisfied]? <despite>

Further investigation is conducted by Na and Huck (1992) based on Lakoff's observation. Na and Huck propose the primary/secondary distinction of conjunctions and the distinction differs following two cases. In (7), both of the conjuncts are primary since, if the one of conjuncts is elided, the expressed meaning by the whole sentence changes as illustrated in (7). In contrast, in (8), one of the conjuncts is secondary, since even though one of conjuncts, which carry the secondary information, is elided, the expressed meaning by the sentence does not change.

(7) a. Bobbie [$_P$ writes novels] and [$_P$ raises goats].
b. ≒ Bobbie ~~[$_P$ writes novels] and~~ [$_P$ raises goats].
c. ≒ Bobbie [$_P$ writes novels] ~~and [$_P$ raises goats]~~.

(8) a. [$_S$ I went to the store and] [$_P$ bought some whiskey].
b. ~~[$_S$ I went to the store and]~~ [$_P$ bought some whiskey].
c. ≒ [$_S$ I went to the store] ~~[$_P$ and bought some whiskey]~~.

They further claim that, presenting the correlation between extraction and the primary/secondary distinction, adopting following contrasts illustrated in (9). In (9a), the conjoined two sentences express a <cause-result> relation, and the extraction of item from the first conjunction yields a grammatical sentence. On the other hand, in (9c), the conjoined two sentences express an <and-then> relation, and the extraction of item from the second conjunction yields a grammatical sentence.

(9) a. You just identify the loot and we arrest the thief on the spot.
b. This is the loot that [you just identify *t*] and [we arrested the thief on the spot].
c. This s the thief that [you just identify the loot] and [we arrested *t* on the spot].

Based on these observations above, Na and Huck propose the following condition.

> "In any asymmetrical conjunction, if extraction is performed on a secondary conjunct, it must be performed Across-the-Board."

4. Semantic Subordination Despite Syntactic Coordination

Further investigation is made by Culicover and Jackendoff (1997). They introduce the notion of "subordinator and" and claim that the secondary conjunct in Na and Huck's sense is, in fact, a subordinate clause. Their claim is supported by the contrast illustrated in (10). In the following examples, the ATB-movement, which is supposed to be possible only with a coordinate structure, leads ungrammatical or at least marginal sentence.

(10) a. You just point out the thief and we arrest her on the spot.
b. ?? This is the thief that you just point out *t* and we arrest *t* on the spot.

This impossibility of extraction indicates that some of the sentences involving "and"-coordination do not involve coordination.

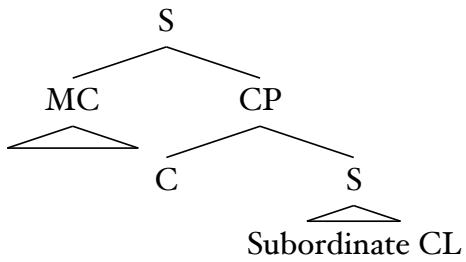
Moreover, they observe the difference and similarity between a subordinator "and" and regular subordinators. First, they points out the position of a subordinator and a subordinator "and". That is, a subordinator "and" needs to be between the first and the second conjunction regardless of the meaning, a regular subordinator needs to be followed by (a) clause(s) as illustrated in (11). However, in the case where the subordinator "and" is involved, "and" is always in between as illustrated in (12).

(11) a. … because it is raining…
b. * … it is raining because.

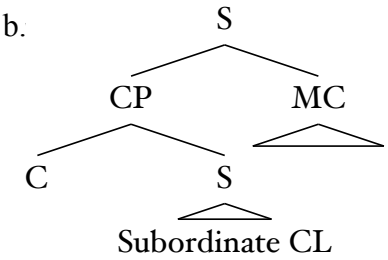
(12) a. Big Louie sees you with the loot and he puts out a contract on you. <cause-result>
b. Big Louie sees you with the loot and he puts out a contract on you. <and-then>

The yielded subordinate structure for (11) from Culicover and Jackendoff's observation should be something like (13).

(13) a.



b.

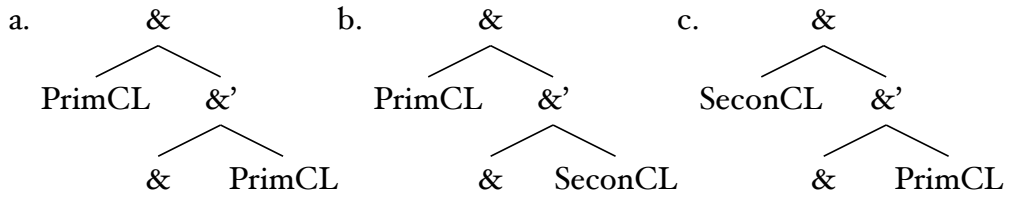


However, the structure above cannot be used for the coordination since in the case of coordination, two juxtaposed conjuncts are interchangeable (Of course, ones involves secondary conjunction cannot be interchangeable, though) as illustrated in (14).

(14) a. I drank wine and ate cheese. ↔ I ate cheese and drank wine.
b. I drank a bottle of wine and still stay sober
*↔ I stay sober and drank a bottle of wine.

Coordination must satisfy the following conditions. First, "and" must be middle of conjuncts. Second, either the first conjunct or the second conjunct can be a secondary sentence. To sum, the yielded structure should be something as follows:

(15)



5. Intermediate Conclusion

To sum, the existing literatures point out the cases where two sentences do not form the coordination despite they are linked together by "and". Throughout this paper they are called "symmetric coordination" and "asymmetric coordination". Moreover, in the asymmetric coordination, the coordinator "and" behaves just like a subordinator (a subordinator and, by Culicover and Jackendoff 1997), although the subordinator-and is different from a regular subordinator with respect to its position. That is, the subordinator-and only attaches to the left most edge of the preceding clause, while regular subordinator attaches to the very beginning of either the preceding clause or the following clauses.

6. Secondary Conjunction as an Adjunct

If the secondary or subordinate conjunct is different from a regular conjunct, which obeys CSC, what is it? In this paper, I propose that the relevant conjunct is, in fact, an instance of an adjunct.

6.1. Deriving Adjunct Condition–Chomsky (2004)

If the secondary conjunct, or a subordinate clause, is, in fact, an instance of adjunct, it should be derived by a set-merge and SIMPL operation under the current Minimalist tenet (Chomsky 2004, 2008). The set-merge is described as below.

> "For structure building, we have so far assumed only the free symmetrical operation Merge, yielding syntactic objects that are sets, all binary: call them simple. The relation that come "free" (contain, c-command, etc.) are defined on simple structures."
> (Chomsky 2004: 117)

Chomsky also proposes another type of merge, which is applied to build an ordered pair between α and β as illustrated below.

> "But it is an empirical fact that there is also an asymmetric operation of adjunction, which takes two objects β and α and forms the ordered pair <α, β> , α adjoined to β"
> (Chomsky 2004:117-118)

The item introduced by the set-merge above is generated on the secondary plane, which Chomsky calls as the separate plane (from the primary plane). Then, at the interface level, items generated on the separate plane must be compiled via simplification as illustrated below, based on Chomsky's (2004, 2008) idea.

> "Given the basic properties of adjunction, we might intuitively think of α as attached to β on a separate plane, with β retaining al its properties on the "primary plane.", the simple structure."

> "We know that at the stage where <α, β> is spelled out, it also becomes a simple structure at SEM … Therefore, there is an operation SIIMPL that converts <α, β> to {α, β}."
> (Chomsky 2004:118)

Then, Chomsky tries to deduce the adjunct condition with the mechanisms mentioned above.

> "The adjunct island subcase follows if an adjunct is not in the search domain of the probe. That in turn follows from the approach to adjuncts in Chomsky 2004, taking them to be entered into the derivation by pair-merge instead of set-merge to capture the fundamental asymmetry of adjunction.
> (Chomsky 2008. 146-147)

The pair-merge + SIMPL analysis seems to predict the following ungrammatically produced by the adjunct island (cf. Huang 1982).

(16) * Who did Mary cry [$_{ADJ}$ after John hit *t*]?

To account for the ungrammaticality yielded by extraction from an adjunct, Chomsky proposes an account based on the pair-merge, which introduces an invisible object by the time when the SIMPL takes place at the level of transfer.

6.2. Alternative to Pair-Merge and SIMPL Approach.

However, recently exceptions of the adjunct island are reported. For instance, the following example in (17) where extraction from the *v*P adjunction is involved, exhibits much better grammaticality than one in (16).

(17) What did John drive Mary crazy [$_{ADJ}$ trying to fix].

Existence of the sentence like (17) indicates that Chomsky's account is too strong and it predicts a wrong result. Alternatively, I assume an optional counter-cyclic merge (cf. Lebeaux 2000, Stepanov 2001.) According to this literature, an adjunct may be introduced to the derivation either cyclically or counter-cyclically. One instance of their supporting data is something like (18).

(18) a. * He believes the claim that John is nice
b. * He likes the story [$_{ADJ}$ that John wrote]
c. * Whose claim that John is nice did he believe?
d. Whose story [that John wrote] did he like.
(Lebeaux 2000: 344)

In (18a-c), a pronoun and *John* induces condition C violation, while in (18d) the fronted adjunct does not yield condition C violation. Further examples are provided by Speas (1991). The following examples involve topicalization of adjunction.

(19) a. [$_{ADJ}$ In Ben$_i$'s office] he$_i$ is an absolute director.
b. [$_{ADJ}$ With John$_i$'s novel finished], he$_i$ began to write a book of poetry.
c. [$_{ADJ}$ TO Ben$_i$'s surprise], he$_i$ noticed that the other had left.
d. [$_{ADJ}$ For Mary's valor], I heard she was given a medal.
(Speas 1991: 250)

7. Projection & Optional Counter-Cyclic Approach

In this section, I will investigate coordination/subordination distinction based on the recent proposal put forth by Chomsky (2014).

7.1. Labeling Algorithm

In Chomsky (2014), it is stated that "for a syntactic object to be interpreted, some information" and such information is a part of information which is in Syntactic Object (SO) and he claims that the information is labels of SO. Moreover he assumes that the Labeling Algorithm is just minimal search.

According to Chomsky, if the SO is {H, XP}, H a head and XP not a head, then the LA selects H as its label, then the labeled SO can be interpreted at the interfaces. Moreover, he further assumes that if SO is {XP, YP} or {H, H}, where neither of item contained in the set is a head, there are two ways to determine a head of such a SO. One way to determine the label of SO is based on feature-sharing. According to Chomsky, if the two items in the set share the feature (in Chomsky's sense, both Hs have the same label), the label of both of them will be a label of SO. The second cases is when the SO is constituted with {XP, YP}, where both are non-head. In this case, for the labeling to conducted properly, one of the items must raise (cf, "dynamic antisymmetry" by Moro (2000)). This second case is depicted by the following example involving copula small clause. In this case, according to Chomsky, one of the item within the [XP, YP]

must raise. For instance in the following case in (20), either XP or YP raises to Spec. T and interpreted as a subject. In the case of (20), XP rises. Here, the lower copy of XP is invisible to LA, since a lower XP is a part of discontinuous element.

(20) XP copula {$_{\beta}$ ~~XP~~, YP}

Thus in (20), the only item visible at the time of spell-out is YP. Thus β gets labeled as YP. This is a case where labeling is conducted via asymmetry between two items.

The next case is feature-sharing, which I will focus on this paper. According to Chomsky, structure of coordination underlyingly has the structure illustrated in (21). To label β, one of Z or W must raise. In the following case in (21), Z raises, and β gets labeled as W.

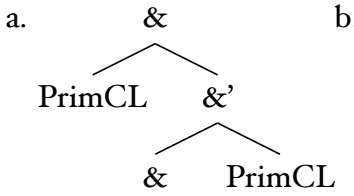
(21) a. [α & [β Z W]]
b. [γ Z [α Conj [$_{WP}$ ~~Z~~ W]]]

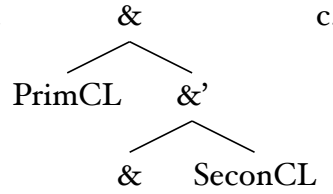
The yielded structure in (21b), again has {XP, YP} structure at the level of γ. To label γ, we use the feature sharing. In the case of coordination, the two (or more) coordinated items share the same category. For instance, if one of the conjuncts is AP, the other has to be AP, or if one of the conjuncts is NP, the other is also NP, etc. Thus, following Chomsky (2014), I assume the label of γ turns to be Z, sharing the feature of two conjunctions.

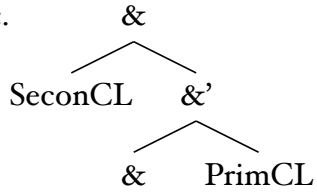
7.2. Analysis: Labeling Based Approach to Coordination/Subordination Distinction

Based on the argument provided in section 3, in the coordination, whether conjunct is a primary or a secondary (= adjunct) conjunct is determined by its semantics. Moreover, there are three possible structures for the apparent coordination. The proposed structure is as follows:

(22) =(15)

a. 

b. 

c. 

Moreover, based on the argument provided in the previous section, it is possible for an adjunct to be introduced to derivation counter-cyclically (Lebeaux 2000, Stepanov 2001). This leads the following generalization. If the surface form A&B is a representation of (22a), both of the conjuncts are primary clause and the yielded structure is coordination. Thus, the ATB extraction is only the option to extract items from the coordinate structure, as Ross (1967) points out. However, if the one of the conjuncts are a secondary clause, the secondary clause yields subordi-

nate clause, that is, an adjunction. Thus, the ATB-movement is impossible and also extraction of items from the secondary clause leads an ungrammatical sentence.

Now, let us closely look at the generalization above from the point of labeling Algorithm. First, as noted above, and may introduce either its complement or adjunct. Second, adjunction takes place either cyclically or counter-cyclically. Based on this observation, there are three possible structure of coordination. From now, an adjunct is indicated by italic.

(23) a. PrimCL & PrimCL case : [AND [XP YP]]
b. PrimCL & SeconCL case: [AND XP] or [AND [XP *YP*]]
c. SeconCL & PrimCL case: [AND YP] or [AND [*XP* YP]]

The first case as illustrated in (23a) is straightforward. As we have seen in (21), one of the PrimCL raises and the raising creates anti-symmetric structure, and as a result, the coordination can be successfully labeled as illustrated in (24a-c).

(24) a. $[_{\alpha}$ AND $[_{\beta}$ XP YP]] (raise XP)
b. $[_{XP}$ XP [AND $[_{YP}$ XP YP]]] (label α and β)
c. XP and YP (pronounce the higher copy)

Not so straightforward cases are "PrimCL & SeconCL" or "SeconCL & PrimCL" cases. In both cases, extraction of items from the PrimCL is possible, whereas extraction of items from the SeconCL is impossible. Moreover, the expressed meaning yielded by the seconCL is almost equivalent to a regular subordinate clause. Suppose the SeconCL is an instance of adjunct, and it is allowed to introduced to the derivation counter-cyclically, it is possible to predict that extraction of item from the SeconCL results in an ungrammatical sentence. This prediction is born out:

(25) a. * How much big a meal did he [eat t] and [feel satisfied]. (with "and-then" reading)
b. How much small a meal did he [eat t] and [feel satisfied]. (with "despite" reading)

Adopting the labeling Algorithm, coordination involving the SeconCL is accounted for as follows: First, we have one of two structures as in (26a) and if XP raise as in (26b), γ gets labeled as XP as in (26b), or if anything raises, β gets labeled as YP. After that, due to the requirement of & (,which must take two arguments), the SeconCL, either XP or YP is counter-cyclically merged to the derivation as illustrated in (26c).

(26) a. $[_{\alpha}$ & $[_{\beta}$ XP]] or $[_{\alpha}$ & $[_{\beta}$ YP]]
b. $[_{\gamma=XP}$ XP $[_{\alpha}$ & $[_{\beta}$ XP ___]] or [$[_{\alpha}$ & $[_{\beta=YP}$ ___ YP]]
c. $[_{XP}$ XP $[_{\alpha}$& $[_{YP}$ YP]]] or $[_{XP}$ XP $[_{\alpha}$ & $[_{YP}$ YP]]]

These processes correctly predict that extraction from either XP or YP are impossible. Since at the time movement operation takes place, an adjoined "SeconCL" is not introduced to the derivation.

8. Conclusion

This paper sheds the light on the coordination in which two sentences are connected by "and" but cannot be a target of CSC and argues that their behavioral difference with respect to extraction is attributed to coordination/subordination distinction. Moreover, this paper proposes that the subordinate clause is semantically secondary within the coordination and it is counter-cyclically introduced to the derivation. This brings us a new look for adjunct condition and the adjunct condition is accounted for not by Chomsky's (2001, 2004) proposal but it is better accounted for by counter-cyclic merge put forth by Lebeaux 2000 and Stepanov 2001.

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