

Initial coordination and the Law of Coordination of Likes*

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1. Introduction

In the literature on coordination, it is widely assumed that two elements may be coordinated only if they are of the same syntactic category. This assumption is known as the Law of Coordination of Likes. In addition, a common assumption with respect to initial coordination, which is characterized by the presence of a pair of elements such as *either-or*, *both-and* and *neither-nor*, is the assumption that the first element of the pair marks the left edge of the coordinate structure. Schwarz (1999) terms this assumption the Left Bracket Thesis. Neijt (1979), Sag et al. (1985), van Zonneveld (1992) and Grootveld (1994), among others, adopt both of these assumptions for their analysis of coordination.

This paper focuses on initial coordination involving the pair *either-or*. On the basis of the distribution of *either* it is argued that the Law of Coordination of Likes and the Left Bracket Thesis cannot be both correct at the same time. To determine which of the two assumptions must be weakened or possibly even abandoned, three different positions with respect to the Law of Coordination of Likes are investigated. Because neither of these positions is able to explain the distribution of *either* under the assumption of the Left Bracket Thesis, the conclusion is that the Left Bracket Thesis must be abandoned. The paper ends with a brief investigation into the nature of the element *either*.

2. Displaced *either*

If both the Law of Coordination of Likes and the Left Bracket Thesis would hold, the following examples are rather puzzling:

- (1) Jane either ate rice or beans.

- (2) Either Jane ate rice or beans.

If the conjuncts in a coordinate structure are required to be of the same syntactic category, then in (1) and (2) the first conjunct must be the noun phrase *rice*, since this element is of the same category as the second conjunct, *beans*. However, if *rice* indeed is the first conjunct in these examples, *either* does not mark the left edge of the coordinate structure. If, on the other hand, *either* does mark the left edge of the coordinate structure, the first conjunct must be the verb phrase *ate rice* in (1) and the clause *Jane ate rice* in (2). But now the first conjunct in these sentences is not identical to the second conjunct *beans* anymore. Hence, these two sentences either violate the Law of Coordination of Likes or the Left Bracket Thesis, or perhaps even both.

To reconcile the Law of Coordination of Likes with the Left Bracket Thesis, two solutions have been proposed to these instances of displaced *either*. In the next section, Larson's (1985) movement analysis will be discussed. Section 4 will be concerned with the reduction analysis proposed by Schwarz (1999). It will be shown that neither of these analyses provides a satisfactory explanation for the distribution of *either*.

3. The movement analysis

Larson (1985) proposes to account for the apparent violation of the two assumptions under discussion by restricting the Left Bracket Thesis to the level of deep structure. According to Larson, *either* only marks the left edge of the disjunction at deep structure. At surface structure, *either* is moved away from its original position to indicate the scope of the disjunction:

- (1) a. Jane either_i ate [_{NP} t_i [_{NP} rice] or [_{NP} beans]]

Although Larson's analysis is able to account for instances of leftward displaced *either*, his analysis cannot provide an explanation for occurrences of rightward displaced *either*, such as in (3):

- (3) Jane either ate rice or she ate beans.

Assuming that the Law of Coordination of Likes still holds at all levels of representation, the first conjunct in (3) must be a full sentence because the second conjunct is. This implies that, at surface structure, *either* occurs to the right of its deep structure position. Deriving the surface position of *either* from its deep structure position therefore requires rightward movement, as can be seen from (3a).

- (3) a. [_{IP} t_i [_{IP} Jane either_i ate rice] or [_{IP} she ate beans]]

But since rightward movement in general seems to be prohibited for *either*, Larson rejects such an analysis for sentences like (3). Instead, he assumes that (3) contains an asymmetric disjunction of VP and IP (=S in Larson's terms):

- (3) b. [_{IP} Jane [_{XP} either [_{VP} ate rice] or [_{IP} she ate beans]]]

Apparently, then, Larson abandons the Law of Coordination of Likes. However, he does not do so entirely. According to Larson, the second conjunct in these cases (i.e., the IP) is subject to a semantic constraint which requires that this clause contains an NP which is coreferential with the main clause subject. This explains the contrast in acceptability between (3) and (4):

- (4) *Jane either ate rice or John ate beans.

Example (4) differs from (3) in that the pronoun *she*, which is coreferential with the main clause subject *Jane*, has been replaced by the proper name *John*, which evidently cannot be coreferential with *Jane*. Larson argues that a coreferential NP such as *she* in (3) can be treated as a variable and that this allows the second conjunct to be reanalyzed as a 'derived VP' with the meaning $\lambda x.(x \text{ ate beans})$. Because the two conjuncts in (3) are now of the same predicative type, they can be conjoined. So although Larson rejects the Law of Coordination of Likes as a condition on syntactic identity, he maintains it as a condition on the semantic identity of the conjuncts.

However, it is not very difficult to find exceptions to Larson's semantic constraint on coreference:

- (5) Yet our invitation was either a complete hoax [...] or else we had good reason to think that important issues might hang upon our journey.
(A. Conan Doyle, *Sherlock Holmes*)
- (6) By the prefix, we are either put in possession of the subject of the poem, or some hint [...] is thereby afforded, not included in the body of the piece, which, without the hint, is incomprehensible.
(E. A. Poe, *Selected Works*)

In these sentences, it is not possible to form a derived VP from the second conjunct by abstracting over the subject of the main clause. For example, no straightforward analysis is possible according to which the clause *we had good reason to think that important issues might hang upon our journey* is a derived VP taking *our invitation* as its subject argument. So even if the Law of Coordination of Likes were a semantic constraint, Larson's analysis is not able to explain the acceptability of (5) and (6). Thus, Larson's account of displaced *either* cannot be correct.

4. The reduction analysis

Schwarz (1999) argues against a movement analysis and in favour of a reduction analysis (which is similar in spirit to the analysis proposed by Seuren 1985). His main argument against a movement analysis such as Larson's is that the conditions on overt movement of *either* are somewhat different from the conditions on covert movement of quantifiers. Schwarz argues that the reduction operation which is responsible for reduction of the second conjunct is the operation of Gapping (Ross 1970). Under this view, the underlying structure of (1) is (1b), where the strike-out represents reduced material.

- (1) b. Jane either [_{VP} [_{VP} ate rice] or [_{VP} ~~ate~~ beans]]

Gapping, as it is known from the literature, is a grammatical process which deletes the finite verb in the second conjunct of coordinate structures under identity with material in the first conjunct. In addition to the finite verb, also other elements may be deleted. In the previous section, we saw that movement of *either* does not yield an explanation for rightward displaced *either*. Can Gapping, on the other hand, account for the position of *either* in (3)? Unfortunately, the answer is no. If it is assumed that the Left Bracket Thesis holds, the conjuncts will be as indicated in (3c).

- (3) c. Jane either [[_{VP} ate rice] or [_{IP} she ate beans]]

There is no way in which we could have derived these conjuncts from a coordinate structure with identical conjuncts by means of Gapping. Because the second conjunct does not contain a gap, Gapping cannot have applied here. A possible way out would be to assume that (3c) is derived from (3d):

- (3) d. Jane either [[_{IP} Jane ate rice] or [_{IP} she ate beans]]

Here, both the Law of Coordination of Likes and the Left Bracket Thesis hold. However, it is unclear how a deep structure such as (3d) could arise at all, since it contains a main clause subject as well as two embedded subjects. Moreover, to arrive at the structure in (3c), reduction must affect the first conjunct rather than the second one. However, Gapping is not able to affect the first conjunct. But neither is any other reduction operation, since no known reduction operation is capable of deleting a non-peripheral subject from the first conjunct in English. Thus, sentences like (3) are also problematic for the reduction analysis.

Schwarz actually mentions examples like (3) briefly (1999: fn. 2) but refers to Larson's solution of weakening the Law of Coordination of Likes as a possible approach to these examples. However, as we saw in the previous section, this solution does not provide a satisfactory explanation for the distribution of *either*.

5. The Law of Coordination of Likes

From the previous two sections, it can be concluded that there is no way to reconcile the standard version of the Law of Coordination of Likes with the Left Bracket Thesis. Sentences involving rightward displaced *either* show that these two conditions cannot hold at the same time, even if it is assumed that movement or reduction has taken place to derive the surface form. Three options remain: the Law of Coordination of Likes is incorrect, the Left Bracket Thesis is incorrect, or both assumptions are incorrect. In this section, we will look at three different positions with respect to the Law of Coordination of Likes. It will be argued that if the Left Bracket Thesis is assumed to hold, neither position with respect to the Law of Coordination of Likes is able to explain the distribution of *either*.

5.1 Extending the notion of syntactic category

Sag et al. (1985) start out from the standard version of the two assumptions under discussion: *either* marks the beginning of the conjunction, and the Law of Coordination of Likes is a constraint requiring that the conjuncts be of the same syntactic category. They then go on to note that examples like the following exist, where the conjoined elements appear to be of distinct syntactic categories:

- (7) Pat is either stupid or a liar. [AP or NP]
- (8) Pat is either asleep or at the office. [AP or PP]
- (9) Sandy is either a lunatic or under the influence of drugs. [NP or PP]

On the basis of examples like these, Sag et al. suggest that the notion of syntactic category must be extended. In particular, underspecified categories must be allowed. These underspecified categories do not occur freely but can only be introduced as the complement of specific elements. For example, the verb *be* introduces as its complement an underspecified maximal projection XP carrying the feature [+PRD], for 'predicative category'. Because the AP *stupid* and the NP *a liar* each satisfy this description, they can occur conjoined as the argument of *be*.

Although this approach, which is couched in the framework of GPSG, accounts for the coordination of apparently unlike categories in a very elegant fashion and also explains why coordination of these unlike categories is not possible in other positions (**the stupid or a liar man*), it cannot account for the difference between the conjuncts *ate rice* and *she ate beans* in (3). No lexical element is present in (3) which could possibly introduce an underspecified category as its complement. Moreover, an implication of Sag et al.'s analysis is that each conjunct must also be able to appear alone in the position of the entire coordinate structure. But if we

assume, in accordance with the Left Bracket Thesis, that *ate rice* and *she ate beans* are the two conjuncts of the coordinate structure in (3), we incorrectly predict that *Jane she ate beans* is an acceptable sentence of English. Thus, maintaining the Left Bracket Thesis while modifying the Law of Coordination of Likes by extending the notion of syntactic category does not allow us to account for leftward and rightward displaced *either*.

5.2 Restricting the Law of Coordination of Likes to the level of semantics

The other two positions with respect to the Law of Coordination of Likes that will be discussed here, Munn's (1993) and Johannessen's (1993), are both couched within an X-bar framework. Munn argues, partly on the basis of the examples discussed by Sag et al., that the Law of Coordination of Likes is in fact a constraint on semantic types. However, it will be obvious that if the Left Bracket Thesis holds, the two conjuncts in (1) and (2) will not be semantically identical. The VP *ate rice* in (1) is a predicative expression and hence not semantically identical to the NP *beans*, which refers to an individual. Similarly, the IP *Jane ate rice* in (2), which semantically expresses a complete proposition, is of a different semantic type than the NP *beans*. Munn acknowledges this problem posed by leftward displaced *either*. He therefore abandons the Left Bracket Thesis and claims (following Dougherty 1970) that *either* is a quantifier which occurs independently of the coordinate structure but merely selects a plural NP. Thus, if the Law of Coordination of Likes is assumed to be a semantic constraint, the Left Bracket Thesis must be given up to be able to account for leftward displaced *either*. Note that the same is true for rightward displaced *either*.

5.3 Abandoning the Law of Coordination of Likes

A different position is taken by Johannessen (1993). She introduces a specific transformation, Coordinate-Alpha, which operates on fully projected CPs and is able to conjoin any part of a CP to any part of another CP. Thus, Johannessen abandons the Law of Coordination of Likes entirely. This would lead to enormous overgeneration if this process were not restricted somehow. This is achieved by the operation Merge, which requires the non-conjoined parts of the trees to be merged. The operation Merge thus has the same function as the traditional notion of 'deletion under identity', namely to prevent overgeneration in the absence of constraints such as the Law of Coordination of Likes.

As a side effect, however, the operation Merge forces Johannessen to conclude that elements like *both*, *either* and *neither* are adjuncts of the coordinate construction rather than conjunctions. If these elements and their counterparts in other

languages are assumed to be conjunctions observing the Left Bracket Thesis, Merge would yield the wrong predictions for examples such as (10).

- (10) *Jeg sa at jeg hverken så Per eller Pål.*
 I said that I neither saw Per or Paul

In accordance with the operation Merge, the merged material should form a well-formed CP together with each conjunct. But this is not the case for the second conjunct in this Norwegian example, nor is it the case for the second conjunct in an English example such as (1). If *either* in (1) were a conjunction immediately preceding the first conjunct, the merged material *Jane* should form a well-formed CP together with the second conjunct as well. However, *Jane beans* is not an acceptable sentence in English. Treating *either* as an adjunct avoids this problem, since adjuncts are not subject to the Left Bracket Thesis. Thus, under her analysis of coordination, Johannessen is forced to abandon the Left Bracket Thesis. The conclusion must therefore be that if the Left Bracket Thesis is adopted, even abandoning the Law of Coordination of Likes entirely does not provide a satisfactory explanation for leftward displaced *either*.

Note, by the way, that Johannessen's assumption that *either* is an adjunct of the coordinate structure is not able to explain why *either* can also occur to the right of its standard position. If it is assumed that, in (3), two full clauses are conjoined, *either* cannot be an adjunct of the coordinate structure because adjuncts cannot appear inside the material they are adjoined to.

6. What kind of element is *either*?

In the previous section, we started from the assumption that the Left Bracket Thesis is a correct assumption about initial coordination. We then looked at three different positions with respect to the Law of Coordination of Likes. It turned out that even the weakest position with respect to the Law of Coordination of Likes, namely the position that no such constraint exists, is unable to explain the distribution of *either* under the assumption of the Left Bracket Thesis. Only when the Left Bracket Thesis is abandoned, an explanation becomes possible. The conclusion must therefore be that the Left Bracket Thesis is incorrect, irrespective of the correctness or nature of the Law of Coordination of Likes. Note that no position is taken here with respect to the nature of the Law of Coordination of Likes. Whether this constraint is a syntactic constraint, a semantic constraint or no linguistic constraint at all falls beyond the scope of this paper. The only thing that is relevant here is the incorrectness of the Left Bracket Thesis. Because the Left Bracket Thesis more or less followed from the status of *either* as a conjunction, this immediately calls into

question the status of *either*. In this section, we will discuss two alternatives to the assumption that *either* is a conjunction.

6.1 Why *either* is not a conjunction

Let us briefly recapitulate why *either* was assumed to be a conjunction in the first place. First of all, *either* usually occurs at the beginning of the first conjunct in a coordinate structure. Similarly, true conjunctions also introduce conjuncts, although never the first one. But since *either* can also appear to the left and right of this position, whereas true conjunctions cannot, they differ in their distribution.

Secondly, as Borsley (1994) notes, there are languages in which ‘coordination introducers’ like *either* are identical to ordinary conjunctions. One such language is Dutch, where disjunction can be expressed by the pair *of-of*. However, leftward and rightward displaced *of* are also possible in Dutch (cf. Bredschneijder 1999; Haeseryn et al. 1997):

- (11) *Of Jan zal de rozen snoeien of de tulpen planten.*
either Jan will the roses prune or the tulips plant
- (12) *Jan zal of de rozen snoeien of hij zal de tulpen planten.*
Jan will either the roses prune or he will the tulips plant

Analyzing the first occurrence of *of* as a conjunction here will yield the same problems as discussed earlier for displaced *either*. Thus, both English *either* and Dutch initial *of* do not seem to be true conjunctions.

6.2 Is *either* a quantifier?

A suggestion put forward by Munn (1993) is that *either* in *either-or* constructions is a quantifier. Following Larson (1985), Munn takes the distribution of *either* to mirror the scopal properties of the construction. Larson’s generalization is that when *either* occurs displaced, it marks the scope of the disjunction explicitly, but when *either* occurs adjacent to the first conjunct, the scope of the disjunction is delimited by the possible surface positions of *either*. Thus, (13) is ambiguous between a narrow scope reading and a wide scope reading, whereas (14) only has the wide scope reading.

- (13) Mary is looking for either a maid or a cook.
- (14) Mary is either looking for a maid or a cook.

According to the narrow scope reading, Mary is looking for a servant and would be satisfied with anyone who is a maid or a cook. According to the wide scope reading, Mary is looking for a maid or Mary is looking for a cook, but the speaker does not

know which. Note that both readings are *de dicto* readings. Rooth and Partee (1982) claim that there also is a narrow scope *de re* reading meaning that there is some particular person, who is a maid or a cook, and Mary is looking for this person. However, this reading does not play a role in the present discussion.

Munn explains the above observations as follows. *Either* is assumed to be base-generated in its surface position in all cases. If *either* occurs in its standard position, it can undergo Quantifier Raising at LF to determine the scope of the disjunction in the same way quantified NPs determine their scope. That is, it can remain within the scope of the intensional verb *look for* in (13) or it can raise outside its scope. If, on the other hand, *either* occurs displaced, the entire coordinate structure must be raised to the position of *either* at LF to satisfy the selectional restrictions of *either*, because *either* selects a plural NP (see Winter 1998 for a similar suggestion). Unfortunately, this approach does not work for rightward displaced *either*. In these cases, it is not clear what material, if any, should be raised. Whatever is raised to the position of *either* in a sentence such as (3) must originate to the right of *either*. But then the raised coordinate structure cannot consist of two semantically identical conjuncts, in contrast with what Munn argues.

Larson's own analysis is somewhat different from Munn's. Larson makes a distinction between moved *either* and base-generated *either* rather than between displaced *either* and non-displaced *either*. Furthermore, he argues that *either* is a scope indicator rather than a quantifier. It indicates the point at which a variable introduced by the disjunction must be bound. If *either* occurs displaced because it has moved to that position at surface structure, it must stay there at LF. Hence, displaced *either* marks the scope explicitly. On the other hand, if *either* stays in its original position at surface structure, it may move away from this position at LF. Because it may raise to any position at LF in which *either* is allowed to occur overtly, disjunctions in which *either* occurs in its standard position are ambiguous as a result. Now consider (15), where we have an instance of displaced *either* which has nevertheless not moved (see Section 3). Larson's analysis predicts this sentence to be ambiguous, because *either* could have moved at LF.

(15) Mary is looking for either a maid or she is looking for a cook.

However, (15) only seems to have the wide scope reading. Thus, analyzing *either* as a quantifier or scope indicator is not entirely unproblematic.

6.3 *Either* as a marker of contrast

If *either* is not a conjunction nor a quantifier or scope indicator, what kind of element could it then be? If we look at the examples presented earlier, it is obvious that in many cases displacement of *either* has no truth conditional effects at all.

Compare, for example, sentences (1) and (2). And although *either* occurs leftward displaced in (16), its standard position immediately preceding *the fire* would have given us exactly the same interpretation.

- (16) They are then buried in the ground for four hours, then boiled again for a short time, after which they are dried, either by the fire or the sun.
(E. A. Poe, Selected Works)

In most cases, displacement of *either* seems to be for prosodic reasons only. Support for this hypothesis comes from the observation that prosody seems to be able to provide an explanation for the coreference effects discussed in Section 3 and illustrated by the difference in acceptability between (3) and (4), repeated below.

- (3) Jane either ate rice or she ate beans.
(4) *Jane either ate rice or John ate beans.

Acceptable instances of rightward displaced *either*, such as (3), (5), (6) and (15), all have in common that the material preceding *either* is unstressed. In (4), on the other hand, *Jane* is contrasted with *John* and hence receives contrastive stress. As a result, (4) is unacceptable. Since stressing one element results in destressing another, destressing the material preceding *either* could be the result of stressing (part of) the material following *either*. Because stressed material in a coordinate structure expresses contrast, the function of *either* seems to be to mark the contrasted material.

This view that *either* is a marker of contrast would also explain the difference in acceptability between the following two sentences.

- (17) *JANE either ate rice or JOHN.
(18) Either JANE ate rice or JOHN.

Here, capitals indicate stress. If both proper names are stressed, resulting in the most natural reading that Jane ate rice or John ate rice, *either* must precede the first contrasted element (cf. (18)) and is not allowed to follow it (cf. (17)).

Although for reasons of space it will not be possible to give a fully worked out account of *either-or* constructions, the observations presented here show that the placement of *either* is not a purely syntactic phenomenon but is influenced by prosodic factors as well. In particular, *either* is subject to the requirement that it precedes the elements carrying contrastive focus.

7. Conclusion

In this paper, it was shown that the Law of Coordination of Likes and the Left

Bracket Thesis cannot be both correct at the same time. Because abandoning the Law of Coordination of Likes does not yield an explanation for the distribution of *either*, it must be the Left Bracket Thesis that is incorrect. This immediately calls into question the status of *either*, since the Left Bracket Thesis followed from the status of *either* as a conjunction. *Either* neither seems to be a conjunction nor a quantifier. It is suggested that *either* is a marker of contrast.

Notes

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