

On Chomsky-Adjunction

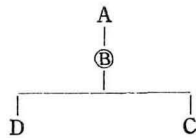
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I. Introduction

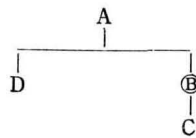
In the transformational grammatical theory there have been proposed three types of adjunction operation: daughter-adjunction, sister-adjunction and Chomsky-adjunction. They can be illustrated as in (2a, b, c), the three possible different derived constituent structures for adjoining the element D to the left of the node B in the constituent structure (1).



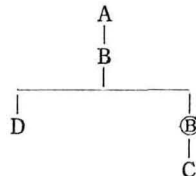
(2) a. Daughter-adjunction of D to the left of B:



b. Sister-adjunction of D to the left of B:



c. Chomsky-adjunction of D to the left of B:



In (2a) the element D is adjoined under the node B so that D becomes a 'daughter' of B. In (2b) the element D is adjoined under the node A so that D becomes a 'sister' of B. In (2c) the element D is adjoined neither to the node A nor to the original node B but

to the newly-created node B, so that D becomes a 'daughter' as well as a 'sister' of B. Thus, Chomsky-adjunction is a so-called 'node-creating' or 'structure-building' elementary transformation that 'tends to preserve the constituent structure' (Lakoff 1968:24).

The only explicit argument for the necessity of daughter-adjunction has been presented by Ross (1967:64, fn. 20) for the rule of Clitic Placement in Serbo-Croatian.¹ However, he is rather reluctant to admit daughter-adjunction as a separate legitimate elementary transformation, and states (Ross 1967: 64, fn. 20):

This rule (Serbo-Croatian Clitic Placement) is the only one that I know of where daughter-adjunction is required, and I am reluctant to argue for a change in the number of kinds of elementary operations which the theory of grammar provides.

Ross (1967) assumes sister-adjunction for the rules of Extraposition (p. 99), Extraposition from NP (p. 5), Particle Movement (p. 28), and Complex NP Shift (p. 32) in English.² Unfortunately, however, he does not present any explicit argument for the necessity of sister-adjunction for any of the rules. Furthermore, as far as I know, there has been no explicit argument offered for sister-adjunction by any other generative grammarian, either.

On the other hand, Ross (1967) claims that Chomsky-adjunction³ is the correct operation for the rules of Relative Clause Formation (p. 101), Question (p. 156), Conjunction Copying (p. 91), Conjunction Reduction (p. 97), Topicalization (p. 115), Left Dislocation (p. 232), and Right Dislocation (p. 236) in English. Other rules in English that have been assumed or claimed to involve Chomsky-adjunction are *It*-Replacement in Lakoff (1968:24) and Complementizer Placement in Lakoff (1971:254). For none of these rules,

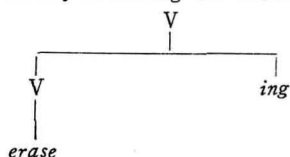
¹ Ross (1967:146) suggests another case that partially involves daughter-adjunction. That is, he describes the rule of *IT*-Replacement in English as substituting the subject of the embedded sentence for the pronoun *it* and daughter-adjointing the remainder of the embedded sentence to the VP of the matrix sentence. But he does not present any explicit argument for doing so.

² The page references are to Ross (1967).

³ The term 'Chomsky-adjunction' is due to the fact that Chomsky first noted the necessity of this type of adjunction. (cf. Ross 1967:143). Chomsky's original motivation for this type of adjunction concerns the correct stress assignment in English. For example, in sentences like (i) below it seems clear that the result of adjoining the present participle ending, *ing*, to a verb should be a node of some sort. But the stress rules will only work properly if the formative *erase* is dominated exhaustively by the node V as in (ii).

(i) The boy is erasing the blackboard.

(ii)



except Ross' (1967: 101) Relative Clause Formation and Lakoff's (1968:24) *It*-Replacement, explicit arguments for the necessity of Chomsky-adjunction have been offered.

The purpose of this paper is to show that even in the cases of Ross' Relative Clause Formation and Lakoff's *It*-Replacement, the arguments for the necessity of Chomsky-adjunction are either untenable or very weak, and to discuss further problems of Chomsky-adjunction, which indicate that it is far from certain that Chomsky-adjunction is the correct adjunction operation for the theory of derived constituent structure even if many generative linguists (especially generative semanticists) seem to assume that it is so (cf. R. Lakoff 1968).

2. Ross' Relative Clause Formation

Ross (1967) claims that a relativized NP should be Chomsky-adjoined in English relativization, arguing that if it is sister-adjoined such ungrammatical sentences as (4), which is formed by relativizing the first NP *the boy* in (3), cannot be blocked by the Coordinate Structure Constraint.

(3) The boy and the girl embraced.

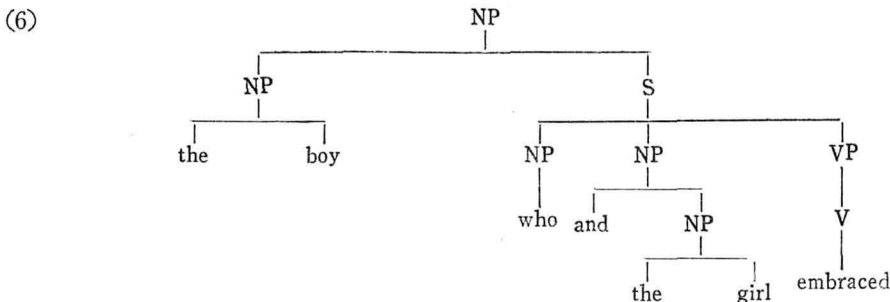
(4) *The boy who and the girl embraced is my neighbor.

The reason why (4) cannot be blocked by the Coordinate Structure Constraint, Ross argues, is that this constraint only prevents constituents from being moved, and in the derivation of (4) through sister-adjunction the relativized NP *who* has not moved at all. That is, Ross claims that if we assume (5) as the rule of Relative Clause Formation in English the derived structure for the relative clause in (4) is not (6) but (7).

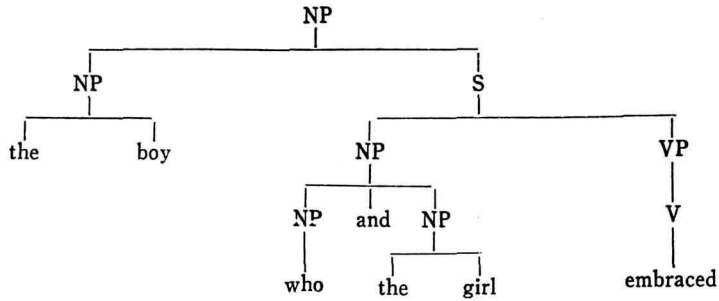
(5) Relative Clause Formation

W-	NP	[	NP	-s	[	X	-NP	-Y	s	]	NP	-Z	
1	2	3	4	5	6								OBLIG
													==>
1	2	4+[3	0	5]	6								

Condition: 2=4 ('+' indicates sister-adjunction.)



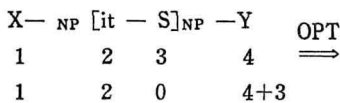
(7)



Note that in (7) the relativized NP *who* has not moved from its deep structure position at all whereas in (6) it has moved up and is attached under the S. Note also that, according to the definition of sister-adjunction given earlier (cf. (2b)), the correct derived structure for the relative clause in (4) is more likely to be (6) than (7). The only reason why Ross assumes (7) rather than (6) as the derived constituent structure for sister-adjointing the relativized NP (4) is because he imposes a condition on sister-adjunction that, if a term is sister-adjointed to a null variable no change in the derived constituent structure will result' (Ross 1967:101).

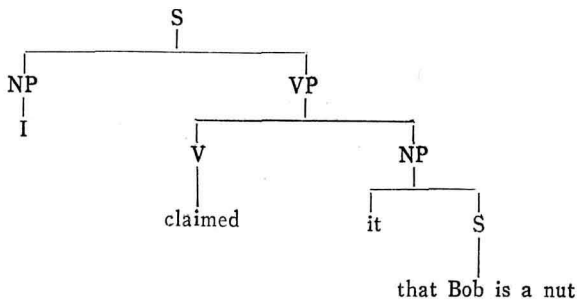
For this condition on sister-adjunction, Ross presents the following argument. With this condition on sister-adjunction, if the rule of Extrapolation (8) were to apply to (9), no change would be effected: the sentence in opposition to *it* would stay within its NP.

(8) Extrapolation



('+' indicates sister-adjunction.)

(9)

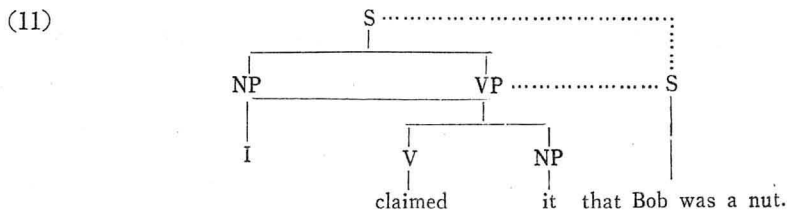


Thus the next rule in the ordering, *It*-Deletion, could be formulated as shown in (10).

(10) *IT*-Deletion

X—	NP[it—	S]NP	—Y	OBLIG
1	2	3	4	\implies
1	0	3	4	

However, if this condition on sister-adjunction were not in effect, ‘vacuous extraposition’⁴ would be possible, and the embedded sentence could be moved out of its NP and attached somewhere higher up the tree, as shown in (11) (just where it would attach is not relevant here and the two dotted lines from the extraposed S are to indicate two possibilities).



But if (9) can be converted into (11), then (10) will have to be modified as shown in (12), for otherwise this rule would not delete the *it* in (11), and the ungrammatical (13) would result.

(12)

X —	it —	S —	Y	OBLIG
1	2	3	4	\implies
1	0	3	4	

(13) *I claimed it that Bob was a nut.

But there are many sentences which show that (12) is far too strong: it requires the deletion of *it* before any sentence whatsoever, and it is easy to construct sentences where this extra power leads to wrong results. In (14a), for instance, the *it* which is the object of *claim* will be deleted, because it precedes the clause $s[and\ I\ think\ so\ too]_s$, and the ungrammatical (14b) will result.

(14 a. Although Bob may not be a nut, many people have claimed it $s[and\ I\ think\ so\ too]_s$.

b. *Although Bob may not be a nut, many people have claimed and I think so too. Therefore, he concludes, we need the condition on sister-adjunction, which means that if we assume (5) as the Relative Clause Formation rule the derived constituent structure for the relative clause in (4) has to be (7); hence the Coordinate Structure Constraint cannot block the derivation of (4). Thus, for the Coordinate Structure Constraint to be able to block (4), Ross argues, the rule of Relative Clause Formation has to be formulated

⁴ This term is Rosenbaum's. Cf. Rosenbaum (1967) for the function of 'vacuous extraposition.'

in such a way that the relativized NP is moved to be Chomsky-adjoined to the .S, as in (15), and the derived constituent structure for the relative clause in (4) would be (16).

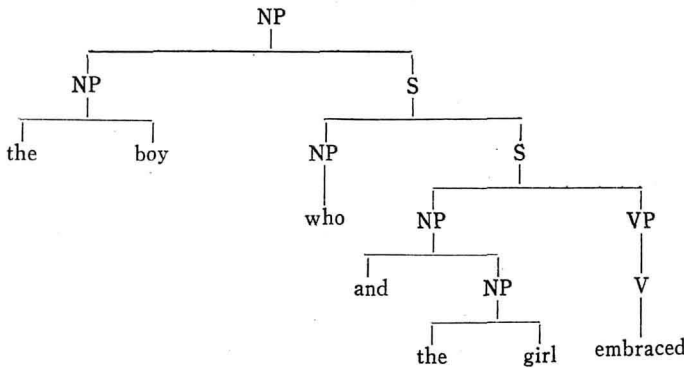
(15) Relative Clause Formation

W—	NP[NP—	s[X—	NP—	Y]s	]NP —	Z	
I	2	3	4	5	6		OBLIG
							====>
I	2	4#	[3	0	5]	6	

Condition: 2=4

(‘#’ indicates Chomsky-adjunction.)

(16)



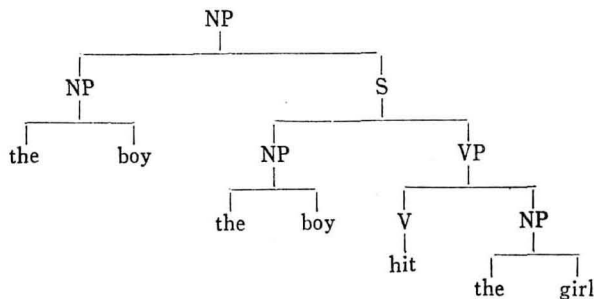
Note that Ross' above argument for the necessity of Chomsky-adjunction in English relativization crucially depends on his condition on sister-adjunction since if it were not for the condition on sister-adjunction the normal derived constituent structure for the relative clause in (4) would be (6) where the relativized NP is *moved* up, and thus the Coordinate Structure Constraint would correctly block the derivation of (4). On the other hand, his motivation for the condition on sister-adjunction in turn crucially depends on the existence of the *IT*-Deletion rule, since if it were not for the *IT*-Deletion rule the condition on sister-adjunction would not be necessary. Thus, Ross' whole argument for the necessity of Chomsky-adjunction in the case of English relativization crucially depends on the existence of the *IT*-Deletion rule.

But *IT*-Deletion is one of the least motivated rules in English. It is so simply because the postulation of *it* in the deep structure can hardly be motivated. That is, first of all, the *it* has no lexical meaning and furthermore predictable from the structure in which it occurs. Secondly, by positing *it* in the deep structure, we cannot explain why the surface pronoun in this structure (or the structure where Extraposition applies) is the *it* rather than any other pronoun or any other grammatical morpheme available in English. Thus

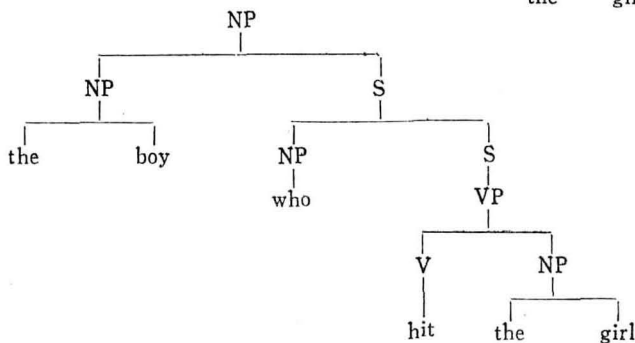
we might better introduce the *it* by some kind of pronominalization. In fact, Kiparsky and Kiparsky (1971) propose the *IT*-Insertion rule in place of the *IT*-Deletion rule. Furthermore, in view of the fact that currently the underlying structure is getting more and more abstract, keeping the semantically empty prop *it* in the underlying structure of an extraposed sentence can hardly be motivated. Accordingly, it is unlikely that the *IT*-Deletion rule can be motivated in English. Under this situation on the *IT*-Deletion rule, any argument that crucially depends on the *IT*-Deletion rule can only be at most highly questionable. Therefore, Ross' argument for the necessity of Chomsky-adjunction in English relativization is very weak. In fact, if we remove his condition on sister-adjunction the derived constituent structure of the relativization through sister-adjunction will be like (6) and thus the Coordinate Structure Constraint will be able to correctly block derivations of sentences like (4) since in a structure like (6) a relativized NP has moved up.

Another problem with Chomsky-adjointing the relativized NP in the derivation of a relative clause is that it leads to a strange consequence that the derived constituent structure for the relative clause differs in terms of embedding, depending on whether the relativized NP is a subject NP or an object NP. That is, the relative clause structure (17c), where the subject NP is relativized, would be derived from its deep structure (17a) through the intermediate structure (17b) by the Chomsky-adjunction version of Relative Clause Formation (15).

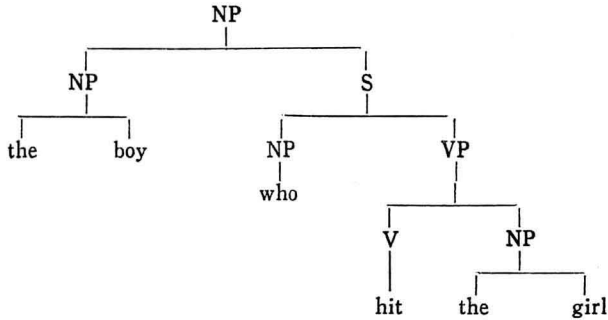
(17) a.



b.

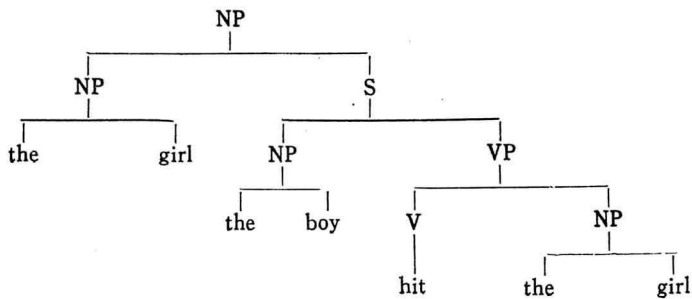


c.

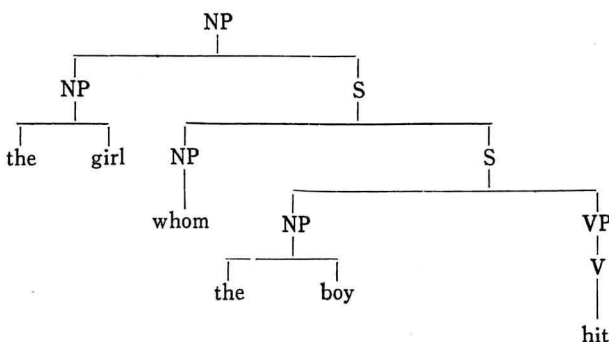


Note that in (17 b) the relativized NP is Chomsky-adjoined and that (17c) is derived from (17b) by pruning the lower S in (17b) since the S does not branch. However, the relative clause structure (18b), where the object NP is relativized, would be derived from its deep structure (18a), resulting in a structure different from (17c) in terms of embedding.

(18) a.



b.



Note that in (18b) the lower S cannot be pruned since it does branch. The problem here is that we cannot find any motivation for having different derived structures (17c) and (18b) for the two relative clauses, one with the subject NP relativized and the other with the object NP relativized.⁵

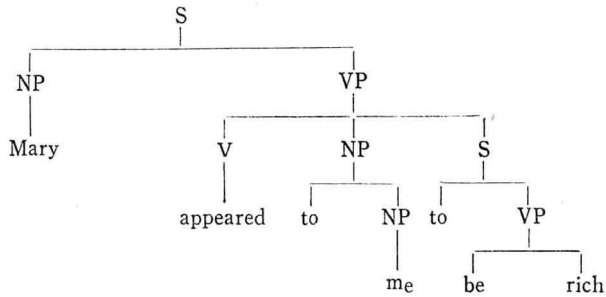
3. Lakoff's *IT*-Replacement

Lakoff's (1968) *IT*-Replacement is to derive structures like (19b) from structures like (19a).

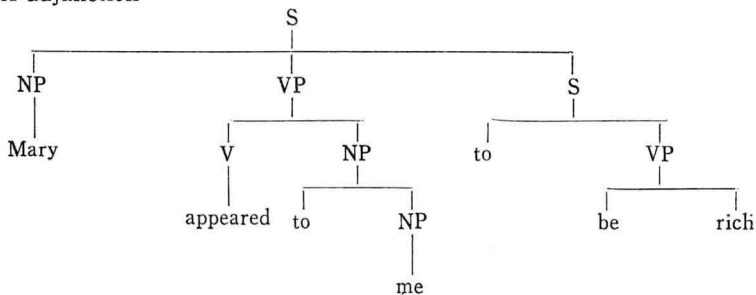
- (19) a. It appeared to me that Mary was rich.
- b. Mary appeared to me to be rich.

Thus his *IT*-Replacement rule does double operations: the constituent subject is raised and replaces matrix subject *it* while the constituent predicate is raised and attached to the right of the matrix predicate. The latter part of *IT*-Replacement involves an adjunction operation, i.e., adjoining the constituent predicate to the matrix predicate. This adjoining operation can also be performed in three different ways: daughter-adjunction, sister adjunction and Chomsky-adjunction. For example, the three different derived constituent structures (20a, b, c) are possible for (19b), depending on the type of adjunction operation chosen for the predicate raising portion of *IT*-Replacement.

- (20) a. Daughter-adjunction

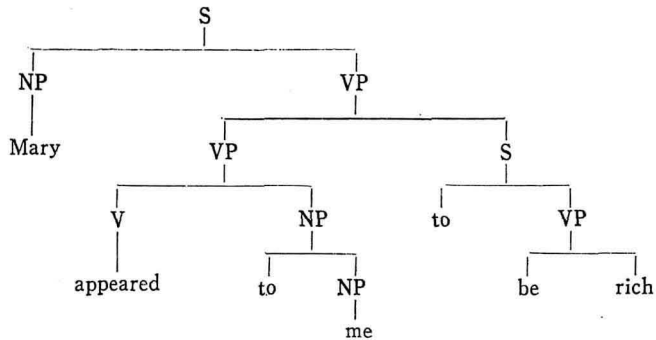


- b. Sister-adjunction



⁵ I have ignored here the possibility that the constituent AUX originates between the subject NP and the predicate VP, in which case the lower S in (17b) would not get pruned and the embedding difference between (17b) and (18b) would disappear. However, it is hard to motivate the constituent AUX appearing between NP and VP in the deep structure. Furthermore, even if it is possible to motivate it, we still have to motivate the double embedding for a relative clause structure in general.

c. Chomsky-adjunction



In (20b) *appeared to me to be rich* is not a constituent, but such rules as Equi VP Deletion require it to be a constituent, i.e., a VP; therefore, (20b) cannot be the correct derived constituent structure. In both (20a) and (20c), however, *appeared to me to be rich* is a constituent, i.e., a VP; thus both (20a) and (20c) are appropriate derived constituent structures for such rules as Equi VP Deletion. And in fact it is very difficult to choose between (20a) and (20c) as the correct derived constituent structure for (19b), simply because there is little evidence available for choosing one or the other as the correct derived constituent structure for (19b). Nevertheless Lakoff (1968) chooses (20c), the Chomsky-adjunction version, as the correct derived structure for (19b) only on the ground that *appeared to me* is also a constituent or a VP in (20c) but it is not in (20a). Unfortunately, however, Lakoff (1968) presents not a single piece of evidence that *appeared to me* has to be also a constituent or a VP in the derived constituent structure of (19b). Until we find such evidence his claim on Chomsky-adjunction has to be tentative.

4. Other Problems

There are some formal problems that result from the adoption of Chomsky-adjunction. When the structural change of a rule states that a constituent be Chomsky-adjointed to an S node, the result of this operation is the creation of a new S node and consequently the creation of a new cycle. But obviously no cyclic rule applies to this new cycle created by Chomsky-adjunction.

Furthermore, a serious contradiction arises between the notion of the post-cycle rule and that of Chomsky-adjunction. If a post-cycle rule with Chomsky-adjunction operation applies to a P-marker, it will apply to the highest S and create a new S node. If

another post-cycle rule follows in the sequence of rules that apply on that last cycle,⁶ this second post-cyclic rule, which would have to apply to the highest S because it is post-cyclic, will not apply to the highest S because another S node has been created. That is, a post-cyclic rule should apply on the last cycle, but does not apply on the last cycle because a new cycle has been created by Chomsky-adjunction.

5. Conclusion

We have seen that Chomsky-adjunction is by no means the best motivated adjunction operation. Thus we have to motivate each adjunction derived constituent structure case by case for the time being until we establish one type of adjunction operation as the correct adjunction operation for the theory of derived constituent structure.

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⁶ Ross (1968) argues that Topicalization (or Question), a Chomsky-adjunction post-cyclic rule, should precede Extraposition from NP, another post-cyclic rule.