IDENTITY DELETION AND REGROUPING IN COORDINATE STRUCTURES

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1. Introduction. The purpose of this paper is to discuss some essential properties of identity deletion and regrouping in coordinate structures conjoined with and, and to propose a new analysis of coordination reduction which can be shown to be more general and of greater explanatory value than such other well-known alternative analyses as those presented by Schane (1966), Ross (1967b), Postal (1968), Stockwell et al. (1969), and Dougherty (1970).

The proposed treatment analyzes coordination reduction into two ordered processes, which are to be referred to as Identity Deletion and Regrouping. It will be shown that in conjunction with Respectively Insertion and Each-Other Pronominalization, these two processes can explicitly relate the following four types of coordination reduction.

Type A: (1)a John sang and John danced.
b John sang and danced.
(2)a John came and Bill came.
b John and Bill came.
(3)a John hit the dog and John hit the cat.
b John hit the dog and hit the cat.
c John hit the dog and the cat.
(4)a John hit the dog and John kicked the dog.
b John hit the dog and kicked the dog.
c John hit and kicked the dog.
Type B: (5)a John loves the dog and Bill loves the cat.
b John loves the dog and Bill the cat.
(6)a John hit the dog and Bill kicked the dog.
b John hit and Bill kicked the dog.
Type C: (5)c John and Bill loves the dog and the cat respectively.
(6)c John and Bill hit and kicked the dog respectively.
Type D: (7)a John hit Bill and Bill hit John.
b John and Bill hit each other.

In type A, the reduction results in conjoined constituents of lower order. In type B, the reduction involves merely the deletion of identical constituents. In type B, the result of reduction is the respectively construction. In type D, the result is the each-other construction.

2. Identity Deletion. Gapping is a rule proposed by

Ross (1967a) which deletes indefinite number of main verbs in coordinate structures. Ross proposes a directionality constraint on this rule in order to account for the fact that while Gapping operates forward in English, it operates backward in Japanese.

(8)a I ate fish and Bill ate rice.
b I ate fish and Bill rice.
c*I fish and Bill ate rice.
(9)a watakushi wa sakana o tabeta to, Biru wa gohan o tabeta.
(I) (fish) (ate) (and) (rice)
b watakushi wa sakana o, Biru wa gohan o tabeta.
c*watakushi wa sakana o tabeta, Biru wa gohan o.

The directionality constraint states:

(10) The order in which Gapping operates depends on the order of elements at the time that the rule applies; if the identical elements are left branches, Gapping operates forward; if they are on right branches, it operates backward. (Ross, 1967a p. 5).

Sanders (1969, 1970) observes that this directionality constraint holds not only for verbal reductions but also for all other reduced coordinations as well. He gives the following well-formed reductions in English for illustration.

(11) (a) (S PRED) (Ø PRED) John sang and Ø danced.
(b) (S PRED) (S PRED) John Ø and Bill sang.
(c) (S (VØ)) (S (VO)) I wrapped Ø and you tied the package.
(d) (DET N) (Ø N) The king and Ø queen arrived.
(e) (ADJ N) (ADJ N) The young Ø and old men left.

It is therefore necessary for any correct analysis of coordination reduction to incorporate the directionality constraint in (10).

In addition to the directionality constraint, there is a hierarchical constraint on identity deletion in coordinate structures. This constraint states:

(12) Higher identical constituents must be deleted before lower identical constituents.

This hierarchical constraint accounts for the fact that old in (13a) cannot be deleted without like sunshine being first deleted.

(13)a Old men like sunshine and old women like sunshine.
b Old men and old women like sunshine.
c Old men and women like sunshine.
d*Old men like sunshine and women like sunshine.

It also accounts for the impossibility of Gapping in coordinate sentences in which the subjects or the objects in each conjunct are identical, as shown in (14d) and (15d). Furthermore, it accounts for the fact that deletion of identical objects is questionable when the subjects or the verbs in each conjunct are identical, as shown in (15c) and (16d).

(14)a The boy hit the dog and the boy hit the cat.
b The boy hit the dog and hit the cat.
c The boy hit the dog and the cat.
d*The boy hit the dog and the boy the cat.
(15)a The boy hit the dog and the girl hit the dog.
b The boy and the girl hit the dog.
c?The boy hit and the girl hit the dog.
d*The boy hit the dog and the girl the dog.
(16)a The boy hit the dog and the boy kicked the dog.
b The boy hit the dog and kicked the dog.
c The boy hit and kicked the dog.
d?The boy hit and the boy kicked the dog.

To generate the grammatical reduced sentences in (14)-(16), and to block the ungrammatical ones, we can assume that Identity Deletion and Regrouping can reapply to their own output successively from coordinate sentences to coordinate structures of lower order.[1] If we adopt this assumption, then in each application of Identity Deletion, only the highest identical constituent can be deleted. The process of Identity Deletion can thus be stated in the following way.

(17) Delete all but one of the corresponding highest identical constituents in each conjunct. If they are left branches, the deletion operates forward; if they are right branches, it operates backward.

(17) can be formulated as a mirror image rule according to the convention proposed by Langacker (1969).

(18) Identity Deletion (optional, mirror-image)[1]

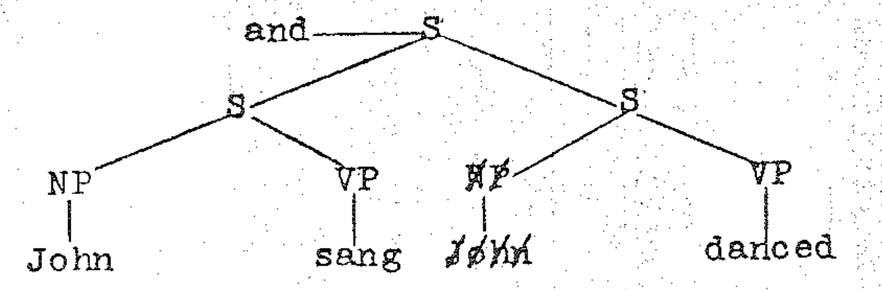
$$[[X_1\text{-}[A\text{-}X_2]_C\text{-}X_3]_B[X_4\text{-}[A\text{-}X_5]_C\text{-}X_6]_B^n]_B \longrightarrow 12345\emptyset78$$

1 2 3 4 5 6 7 8

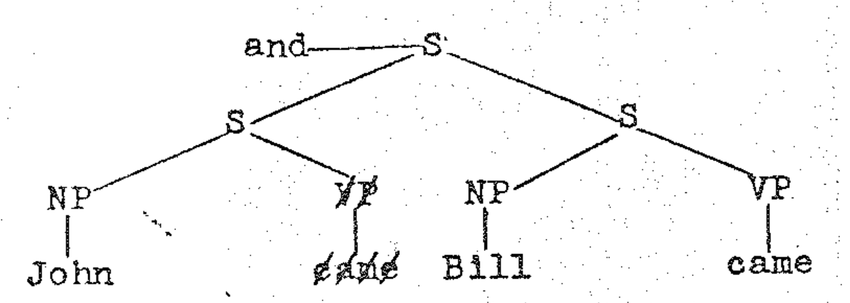
condition: (1) A is the highest identical constituent in B.
(2) $X_2 \neq 0$ and $X_5 \neq 0$

3. Regrouping. Through Identity Deletion, we get structures like (19) and (20), in which the reduced conjunct is no longer branching, as well as (21) and (22), in which the reduced conjunct is still branching.

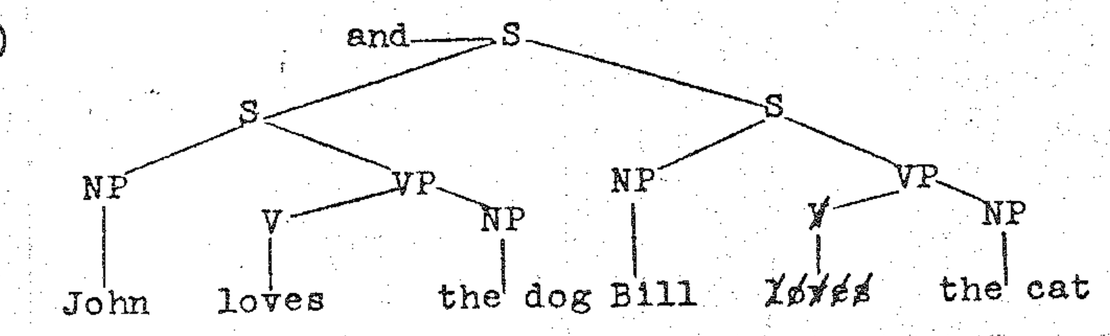
(19)



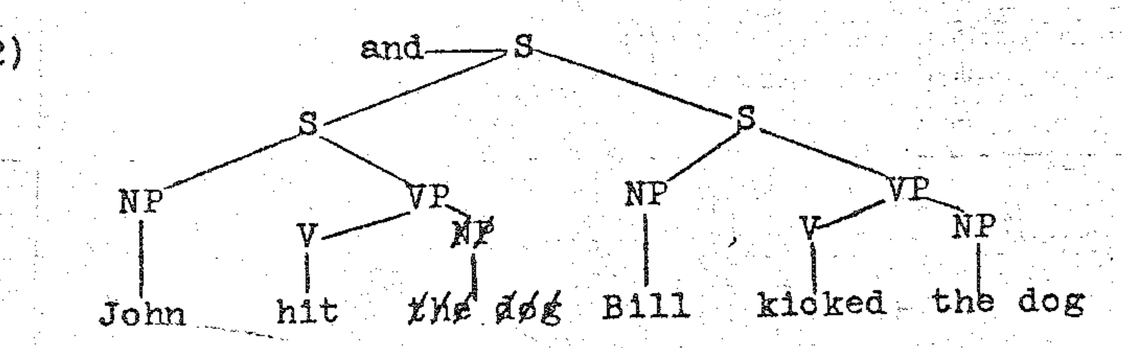
(20)



(21)



(22)



If we Chomsky-adjoin the remaining constituents of the reduced conjuncts onto the corresponding constituents of the unreduced conjuncts, and then delete all empty nodes, we convert (19), (20), (21), and (22) into (23), (24), (25), and (26) respectively.