Semantic Constraints II: Relativization*

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1. Introduction

Thompson (1971) argues that a structure like (1) underlies all the sentences in (2), (3) and (4).

(1) (I met girl) (girl speaks Basque)

(2) a. I met a girl and she speaks Basque.
    b. A girl speaks Basque and I met her.
    c. I met the girl and she speaks Basque.
    d. The girl speaks Basque and I met her.

(3) a. I met a girl, who speaks Basque.
    b. A girl, whom I met, speaks Basque.
    c. I met the girl, who speaks Basque.
    b. The girl, whom I met, speaks Basque.

(4) a. I met a girl who speaks Basque.
    b. A girl whom I met speaks Basque.
    c. I met the girl who speaks Basque.
    d. The girl whom I met speaks Basque.

What she claims here can be summed up as follows. First, the conjoined structure and the relative clause structure share the same underlying structure. Second, the shared underlying structure is not to specify any surface order of conjuncts for derivation of conjoined structures, nor any indication on which clause is to be realized as the surface relative clause for derivation of relative clause structures. Third, the underlying structure is not to specify any distinction between restrictive and nonrestrictive relative clause structures. Fourth, the underlying structure is not to specify the definite-indefinite distinction of nominal expressions. Such matters, she argues, as the surface positioning of constituent clauses, the distinction between restrictive and nonrestrictive clauses and the definite-indefinite distinction of nominal expressions should all be derivationally introduced.

The purpose of this paper is to investigate implications of Thompson's above claims on relativization with respect to a semantic constraint on definitization.

* An earlier version of this paper was presented at the annual meeting of the English Literary Society of Korea, Seoul, October 1975.
2. Conjunction and Relativization

Consider the following.

(2) a. I met a girl and she speaks Basque.
(3) a. I met a girl, who speaks Basque.
(4) a. I met a girl who speaks Basque.

Thompson (1971) assumes that the above three sentences are synonymous in the sense that whatever difference in meaning between them may exist is to be relegated to the so-called stylistic variation so that they can be assumed to be derived from a single underlying structure. As for (2a) and (3a), indeed we can readily agree that they are 'synonymous' as similarities between conjoined structures and nonrestrictive relative clause structures have been claimed by a number of generative linguists, e.g., Lakoff (1966) and Ross (1967). As for (3a) and (4a), however, it has been generally assumed in generative grammar that restrictive and nonrestrictive relative clause structures are underlingly different despite their structural similarities on the surface. Indeed if we consider (3c) and (4c) where the antecedents of the relative clauses are definite a clear presuppositional difference between them shows up, as Thompson (1971) in fact points out.

(3) c. I met the girl, who speaks Basque.
(4) c. I met the girl who speaks Basque.

In (3c), she argues, the speaker is assuming that the girl is already known or fully identified to the hearer and is adding two pieces of information about the girl, i.e. I met her and she speaks Basque, whereas in (4c) the speaker is assuming the girl who speaks Basque is already known to the hearer and is adding another piece of information about her that I met her. This speaker's presuppositional difference between (3c) and (4c), however, does not obtain between (3a) and (4a); that is, in both (3a) and (4a) the speaker is asserting that I met a girl and that she speaks Basque. The only significant semantic difference between (3a) and (4a), as Huddleston (1971) argues, is that the same semantic content is expressed as a single piece of information in (4a) but as two pieces of information in (3a), just like the case of different intonational groupings of a sentence as in (5) and (6).

(5) a. / I saw John yesterday /  
   b. / I saw John / yesterday /  
(6) a. / I'm leaving now to catch the train /  
   b. / I'm leaving now / to catch the train /  
(where / marks a tone group boundary1: each tone group contains one and only one nuclear stress). (5a) constitutes a single tone group and conveys a single piece of information while (5b) constitutes two tone groups and conveys two pieces of information.

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1 For the notion of tone group, see Halliday (1967). Roughly speaking, the tone group boundary (/) means an intonational pause. Thus, the difference between (5a) and (5b) is that there is an intonational pause after John in (5b) but there is not in (5a).
though both (5a) and (5b) express essentially the same propositional content. The same can be said of (6a, b). (6a) is interpreted as conveying a single piece of information, whereas (6b) conveys two: I’m leaving now, and the reason is that I want to catch the train. If we assume that whatever semantic difference between (5a) and (5b) or between (6a) and (6b) may be is not to be represented in the underlying structure, and that each of such pairs of sentences as (5a, b) or (6a, b) are to be derived from the same underlying structure, it can be also assumed that (3a) and (4a) are synonymous and derived from the same underlying structure. Thus, it is at least semantically motivated within the current theory of generative grammar that (2a), (3a) and (4a) are ‘synonymous’ and derived from the same underlying structure. In other words, in the case of a relative clause structure with an indefinite head noun, there is no semantic motivation for underlying distinction between restrictive and nonrestrictive relative clauses, and not only a nonrestrictive but also a restrictive relative clauses can be assumed to be derived from an underlying conjoined structure. Indeed, as Thompson (1971) observes, a restrictive relative clause with an indefinite head noun does not “restrict” the head noun in the way that a restrictive relative clause with a definite head noun does.

Essentially the same, in fact, can be said about the case of relative clause structure with the definite head noun. Since, as noted earlier, the presuppositional difference between (3c) and (4c) does not obtain between (3a) and (4a), the presuppositional phenomena cannot be said to be entirely due to the structural difference between restrictive and nonrestrictive clauses. The existence of the presupposition itself in (3c) and (4c) is due to definiteness of the head nouns. The only difference between (3c) and (4c) is the scope of definiteness: in (3c) the scope of definiteness is only the head noun the girl while in (4c) it is the head noun plus the relative clause the girl who speaks Basque. In other words, in (3c) the head noun constitutes a complete referring expression whereas in (4c) the whole relative clause complex, i.e. the relative clause plus the head noun, does so. This scope difference between (3c) and (4c) can naturally be assumed to be a corollary of the above-mentioned difference in “information structure” between a restrictive and nonrestrictive relative clause structures as observed between (3a) and (4a) earlier, i.e. the difference of whether something is expressed as a single piece of information or as two pieces of information. Note that the two referring expressions in (3c) and (4c) identify the same person, i.e. the Basque-speaking girl. Thus it is clear that the traditionally recognized non-stylistic semantic distinction between restrictive and nonrestrictive relative clauses as revealed in (7) is evident only in the case of a relative clause with a definite head noun.

(7) a. The Chinese, who are industrious, control the economy of Singapore.

b. The Chinese who are industrious control the economy of Singapore.

Since the definiteness of the head noun is crucially involved in the traditional semantic distinction between restrictive and nonrestrictive relative clauses, deeper understanding of
definitization is essential to proper analysis of relativization. With a proper understanding of definitization as rather independent of relativization, the semantic relationship between restrictive and nonrestrictive relative clause structures with definite head nouns can be considered the same as the one between restrictive and nonrestrictive relative clause structures with indefinite head nouns as observed in (3a) and (4a). Thus, what is claimed above about relative clauses with indefinite head nouns can be assumed to be also the case with relative clauses with definite head nouns. That is, it can be assumed that, aside from definitization, both restrictive and nonrestrictive relative clauses with definite head nouns, are derived from a single underlying structure, i.e. a conjoined underlying structure, just like relative clauses with indefinite head nouns. Definitization with respect to relativization will be discussed later.

We have seen above that if a nonrestrictive relative clause is assumed to be derived from a conjoined underlying structure a restrictive relative clause can be also assumed to be so, once the two types of relative clauses are shown to be synonymous in the sense that they can be transformationally related. Another piece of semantic evidence for close semantic relationship between relative clause structures and conjoined structures is that surface ordering of constituent clauses in both structures can be shown to have no semantic effect beyond the level of the so-called stylistic variation. Consider (2a, b, c, d) for the case of conjoined structures.

(2) a. I met a girl and she speaks Basque.
   b. A girl speaks Basque and I met her.
   c. I met the girl and she speaks Basque.
   d. The girl speaks Basque and I met her.

We can readily agree that (2a, b) are synonymous and derived from the same underlying structure and that (2c, d) are synonymous and derived from the same underlying structure. Any semantic difference between the two pairs of sentences (2a, b) and (2c, d) can be assumed to be due to the fact that in (2a, b) girl is indefinite while it is definite in (2c, d). Recognizing definitization as independent of relativization as mentioned earlier, we can assume that (2a, b, c, d) are transformationally related, i.e. derived from the same underlying structure. Consider (4a, b, c, d) for the case of relative clause structures.

(4) a. I met a girl who speaks Basque.
   b. A girl whom I met speaks Basque.
   c. I met the girl who speaks Basque.
   d. The girl whom I met speaks Basque.

Thompson (1971) assumes that (4a, b) are stylistic variations just as (2a, b) are, though there is a presuppositional difference between (4c) and (4d) to the effect that in (4c) the speaker presupposes that there is a girl such that it is known by the hearer that she speaks Basque whereas in (4d) the speaker presupposes that there is a girl such that it is known by the hearer that he met her. The above-mentioned presuppositional
phemonena which obtain in (4c, d) but not in (4a, b) can be assumed to be due to the definiteness of the head nouns in (4c, d) and the indefiniteness of the head nouns in (4a, b), and indeed, as we will discuss later, such presuppositional phenomena involved in (4c, d) can most effectively explained as a case of the general definitization process which also accommodates the earlier-mentioned presuppositional phenomena involved in (2c, d) and in (3c, 4c). Recognizing such general definitization process, we can again assume that (4a, b, c, d) are transformationally related, i.e. they are derived from a single underlying structure.

All the above arguments for the claim that conjoined structures and relative clause structures, restrictive or nonrestrictive, share the same underlying structure crucially depends on independent motivation for the definitization process which is assumed to introduce the definiteness feature. To the extent that we can motivate the definitization process, we can capture better the structural relationship between restrictive and nonrestrictive relative clause structures and the semantic relationship between relative clause structures and conjoined structures, while explaining better the presuppositional phenomena involved in relative clause structures with definite head nouns by showing that they are part of the general process of definitization. This definitization process is meaning-changing since it introduces the semantic feature, definiteness, which has generally been assumed to be posited in the underlying structure. The meaning-changing property of definitization will be justified again to the extent that the definitization process itself is motivated.

Before we discuss the definitization process in detail, a further clarification of underlying structures like (1) is in order since our later discussion crucially depends on the assumption that a structure like (1) is essentially correct as the underlying structure for a relative clause structure. The aspect of (1) to be clarified here below is that the constituent clauses in (1) are not ordered.

3. Unordered Constituent Hypothesis

If we assume that the order of conjuncts is fixed in the underlying structure for relative clauses, it has to be assumed that either the underlying first conjunct is realized as the relative clause while the underlying second conjunct is realized as the main clause, or the other way round. For the former position, Langendeon (1970) argues that (8a) is paraphrased as (9a) while (8b) is paraphrased as (9b).

(8) a. The girl whom my cousin married became pregnant.
    b. My cousin married a girl who became pregnant.

(9) a. My cousin married a girl and she became pregnant.
    b. A girl became pregnant and my cousin married her.

And Ross (cf. Stockwell, Schachter and Partee 1973: 441) considers (10), which is paraphrased as (11a) but not as (11b).

(10) The fact that surprised Ed surprised Madge too.
(11) a. The fact surprised Ed and it surprised Madge too.
    b. The fact surprised Madge and it surprised Ed too.
For the latter position, Ross (cf. Stockwell, Schachter and Partee 1973: 441) again considers (12), which has to be paraphrased as (13).

(12) Many men who never realize it drink polluted water all their lives.

(13) Many men drink polluted water all their lives and they never realize it.
In (12) the sentential pronoun *it*, which refers to the “split” antecedent, *many men*......
drink polluted water all their lives, has to be derived by pronominalization before its antecedent becomes split by relativization; thus it seems reasonable to assume that (12) is derived from (13).

This very conflicting evidence on ordering of conjuncts in the underlying structure argues against the ordering itself. Furthermore, all the above arguments assume that the conjunction paraphrase of a relative clause sentence is the underlying structure of the relative clause sentence, which is not obvious at all. Specifically, there are sentences which have no conjunction paraphrases. The conjunction paraphrases (14b, c) of the interrogative sentence (14a) are ungrammatical.

(14) a. Is even Clarence, who is wearing mauve socks, a swinger?
    b. *Is even Clarence a swinger, and he is wearing mauve socks?
    c. *Clarence is wearing mauve socks and is even he a swinger?
The conjunction paraphrases (15b, c) of the imperative sentence (15a) are also ungrammatical.

(15) a. Tell your father, who is outside, that supper is ready.
    b. *Tell your father that supper is ready, and he is outside.
    c. *Your father is outside, and tell him that supper is ready.
Thompson (1971) suggests that the sources for (14a) and (15a) are (16) and (17) respectively rather than straight conjunction paraphrases like (14b) and (15b).

(16) Is even Clarence a swinger? Clarence is wearing mauve socks.

(17) Tell your father that supper is ready. Your father is outside.
But then it becomes difficult to determine the order of the underlying sequence of sentences, since (18) and (19) can be equally well assumed to underlie (14a) and (15a) respectively.

(18) Clarence is wearing mauve socks. Is even Clarence a swinger?

(19) Your father is outside. Tell your father that supper is ready.
Furthermore, in the cases of relative clause structures with indefinite head nouns, conjunction paraphrases of either ordering of the constituent clauses are possible as discussed earlier. That is, both (4a) and (4b) can be paraphrased as either (2a) or (2b).

(4) a. I met a girl who speaks Basque.
    b. A girl whom I met speaks Basque.
(2) a. I met a girl and she speaks Basque.
b. A girl speaks Basque and I met her.

Another recalcitrant problem to the straight conjunction analysis of relative clause structure is posed by relative clause structures with generic or quantified head nouns. (20), a relative clause structure with a generic head noun, can be paraphrased neither as (21) nor as (22) but as (23).

(20) A lion that doesn’t have enough to eat is a dangerous animal.
(21) A lion is a dangerous animal and it doesn’t have enough to eat.
(22) A lion doesn’t have enough to eat and it is a dangerous animal.
(23) If a lion doesn’t have enough to eat, it is a dangerous animal.

(24), a relative clause structure with a quantified head noun, can be paraphrased neither as (25) nor as (26) but as (27).

(24) Three boys who had beards were at the party.
(25) Three boys were at the party and they had beards.
(26) Three boys had beards and they were at the party.
(27) There are three boys such that they had beards and were at the party.

Since it is extremely difficult to motivate syntactic rules to derive (20) from (23) and (24) from (27), it would be better to attempt to motivate an abstract underlying structure from which both (20) and (23) (or (24) and (27)) can be derived.

All the above evidence concerning the order of underlying conjunctions indicates that for relative clause structure we should better posit such an abstract underlying structure that the order of the underlying constituent conjunctions is not fixed, which means that any surface ordering of constituent clauses has to be derivationally introduced. And such derivational introduction of surface ordering of constituent clauses will be meaning-changing processes. Hopefully such meaning-changing processes will be motivated in terms of the fact that they are part of more general processes in the language and that the order-free underlying structure contributes to capture deeper generalizations in relativization.

4. The Contextual Rule of Definitization

It is very difficult to characterize or define explicitly the notion of definiteness under the current theory of generative grammar. Karttunen(1969) offers essentially the following characterization of definitization, considering sentences like (28)–(33):

If the speaker believes that the hearer has some independent or prior knowledge of the referent, then the referent is definitized, i.e. the definite determiner is used.

(28) *The roof* is leaking.
(29) *The street* is closed.
(30) Mary went to *the beach*.
(31) Did you already take *the dog* out?
(32) Every time Bill crossed the Atlantic by ship, he became good friends with *the captain*. 
It is cheap to fly to San Francisco. The fare is only $13.50. Note that all the definite nouns in (28)-(33) do not have linguistic antecedents. The antecedents are contextually determined or presupposed by the speaker's various beliefs and understandings. Thus, at least in cases like (28)-(33), it is impossible under the current theory of generative grammar to represent structurally the antecedents for the process of definitization in the underlying structure. If the antecedent for definitization is not to be posited in the underlying structure, the definitization process has to assume a different function than the earlier one which is to definitize a nominal if preceded by another coreferential nominal within the scope of the rule. It will be argued below that the new definitization process has to introduce the definiteness feature to derived nominal nodes, which is assumed to be governed by some general semantic constraint.

First of all, we will consider Partee (1972), who argues that among the three currently proposed deep structures (34), (35) and (37) for a relative clause structure, (36) is semantically the most motivated.

(34)
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NP
  |  DET N
  |  ART S
  |  the who speaks Basque
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(35)
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NP
  |  NP S
  |  DET N
  |  ART the girl
  |  who speaks Basque
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Another currently proposed deep structure for a relative clause structure is the following, which is due to Schachter (1973).

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NP
  |  DET NOM
  |  ART NOM S
  |  the girl speaks Basque
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This deep structure is equivalent to (36) in treatment of the definite determiner.
All the above three deep structures, she argues, contain three constituents, ART the, N girl and S who speaks Basque; logically speaking, the constituent the is a unique identifier, the constituent girl denotes the class of girls and the constituent who speaks Basque denotes the class of entities (or persons) that speak Basque. In (34) the interpretation of the first binary constituent DET, which combines two constituents ART the and S who speaks Basque, leads to an assertion that there is one and only one entity that speaks Basque, leaving no natural way to add the interpretation of girl. Similarly, in (35) the interpretation of the first binary constituent NP, which combines ART the and N girl, leads to an assertion that there is one and only one girl, leaving no natural way to add the interpretation of who speaks Basque. In other words, in (34) the referent is uniquely identified with the description who speaks Basque, the description girl becoming redundant in identifying the referent. In (35) the referent is uniquely identified with the description girl, the description who speaks Basque becoming redundant in identifying the referent. In (36), however, the two class-denoting constituent, which is interpreted as denoting the intersection of the two classes, namely the class of entities which both speak Basque and are girls; combining the with the result leads to the correct assertion that it is that class that has one and only one member.

The above semantic argument on relativization summarily leads to a semantic constraint to the effect that once a referent is uniquely identified, i.e. definitized, the definite description for the referent can no longer receive any modifier as part of the definite description. In (34) for instance, the constituent DET already constitutes a full definite description uniquely identifying the referent, the Basque-speaking entity; thus the remaining constituent girl cannot become part of the definite description. In (35) the lower NP constituent already constitutes a full definite description uniquely identifying the referent; thus the remaining constituent who speaks Basque cannot be part of the definite description. In (36) the whole higher constituent NOM constitutes the full definite description, hence the most natural semantic structure for a relative clause structure.

We claim that this semantic constraint is captured in part by the earlier-mentioned new definitization rule which is supposed to introduce definiteness to derived nominal nodes. That is, assuming that definiteness is introduced as a feature rather than as a constituent, the contextual definitization rule differentiates two distinct intermediate structures (38) and (39) for (3c) and (4c) respectively.
(3) c. I met the girl, who speaks Basque.
(4) c. I met the girl who speaks Basque.

(38)
NP
  | NP  | S
[+Def] | who speaks Basque
  | N
  | girl

(39)
NP
  | NP  | S
[+Def] | who speaks Basque
  | N
  | girl

Note that (38) and (39) are identical except the different assigning of the feature [+Def]; in other words, the two structures have been identical up until the contextual definitization rule assigns the [+Def] feature to the two different NP's, which differentiates nonrestrictive and restrictive relative clauses with definite head nouns. A rule like article segmentalization will derive (40) and (41) from (38) and (39) respectively.

(40)
NP
  | NP  | S
[+Def] | who speaks Basque
  | ART
  | the
  | N
  | girl

(41)
NP
  | [+Def]
  | ART
  | the
  | ART
  | the
  | NP
  | S
  | who speaks Basque
  | N
  | girl

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For the cases of relative clauses with indefinite head nouns, our approach will not distinguish restrictive and nonrestrictive relative clause structures semantically, which is indeed a correct prediction since as discussed earlier there is no presuppositional difference due to definiteness in such cases.
(40) will become the nonrestrictive relative clause structure of (3c) while (41) will become the restrictive relative clause structure of (4c). Note that since in our approach the relative clause itself is formed by the same relativization rule for both restrictive and nonrestrictive relative clause structures the surface similarities of the two types of relative clause structures are effectively characterized by the relativization rule.

5. Theoretical Implications

The above-proposed approach to relativization has the following theoretical implications. First, contextual rules like definitization come to motivate intermediate constituent structures since constituent structures, deep or derived, are best motivated by well-motivated transformational rules and we consider the contextual definitization rule is semantically motivated to some extent. Second, our earlier-mentioned semantic constraint is naturally explained in our approach to relativization to the extent that the constraint is one of the consequences of the way the definitization rule operates. Third, deeper investigations of contextual rules like definitization will shed more lights on semantic constraints like the above-mentioned one on definiteness since in the above case the accommodation of the semantic constraint crucially depends on our present understanding of the contextual definitization rule. Fourth, in the case of relativization we have to posit the constituent-order-free underlying structure for the maximum syntactic and semantic generalizations to be explicitly captured by transformational rules and semantic constraints; thus our semantic constraints are different from the interpretive semanticists’ semantic interpretive rules. Fifth, semantic constraints are not always irregular fragmentary residues of grammatical analyses but will ultimately prove to be quite regular and general, positively contributing to capture deeper significant linguistic generalizations.

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