

The Position of Incorporation Transformations in the Grammar

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THE POSITION OF INCORPORATION TRANSFORMATIONS IN THE GRAMMAR

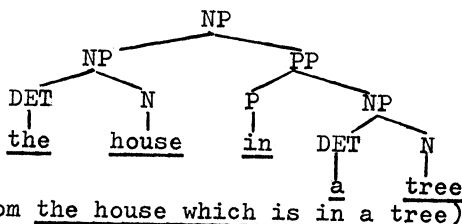
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In Newmeyer (1974a) I argued that the rules of PREDICATE RAISING and NOMINALIZATION, assuming that they are transformations, have to apply precyclically.¹ I concluded from this that the claims of generative and interpretive semantics about grammatical organization turn out not to be as distinct as is generally believed. I further speculated that all incorporation (i.e. word-formation) rules which are not clitic-placement rules might be universally precyclic. If this can be substantiated, then, at least as far as claims about strictly nonglobal processes are concerned, generative and interpretive semantics are true notational variants - those rules which a generativist treatment would label 'precyclic' may simply be thought of as 'presyntactic' under an interpretivist treatment.

In this paper, I will assume that compound nouns and adjectives are formed by a transformational incorporation rule.² I have chosen to study compounds because their derivation seems rather troublesome for the precyclic hypothesis. I say 'troublesome' because it has often been assumed that compounds are derived from reduced relative clauses - that phrases like (1) are derived from relative clause reduced structures like (2):³

(1) the tree-house

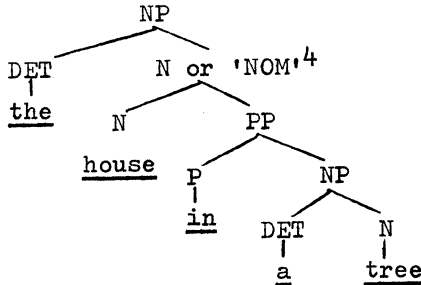
(2)



If compounds are derelational, then, of course, their formation cannot be precyclic, since RELATIVIZATION, RELATIVE CLAUSE REDUCTION, and PREPOSING are clearly not precyclic.

I will argue, however, that the class of compounds whose first element is intuitively related to a prepositional object cannot be derived from reduced relative clauses. Instead, I will demonstrate that their syntactic and semantic properties are much closer to those of noun complement constructions like (3) below than to those of reduced relatives, and will conclude that they must be derived from such constructions:

(3)



Since there is no reason to believe that structures such as (3) do not exist as inputs to the cycle, there is no reason to believe that compounds derived from them could not be formed by precyclic incorporation.

(4) below lists some typical relative clause reductions and (5) some typical noun complements. It is important to point out that ambiguities are often possible between the two:

- (4) a. the book - on the table
 b. the tree - nearest the river
 c. a present - for my uncle
 d. the pan - on top of the stove
 e. the sign - to the right of the other one
 f. the chicken - now in the oven
- (5) a. the - house in the woods
 b. the - girl next door
 c. the - boy down the street
 d. the - pot for cooking
 e. the - road to Mandalay
 f. an - arrow through the heart

Several distinct criteria support the constituency assigned in (2) and (3). First, English speakers' intuitions support a major constituent break between the noun phrase and the prepositional phrase in the phrases of (4), but immediately following the determiner in the phrases of (5). Second, the simplest statement of the rule of RELATIVE CLAUSE REDUCTION (or 'WHIZ-DELETION') leaves both the head noun phrase and the prepositional phrase under the immediate domination of the highest NP node, supporting (2) as a structure for reduced relatives. Third, as Chomsky (1970) pointed out, noun complements but not reduced relatives can often take a contrastively stressed possessive determiner, a fact consistent with (2) as a structure for reduced relatives and (3) for noun complements:

- (6) a. *[JOHN'S book - on the table] is boring
 b. [JOHN'S - house in the woods] is falling apart

Fourth, in careful speech, reduced relatives take secondary phrasal stress on their head nouns, while noun complements do not:

- (7) a. the bōok - on the tãble
b. the - hōuse in the wōods

This fact also seems to support the difference in constituent structure assigned.

Reduced relatives and noun complements also differ in their gross semantic properties. Compare (8) and (9):

- (8) [the book - on the table] belongs to Jones
(9) [the - house in the woods] belongs to Jones

While the subject of (8) involves the predication of an incidental and possibly temporary position of the book, the subject of (9) is a type of house. That is, there is a far greater degree of semantic cohesiveness between the head noun and the prepositional phrase in complements than in reduced relatives. For this reason, sentences like (10) with reduced relatives are always contradictions, while sentences like (11) with noun complements are often not:

- (10) a. [the book - on the table] is on the floor
b. [the pan - on top of the stove] is in the cupboard
(11) a. [the - girl next door] is in Miami
b. [the - pot for cooking] is for storing cookies

There are associated differences in presupposition as well. As Bach (1974 - citing Asa Kasher) points out, 'restrictive relative clauses presuppose the existence of entities of which the description given in the relative clause is not true. Thus, the man that I saw presupposes at least one man that I didn't see'. Reduced relatives work the same way as full relatives. Thus (12a) presupposes that there exist books which are not on the table and (12b) that there exist men who are not standing on the corner:

- (12) a. [the book - on the table] is green
b. [the man - standing on the corner] is bald

Noun complements, however, do not work this way. (13a) does not presuppose that houses exist which are not in the woods, and (13b) does not presuppose that roads exist which are not to Mandalay:

- (13) a. [the - house in the woods] needs repair
b. [the - road to Mandalay] is muddy

Another difference is that reduced relatives, but not noun complements, allow internal modifiers. Thus we have (14a) but not (14b):

- (14) a. [the book - obviously on the table] is green
 b. *[the - house obviously in the woods] is in need of repair

The fact that (14a) but not (14b) can take internally a sentence adverb such as obviously points to the desententiality of the prepositional phrase in reduced relatives but not in noun complements. Notice also that the subject of (15a) is ambiguous between a reading where the existence of men not from India is presupposed and a reading where it is not. In the latter case, man from India functions as a semantic unit - being from India uniquely characterizes that particular man to the speaker. (15b), however, due to its internal modification, has only the reading associated with reduced relatives:

- (15) a. the man from India sold me a flute
 b. the man obviously from India sold me a flute

Finally, noun complements have restrictions on their prepositional objects not found in reduced relatives. This object may be a proper noun or a generic common noun, but never a common referential noun, as illustrated in (16):

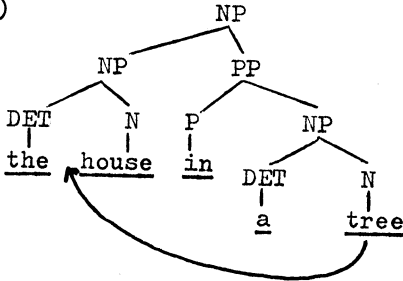
- (16) a. the - boat to China
 b. the - food for horses
 c. *the - food for the horse_i

Reduced relatives have no special restrictions on their prepositional objects.

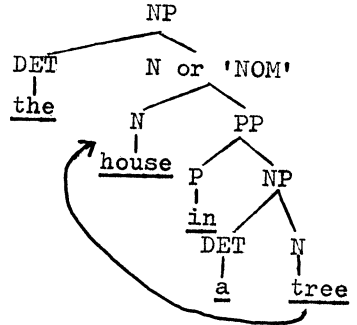
I will now demonstrate that, following each criterion for distinguishing noun complements from reduced relatives, compounds behave like the former, not the latter.

First, take constituency. Obviously, in the phrase the tree-house the main constituent break is between the determiner and the compound. All other things being equal, this supports a derivation from a noun complement, where the main constituent break follows the determiner. However, even stronger evidence in support of a complement origin is possible. (17) and (18) below are the two candidates for the origin of the tree-house:

(17)



(18)



In every case of incorporation with which I am familiar, the element moved and incorporated is in construction with (see Klima 1964) the node under which incorporation takes place. We may therefore hypothesize:

- (19) An element present in a P-marker may be moved and incorporated under a lexical node only if it is in construction with that node.

But constraint (19) automatically rules out the reduced relative source (17) for tree-house. Tree is in construction with the N of house in (18) but not in (17).

Semantically, compounds are much more like noun complements than like reduced relatives. A 'tree-house' is a type of house, a 'garbage can' is a type of can, and so on. In each case, the semantic connection between the two nouns of the compound is the intrinsic one which we found in noun complements, not the accidental one which we found in reduced relatives. This is related to what Zimmer (1971) described as the 'naming function of compounds, which...is based on the potentially classificatory nature of the relation between their constituents'. (see also Bolinger 1973) Noun complements perform this naming function as well, while reduced relatives do not.

Likewise, (20) does not presuppose that houses exist which are not in trees, nor does (21) presuppose that cans exist which are not for garbage:

- (20) My tree-house is nice
 (21) My garbage can is full

Finally, as pointed out by Levi (to appear), the first element in a compound may be a proper noun or a generic common noun, but not a common referential noun. Thus we have (22a) and (22b), but not (22c) if a specific horse is being referred to:

- (22) a. a China-scholar
 b. a horse doctor
 c. *a horse_i doctor

The similarity of compounds to noun complements in this respect is, in my opinion, too striking to be accidental. It points to a complement origin for compounds that seems to me to be indisputable.

On the basis of this evidence, then, we may assume that a class of compound nouns is derived from noun complements. Since, as far as I know, there is no reason to believe that noun complements, whatever their ultimate origin, do not have the structure represented by P-marker (3) cycle-initially, we may assume that at least some compound formation is precyclic. We therefore have more reason to believe the strong claim that all incorporation transformations are precyclic.

Given the strong correlation between the cyclicity of a movement rule and its reference to grammatical relations and the precyclicity of a rule and its word-forming function, it seems to me that, all other things being equal, we should prefer compound formation to be precyclic to its being cyclic. In other words, the burden of 'proof' falls more heavily on anyone who would wish to argue for a cyclic compound formation process. Such an argument could not be an easy one to put through - it is difficult for me to conceive of two compounds which differ only in that DATIVE MOVEMENT applies in the derivation of one but not the other. Yet a cyclic rule of COMPOUND FORMATION would allow for this possibility.

Aside from the rules involved in relative clause formation and reduction, only one cyclic rule has ever been claimed to apply in the derivation of compounds - the rule of PASSIVE. Levi (to appear) suggests, not implausibly, that the application of PASSIVE accounts for the past participles in (23a) and (23b) below:

- (23) a. virus-caused diseases
b. tide-caused waves

I will now argue that PASSIVE is not responsible for the -ed suffix. First note (24a) and (24b):

- (24) a. cancer-causing substances
b. China-watching diplomats

Levi accounts for the -ing suffix in (24) by an ad hoc insertion; thus the postulation of PASSIVE to account for (23) does not lead to a general explanation of the morphology of participial compounds. However, a general explanation is possible which does not involve PASSIVE. Note the underlying grammatical relations of these compounds:

- (25) virus-caused diseases
S V O

- (26) cancer-causing substances
O V S

When the order is SVO we get a past participle. When the order is OVS we get a present participle. Now consider sentences with so-called 'flip' or 'psych-movement' verbs. Under the most popular analysis, (27) represents the underlying order and (28) the derived order:

(27) I was surprised at you
 S V O

(28) You were surprising to me
 O V S

When the order is SVO we get a past participle. When the order is OVS we get a present participle. If we are to relate this generalization to that governing the morphology of participial compounds, there is no reason at all to assume that PASSIVE applies in the derivation of compounds. There is further evidence which suggests that it is correct to relate compounds and 'flip' sentences in this way. Levi points out that compounds with -ing never refer to 'one-time only' activities or properties, but only to repeated, habitual, or customary ones. Thus, a pipe-smoking man can only refer to a man who habitually smokes pipes, not to one who has lit up for the first time. But compounds with -ed are not so restricted: there is no habituality implied in a university-initiated project or a revisionist-inspired slogan. 'Flip' sentences, as it turns out, work the same way. (28) implies a nonmomentary state of surprise on the part of the speaker, while (27) allows for a momentary reading.

What all of this suggests is that the -ed suffixes in (25) and (27) have the same origins. Since we know that the suffix in (27) could not have arisen from the application of PASSIVE, it follows that the suffix in (25) could not have either. Thus, compounds like virus-caused are not counter-examples to precyclic COMPOUND FORMATION.

One side benefit of a precyclic compound formation process is that it becomes possible to pin down the notion 'anaphoric island' (Postal 1969) more precisely. As Postal noted, NP's 'inside' of lexical items may in general not be linked to anaphoric pronouns:

- (29) a. *Tom is an orphan and he deeply misses them
 b. *The French attempt to beautify their country has made it a tourist attraction
 c. *The best wombatmeat comes from the young ones

However, if a lexical item is composed solely of an NP and a cliticized inflectional suffix, that inside NP may be linked to an anaphoric pronoun:

- (30) Johni's brother hates himi

Since there is good reason to believe that cliticization processes are postcyclic (Kayne, to appear; Perlmutter 1973), the inclusion of compound formation rules in the precyclic component of the grammar allows us to state the following generalization about anaphoric islands:

- (31) No pronoun occurring in surface structure may be linked anaphorically to an NP contained in a lexical item if that lexical item was formed by a precyclic incorporation process.⁵

I will conclude with a speculation about the derivation of compounds. Until now I have been assuming (along with most grammarians who have studied compounds) that the structure prior to the application of the compound formation transformation either is the meaning of the compound or is at least closer to the meaning than the structure following the application. In an orthodox generative semantics framework, of course, it is necessary that this be the case. But when we look at the meanings of a wide cross-section of compounds, we find that these meanings are not particularly well represented by the input structure to the transformation. To cite only a few examples, an armchair does not really mean a 'chair with arms': many chairs with arms are not properly termed 'armchairs', and even a proper armchair could be for a time without arms - say if they had been broken and sent out for repair. Even more obviously, a foxglove is not a 'glove for a fox', but a flower; an earmark is not a 'mark on the ear', but a sign; a silverfish is not a fish at all, but an insect; being 'black' and being 'a bird' are neither necessary nor sufficient conditions for being a blackbird; and so on. In each case, the actual semantic representation of the compound is, to one degree or another, independent of the lexical meanings of the words which make it up. Yet at the same time, as Lees (1960) and many others have observed, speakers, as part of their linguistic competence, have the ability to reconstruct a set of semantic representations for compounds which they have never heard. Actually, it is the rules involved in this reconstruction process - not the rules involved in relating the surface realization of the compound to its true meaning - which are those discussed by Lees, Levi, and by myself in this paper. In other words, at least two semantic representations are relevant to the grammar of compounds - that of the true meaning and those of the reconstructable meanings. In this sense, a compound is in some respects like an idiom, whose behavior is governed by a transderivational constraint relating both its literal meaning and its true meaning to its surface form (see Newmeyer 1974b). I have nothing concrete to offer in this paper in the way of a formalism which captures the essential similarities as well as the essential differences

between the derivations of idioms and compounds. However, since compounds have, to a greater or lesser degree, idiomatic properties themselves, I feel that an investigation of this matter might well lead to some useful insights into the nature of idiomatization.

FOOTNOTES

¹This paper has benefited from suggestions by Judy Levi and a number of students and colleagues at the University of Washington. Errors are my own.

²In Kuiper (1972) and Berman (1974), the hypothesis that compounds are derived transformationally is explicitly challenged. Some of their arguments are countered (effectively, in my opinion) in Levi (to appear). Their main point, which deals with the 'messiness' and idiosyncratic properties of any compound formation transformation, seems to me to have force only if this rule belongs to the same component as that of the 'familiar' syntactic rules. Since this the conclusion which I explicitly reject in this paper, there does not seem to be any empirically decidable issue at stake as far as that goes.

³The most recent analysis to assume this is Levi (to appear). While I reject certain aspects of Levi's derivations, her work is by far the most insightful and useful study of compound formation produced to date.

⁴It is not clear to me whether this node should be labeled 'N' or bear some label 'higher' than N but 'lower' than NP, such as the 'NOM' or 'N' of various lexicalist studies.

⁵It is necessary to specify that the pronoun be present in surface structure since, as Ross (1971) points out, sentences such as I approve of America's attempt to justify herself, but I don't approve of the British; attempt to, where the pronoun has been deleted, are grammatical. Some speakers (see Lakoff and Ross 1972 and Corum 1973) apparently allow (31) to be violated if there is a strong morphological resemblance between the antecedent and the NP in question.

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