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NSO Noun Phrases in Modern Hebrew¹

Elizabeth Ritter

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1 Introduction

The apparently flat structure of VSO languages like Welsh and Irish has been analysed by Sproat (1985) as underlyingly SVO. He argues that INFL in these languages, like verbs and prepositions, is constrained to assigned case to the right. Consequently INFL must precede the subject at S-structure in order to assign case to it; V-raising follows to morphologically support INFL unless some auxiliary verb can be inserted. These two scenarios are illustrated in (1) with examples from Welsh:

- (1) a. Gwelodd Sion ddraig [V_i+I S t_i O]
 saw-3sg-pst dragon
 'John saw a dragon'
- b. gwnaeth Sion weld draig [Aux+I [S V O]]
 did-3sg-pst see dragon
 'John saw a dragon' (= (3) Sproat, 1985)

In this paper I propose a similar account for construct state noun phrases in Modern Hebrew (MH). I argue that these constructions are underlyingly S(ubject) N(oun) O(bject) and that the surface constituent order, NSO, is derived by movement of the noun. I adopt the position that non-clausal arguments, like their clausal counterparts, are maximal projections of non-lexical heads: More specifically, I assume that the category "noun phrase" is in fact a determiner phrase (DP), a maximal projection of DET, not N (cf. Abney, 1986; Fukui and Speas, 1986; Szabolcsi, to appear). This assumption is consistent with the analysis of S' as a

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CP, the maximal projection of COMP, and S as an IP, the maximal projection of INFL (cf. Chomsky, 1986a, 1986b).

My analysis exploits the structural parallelism between DP and IP to account for the surface order of constituents in construct state DPs (CSs). On analogy with V-raising to INFL in Welsh sentences, I posit a rule of N-raising to D in this construction. I also claim that like INFL, D may assign structural Case to the subject of a CS. Finally, I show how this analysis provides a straightforward account of binding facts in this structure.

2 Construct State Noun Phrases

The term construct state (CS) refers to a type of "noun phrase" in which the head N is immediately followed by a genitive phrase to which it bears some relation, such as possessed-possessor or theme-source. Some examples are given in (2)²:

- (2) a. beyt ha- mora
house the-teacher
'the teacher's house'
- b. parat ikar
cow farmer
'a farmer's cow'
- c. or ha- yareax
light the-moon
'the light of the moon'

The first thing to note is that CSs are strictly N initial: Although the definite article (ha-) attaches to the head N in [+definite] non-CS DPS, it can only surface post-nominally as a proclitic on the genitive phrase in a [+definite] CS³. This is illustrated by the contrast between the [+definite] CSs in (2a) and (2c) and the [+definite] non-CS DPS in (3)⁴. The examples in (4) show that insertion of the definite article before the head N of a CS leads to ungrammaticality:

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- (3) a. ha- bayt vs. bayt
 the-house (a) house
- b. ha- para vs. para
 the-cow (a) cow
- c. ha- yeladim vs. yeladim
 the-children (some) children
- (4) a. *ha-beyt ha-mora
 b. *ha-parat ikar
 c. *ha-yaldey ha-gan

MH also permits multiply embedded CSs. However, if the genitive phrase is also a CS, the matrix determiner can only be realized on the head N of the most embedded genitive phrase. Thus, in a structure containing a string of CSs, ha- will only be realized on the rightmost genitive phrase, as illustrated in (5) below. The ungrammaticality of (5b,c) derives from the fact that xaver is the head of a CS and hence, cannot be preceded by a definite article.

- (5) a. [roS [ben [xaver ha- mora]]]
 head son friend the-teacher
 'the teacher's friend's son's head'
- b. *[roS [ben [ha-xaver ha-mora]]]
 c. *[roS [ben [ha-xaver mora]]]

Moreover, if the genitive phrase in a CS is overtly marked as [+definitel], both the matrix DP and the genitive phrase are construed as definite. This is supported by the behavior of DP internal adjectives, which always agree in definiteness (as well as number and gender) with the noun they modify, as in (6) below. The examples in (7) show that an adjective in a [+definitel] CS must also be overtly marked as [+definitel], regardless of whether it modifies the head N, or the genitive phrase.

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- (6) a. ha- bayit *(ha-)yafe
 the-house(m.sg.) the-pretty(m.sg.)
 'the pretty house'
- b. ha-mora *(ha-)yafa
 the-teacher(f.sg.) the-pretty(f.sg.)
 'the pretty teacher'
- (7) a. beyt ha- mora *(ha-)yafe
 house the-teacher the-pretty(m.sg.)
 'the teacher's pretty house'
- b. beyt ha- mora *(ha-)yafa(f.sg.)
 house the-teacher the-pretty
 'the pretty teacher's house'

In short, CSs are distinguished from non-CS DPs in MH in two important respects: (a) CSs are characterized by a genitive phrase which appears immediately following the head noun (b) The definite marker is realized as a clitic on the (post-nominal) genitive phrase in a [+definite] CS, but attaches to the head noun in a non-CS DP which is [+definite]. These differences are illustrated in (8) below:

- (8) CS: [N (ha-)XP_{genitive} ...]
 Non-CS: [(ha-)N ...]

In the next section I present an analysis which derives both surface strings in (8) from the same D-structure (modulo the presence or absence of a genitive phrase).

3 Head Movement of N

In this section I present an analysis of MH "noun phrases" which accounts for the complementary distribution of pre-nominal determiners and post-nominal genitive phrases. This account entails the following assumptions: (a) The definite article in MH cliticizes onto the category that follows it. (b) MH syntactic categories basically conform to the standard X-bar theory. (c) The genitive in a CS construction is base-generated in SPEC of NP.

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There is ample evidence for claim (a) that the definite article is a clitic in MH. It is always unstressed and while nothing may intervene between the the definite marker and the word to which it is attached, ha- may surface word internally. For example, a prepositional clitic may only be separated from the noun to which it is attached by ha-. Similarly, ha- surfaces word-internally in lexical compounds (which have the same structure as CSSs). These facts are illustrated in (9) below:

- (9) a. be-bayit vs. be-ha- bayit --> ba-bayit
 in-house in-the-house
 `in (a) house' `in the house'
- b. beyt- xolim vs. beyt- ha- xolim
 house-sick(pl) house-the-sick(pl)
 `hospital' `the hospital'

Within the framework of Chomsky (1986a, 1986b) X-bar theory is summarized as follows: All syntactic categories are endocentric, projecting from lexical (N, V, A, P) or non-lexical (INFL, COMP) heads. The head of a syntactic category (X^0) and its complement(s) are immediately dominated by X' ; SPECifiers, on the other hand, are sisters of X' and daughters of X'' (= XP). Since XPs are head initial in MH, I assume that the head of a syntactic category precedes its complements and follow its SPECs at D-structure in this language. This structure is illustrated in (10) below:

- (10) [X'' SPEC [X' X^0 ...]]

It is generally assumed that SPEC of NP is the category DET(erminer) which includes articles, quantifiers and possessive NPs (cf. Jackendoff 1977; Chomsky, 1986b). From this it should follow that, contrary to fact, articles and possessors both appear in the same position in MH NPs, i.e. to the left of the head noun. However, if we assume that possessors and articles belong to distinct categories, we are not forced to make this erroneous prediction⁵.

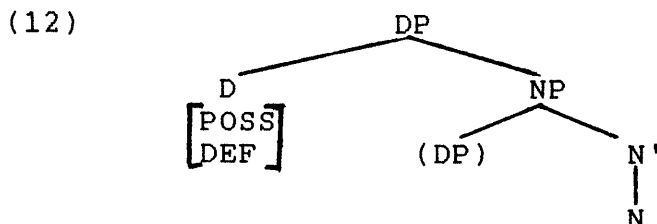
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At first glance, my assumption (c) that the possessor is base-generated in SPEC of NP might lead one to expect it to appear pre-nominally. However, the N-initial surface order observed in CSSs can also be derived if the head N raises out of its base position and over its SPEC(s) to a position immediately preceding the genitive phrase. It has been argued that other cases of head movement, such as V to INFL and object N to V, are limited by a constraint on head movement (Travis, 1982; Baker, 1985). The formalization given in (11) is taken from Baker (1985, p.66 = (60)).

- (11) The Head Movement Constraint
 An X^0 may only move into the y^0 which properly governs it.

If I am correct in asserting that the head of the NP raises in MH CSSs, then it follows from (11) that there must be another syntactic head governing N^0 within the "noun phrase". In fact the existence of such a category has been independently motivated by Abney (1986), Fukui and Speas (1986), Szabolcsi (to appear) and others. They all assume that a non-lexical, or to use Abney's terminology, a functional head governs the NP, and that the head of this category assigns genitive case to the possessor⁶ I shall adopt the proposal that D is the syntactic head of a non-clausal argument, so that what we have been calling a "noun phrase" is in fact a DP. (Henceforth I shall use the term NP to refer to the complement of D and the term DP for the maximal projection of a non-clausal argument, i.e. a "noun phrase".)

Now Hebrew DPs will have the following D-structure:



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The maximal DP is the constituent which is assigned case and a theta-role. The NP, being the complement of a functional head, is not governed by a lexical head at this point. I assume further that, like INFL, D contains two distinct morphemes: DEF(iteness) and POSS(essor). The former is realized as the clitic ha- and the latter as an abstract agreement-like element which assigns genitive case. The DP will be definite whenever D is [+ DEF]; a CS is possible whenever D is [+ POSS]. The full range of possibilities is given in (13). As the chart indicates the feature specifications of these morphemes may vary independently⁷:

(13)	[POSS]	[DEF]	CS DP	Definite DP
	+	+	yes	yes
	+	-	yes	no
	-	+	no	yes
	-	-	no	no

The behavior of DEF is strikingly similar to that of another functional head in MH, the complementizer Se, 'that'. In order to account for apparent that-t violations such as (14), Shlonsky (1986) argues that this complementizer cliticizes down onto the closest maximal projection containing overt lexical material:

(14) mi_i at ma'amina [_{CP} [_{IP}t_iSe-lo ohev salat xacilim]]

'who do you believe (that) doesn't like eggplant salad?'
(= (2) Shlonsky, 1986)

His analysis can be extended to describe the behavior of DEF, which like Se, cliticizes down. I assume that the head movement constraint (11) does not apply to cliticization of either Se or ha- because these are both instances of lowering and hence do not leave a trace which must be properly governed. Thus, in non-CS DPs, the definite marker will attach to the head noun, but in CSs, it will attach to the genitive after N-raising has applied, (deriving N S order in the latter case). These two possibilities are schematized below:

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- (15) a. non-CS DP: [DEF [N ...]]
- b. CS DP: [DEF [NP N ...]]
-

Whenever a DP is positively specified for POSS, this non-lexical head can assign case to the subject of the NP. However, since POSS has to be morphologically supported, N-raising must apply. This movement is analogous to V-raising to INFL in contexts where AGR assigns nominative Case.

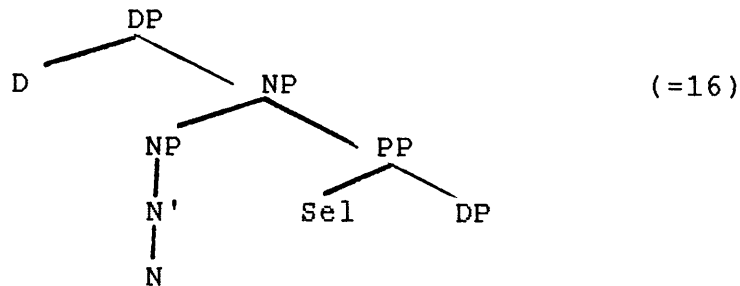
If POSS is negatively specified, then it cannot assign genitive case. However, MH can also express genitive relations by means of a postnominal PP as illustrated in (16):

- (16) a. (ha-)bayit Sel (ha-)mora
(the-)house of (the-)teacher
'(the)/a house of (the)/a teacher's'
- b. (ha-)para Sel (ha-)ikar
(the-)cow of (the-)farmer
'(the)/a farmer's cow'
- c. (ha-) or Sel ha- yareax
(the-)light of the-moon
'(the) light of the moon'

As their glosses indicate, these DPs may have the same interpretation as the CSs in (2). Note, however, that in (16b) for example, the definiteness of the possessed (para) is independent of the definiteness of the possessor (ikar). Adapting Anderson's (1984) analysis of English NPs like a book of John's, I assume that these post-nominal phrases are base-generated NP adjuncts and that they receive a default possessor interpretation. Thus, although both CS genitive phrases and PPs headed by Sel surface post-nominally, they do not occupy the same position. The structure of the DPs in (16) is given in (17):

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(17).



CS genitive phrases and PPs headed by Sel can be distinguished by their position relative to adjectives, as illustrated in (18):

- (18) a. [beyt_i [ha- mora t-(1) ha- yafel]]
 house the-teacher the-nice
 'the teacher's nice house'
- b. [ha- [[bayit ha- yafel] Sel ha- mora]]
 the- house the-nice of the-teacher
 'the teacher's nice house'

In (18a), the adjective follows the CS genitive phrase whereas in (18b) it precedes the PP. This contrast is expected if adjectives like yafe are N' modifiers, base-generated to the right of the head N. They will follow a CS genitive phrase in SPEC, but precede a Sel phrase which is adjoined to the right of the maximal projection of the noun.

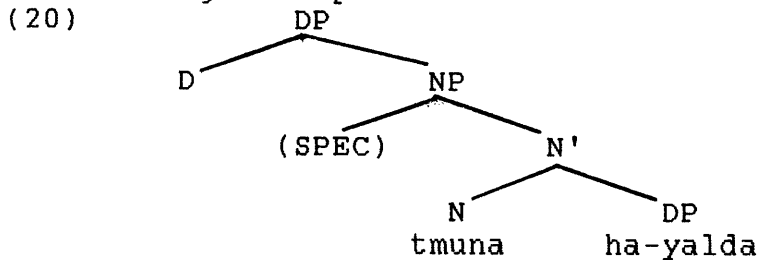
4 Picture Noun Phrases: Evidence for [DP, NP]

Until now I have simply stipulated that genitive case is assigned by a functional head. Considering the examples presented thus far, one might alternatively propose that genitive case is assigned by the head N in MH. Since lexical heads assign case to the right in this language, movement of N would permit this head to assign case to its subject. However, the evidence from "picture DPs" in CS argues against this proposal.

A picture noun in construct with a single argument like (19) is ambiguous. The genitive phrase may bear any relation to the head N. For example, ha-yalda may be the possessor, the agent or crucially the

theme of tmuna. Now assuming that the theta-role of theme is assigned to a complement, on the reading where ha-yalda bears this theta-role, it should be base-generated to the right of N as shown in (20):

- (19) tmunat ha- yalda
 picture the-girl
 'the girl's picture'



If MH Ns were case assigners the head tmuna could assign case to its complement in situ. If the maximal DP was also definite one might predict that, contrary to fact, the definite marker could cliticize onto the head N in (21).

- (21) *_{[DP ha- [NP tmunat ha- yalda]]}
 the- picture the-girl

Recall that the definite article, like the complementizer Se, adjoins to the closest maximal projection. Therefore, I interpret the fact that the definite article appears prenominal in (21) as evidence that both N^0 and its complement are realized in situ. Thus, the ungrammaticality of this example is expected if tmuna is not a case-assigner and no device is available to assign case to its complement.

However, if POSS is positively specified, the complement may move to SPEC of NP in order to receive case from this non-lexical governing head⁸. Since POSS must be morphologically supported, this strategy also entails raising of the head N to D, deriving the following S-structure⁹:

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- (22) [_{DP} tmunat_i+POSS [_{NP} ha-yalda_j [_{N'} t_i t_j]]
'the girl's picture'

I assume that N-raising to D is analogous to V-raising to INFL in that the head of the governing category becomes lexical when N moves to the position of D⁰. This permits L-marking of its complement NP so that the latter is not a blocking category for government. Consequently, t_i, the trace of N, can be properly governed by its antecedent as required by the head movement constraint (11).

Consider now a picture DP containing both a possessor and a theme:

- (23) [_{DP} tmunat_i+POSS [_{NP} [ha-yalda_j [_{N'} t_i t_j]] Sel ha-morall]
'the picture of the girl of the teacher's'

From what I have said so far, if Sel ha-mora is a base-generated NP adjunct it can receive a possessor interpretation by default and ha-yalda may be interpreted as theme¹⁰. Thus, it appears that when no argument is base-generated in SPEC of NP, i.e. when there is no subject, the complement of N can only receive case by movement to SPEC. This is highly reminiscent of the case motivation for movement to SPEC of IP in passive and ergative clauses. Therefore, I propose that Burzio's generalization be extended to apply to nouns as well as verbs. In other words, both nouns and verbs assign case to their objects if and only if they assign a theta-role to their subjects.

Now the SPEC of tmuna in (23) is not a theta position if its object ha-yalda is not assigned case. Movement of the object to SPEC is forced in order to assign it case in MH. This analysis also explains the impossibility of an overt anaphor in picture DPs as illustrated in (24).

- (24) * [_{DP} tmunat_i + POSS [_{NP} acma_j [_{N'} t_i t_j]] Sel ha-mora]]
'picture of herself of the teacher's'

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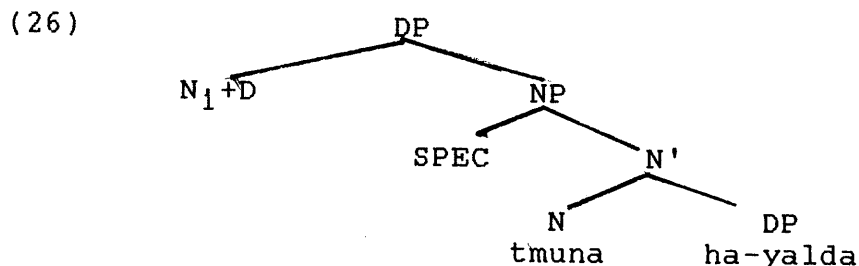
Binding theory dictates that an anaphor must be bound within its minimal NP or S. However, in this example there is no possible binder for the reflexive acma. Sel ha-mora is an adjunct, i.e. in an A-bar position, and therefore cannot serve as a binder for the anaphor.

5 Transitive Nouns

Unlike picture nouns, nominals derived from transitive verbs may assign accusative case as illustrated in (25)

- (25) a. relyat ha- mora et ha- yalda
 view the-teacher acc. the-girl
 'the teacher's view of the girl'
 b. kabalat ha- lakoax et ha- mexir
 acceptance the-customer acc. the-price
 'the customer's acceptance of the price'
 c. ahavat dan et ist-o
 love D. acc. wife-his
 'Dan's love of his wife'

The D-structure of (25a) is given in (26):



Note, however, that a V-derived nominal is only capable of assigning accusative case to its object if it also assigns a theta-role to its subject. Compare the examples in (27) with those in (25) above. The ungrammaticality of the examples in (27), which contain an accusative marked complement but no subject, is expected if Burzio's generalization applies to nouns as well as verbs. Like their verbal counterparts, V-derived nominals can only assign case to their objects if they also assign a theta-role to their subjects.

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Consequently, the contrast between (27) and (28) can be adduced as evidence that sel is not the realization of Case assigned by N, but rather a semantically empty preposition whose presence is required to circumvent a case filter violation.

- (27) a. *(ha-)reiya et ha-yalda
 b. *(ha-)kabala et ha-mexir
 c. *(ha-)ahava et ist-o
- (28) a. (ha-)reiya Sel ha-yalda
 (the-)view of the-girl
 b. (ha-)kabala Sel ha-mexir
 (the-)acceptance of the price
 c. (ha-)ahava Sel ist-o
 (the-)love of wife-his

Moreover, if a V-derived nominal participates in the assignment of a theta-role to its subject, this argument, which is in SPEC of NP can bind an anaphor in complement position as shown in (29a). The ungrammaticality of (29b) derives from the fact that the overt anaphor acmo in SPEC of NP has no C-commanding antecedent¹¹. Since dan is a complement of the head in this example, it is immediately dominated by N' and cannot serve as the antecedent for the anaphor in subject position.

- (29) a. ahavat dan et acmo
 love D. acc. himself
 'Dan's love of himself'
- b. *ahavat acmo et dan

Thus, the structure I am proposing permits an account of anaphora in MH CSs which conforms to the standard interpretation of binding theory.

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6 Conclusion

The analysis presented in this paper accounts for the complementary distribution of prenominal determiners and postnominal genitive phrases as well as binding facts in MH noun phrases. NSO constituent order is derived by positing a non-lexical category, the DP, whose head assigns genitive case to the right. This is strikingly similar to Sproat's account of nominative case assignment in Welsh and Irish. Like V and P, both MH D and Celtic INFL are constrained to assign case to the right. Thus, the parallels between clauses and noun phrases are greater than has generally been assumed. The evidence from these languages suggests the existence of a parameter which accounts for directionality of case assignment by lexical and non-lexical heads and thereby contributes to the determination of surface constituent order across categories.

NOTES

1. I would like to thank my informant, Maya Radzinski. Thanks also to Hagit Borer, Ken Hale, Beth Levin, Peggy Speas, Ur Shlonsky, and Tarald Taraldsen for helpful discussion.
2. Cf. Berman (1978), Borer (1984) for detailed discussion of the properties of CS constructions.
3. If the genitive phrase in a CS is a proper name or referential pronoun no definite article surfaces, presumably because both are inherently [+ definite]. Note also that a pronominal possessor in a CS is always realized as an enclitic on the head noun and not as a separate word, e.g. beyt-a 'her house'.
4. MH has no indefinite determiner. Sometimes the numeral one (exad/axat) is used as in ha-me'il Sel yeled exad, 'the coat of some boy'. However, unlike the definite determiner, exad/axat appears postnominally and is inflected for gender (either masculine or feminine). In short, it has the syntactic properties of an adjective, not a determiner.

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5. Borer (1984) proposes an analysis of the CS which focuses on the role of the pronominal clitic (cf. note 1) in both simple and clitic-doubled constructions. She posits the following structure for the simple CSs under discussion:

(1) $[_{NP} [_{N'} N NP_{gen}]$

Borer assumes that all arguments are generated post-nominally. The fact that a genitive phrase must be strictly adjacent to the head in order to receive case is adduced as evidence that MH nouns are structural case-assigners, but "only if the first node which dominates the head (N') immediately dominates the complement" (p.48). However, she notes (Chapter 3, footnote 11) that her analysis is unable to account for the fact that the pronominal definite article is in complementary distribution with a post-nominal genitive NP in this construction.

6. Anderson (1984) and Szabolcsi (1984) also assume that a non-lexical element assigns genitive case, but they differ crucially with the references cited in the text in that they assume that this category is inside the NP.

7. Szabolcsi (to appear) proposes an analysis of Hungarian DPs which also entails raising of N to the non-lexical head (IN) that governs it and assigns genitive case to the DP internal possessor. However, she argues that the maximal projection of this non-lexical head (i.e. IN") is the complement of the definite article (D), which projects to DP. Consequently the structure she proposes for Hungarian DPs more closely parallels that of CP since IN" is a complement of D and the latter plays a role comparable to COMP. She observes that D closes the argument but does not assign case, and that SPEC of DP constitutes an escape hatch for movement of internal arguments. However, this separation of IN and D seems incompatible with the facts of MH where N raises to the left of the genitive phrase and in cases where there are embedded CSs, the definite marker is realized to the right.

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8. In the context of [- POSS] the semantically empty preposition Sel may be inserted by a rule which is similar to the English of-insertion rule.

9. I assume a filter (*ha-ha) which prohibits two consecutive occurrences of the definite article. A similar filter seems to be required for Hungarian (Szabolcsi, to appear).

10. Note that for some speakers the only possible interpretation for (23) is the one given in the text, i.e. the picture of the girl of the teacher's'. However, there is a subset of speakers who find (23) ambiguous between the above interpretation and a second one where the girl is the possessor and the teacher is the theme. I will not discuss this dialect here but will only suggest that the difference between the two dialects may be due to differences in the formulation of the rule of Sel-insertion.

11. The definition of C-command relevant to binding is given in (i) below:

- (i) A C-commands B iff A does not dominate B
and every G that dominates A dominates B

It has been argued that G should be interpreted as any branching category for the purposes of binding theory. (Cf. Giorgi, 1985; Chomsky, 1986a and references cited therein.)

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