

Syntax

VP-Structure and C-Command

Modul 04-006-2002
Phonology – Morphology – Syntax

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Recap

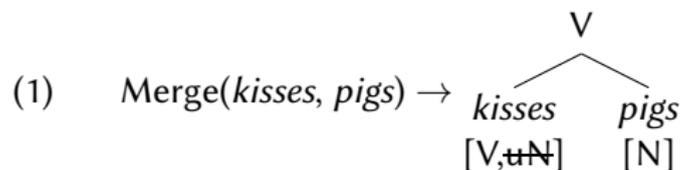
Recap Constituency etc.:

- Sentences are hierarchically structured: they can be divided into constituents at various depths (down to the word level). Constituents can be detected by syntactic processes (displacement, deletion, etc.) that make reference to them.
- The structure underlying all grammatical sentences is generated by the binary, recursive operation Merge. Merge is restricted by C-selection: if ϕ bears [uF], then ϕ can only merge with a ψ bearing the category feature [F]. As a result of Merge, [uF] on ϕ is deleted.
- Every Θ -role of a predicate is associated with a C-selective feature. But there may also be [uF]s that are not associated with any Θ -role. (This will become clear later).
- Every constituent generated by Merge inherits the morpho-syntactic properties of one of its daughters (immediate constituents ϕ and ψ): the head. The head is defined as the daughter that bears the [uF] that is checked upon Merge(ϕ , ψ).

Phrase structure: VP

Merging the complement:

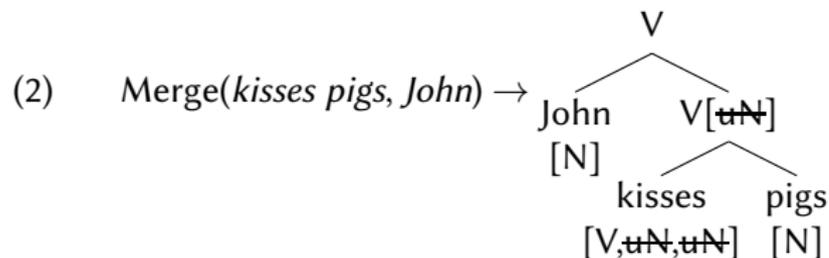
- Merge of a (transitive) verb with an argument realizing the verb's theme-role results in a binary branching structure with verbal properties (1).
- The position occupied by *pigs* in (1) (the head's sister) is called the lexical head's *complement*. The complement is also called the *internal argument* (IA).
- But transitive verbs also have a second θ -role to assign (often the agent-role), which is realized by Merge of another argument (the *external argument*, EA).



Phrase structure: VP

Merging the specifier:

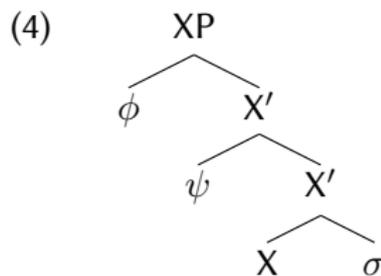
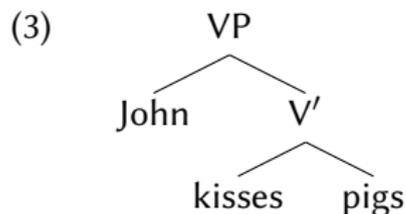
- In this situation, Merge applies recursively: it takes the EA and the complex V-constituent previously created and combines them.
- Since every Θ -role is associated with a C-selectional feature, the verb bears another $[\mu N]$, which is projected and can then be checked off under sisterhood with the EA (2).
- A position such as the one occupied by the EA *John* in (2) is called *specifier* (of a lexical head). A lexical head can, in principle, have arbitrarily many specifiers (but only one sister, i.e., only one complement).



Phrase structure: VP

Levels of projection:

- The projection of a lexical head X that bears no more unchecked [uF]s is called a *phrase* and notated as XP.
- Intermediate projections, i.e. projections that still have some [uF]s unchecked are called *bar-levels* and are notated as X'.
- This is illustrated for the constituent *John kisses pigs* in (3) and for an abstract example (with two specifiers ϕ and ψ , and one complement σ) in (4).
- Note that this notation is, at least for the moment, a purely notational convention without theoretical relevance.

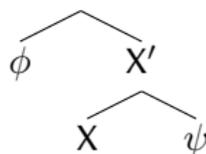


Phrase structure: VP

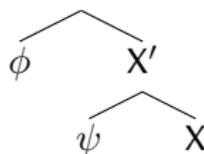
Linearization:

- Tree structures not only encode hierarchical relations, they may also be interpreted as determining linear precedence relations.
- In (3), the head *kisses* follows its specifier *John* and precedes its complement *pigs*.
- The linearization of specifiers relative to their head appears (by and large) to be uniform cross-linguistically: there are hardly any convincing cases of specifiers that follow their head.
- In contrast, languages are *parametrized* with respect to their relative ordering between head and complement.

(5) XP (head-initial)



(6) XP (head-final)

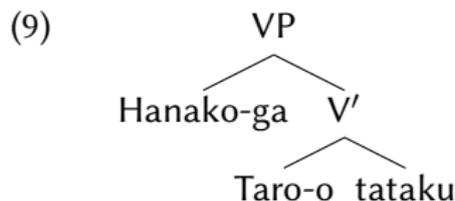
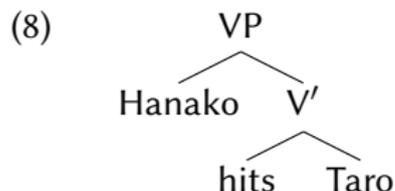


Phrase structure: VP

Examples:

- While English is strictly head-initial, Japanese is strictly head-final.
- This is illustrated for VP in (7-a,b), but it also holds for phrases of other categories (AP, PP, NP, etc.).

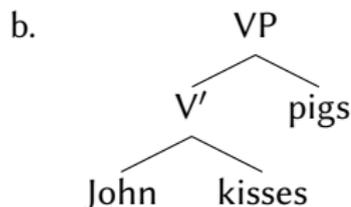
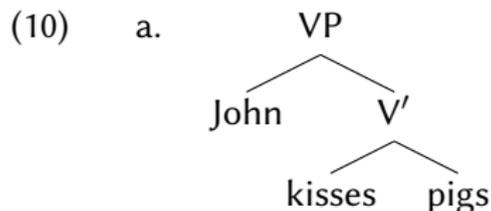
- (7) a. Hanako hits Taro.
b. Hanako-ga Taro-o tatau.
Hanako-subj Taro-obj hits
“Hanako hits Taro”



Phrase structure: VP

Recall:

- How do we know that the VP-structure of *John kisses pigs* is (10-a) and not (10-b) (with a rightward specifier)? The linear order of the terminal nodes in both structures matches the relevant string of the constituent.
- The main answer to this question is based on constituency tests: (11-a,b) show that the verb forms a constituent together with the IA (to the exclusion of the EA).



- (11) a. Dr. Brumm said that he will [shave himself] . . .
... and [shave himself] he will.
- b. Dr. Brumm [shaved himself], and Pottwal did Δ , too.
(Δ = *shave himself*)

C-Command

Observation:

- The representations in (10-a,b) not only involve different constituents. They also involve different relations between the nodes that are part of the representations.
- A particularly relevant relation is known by the name of *c-command* (c = constituent; Reinhart 1976). Its definition is given in (12).

(12) *C-command:*

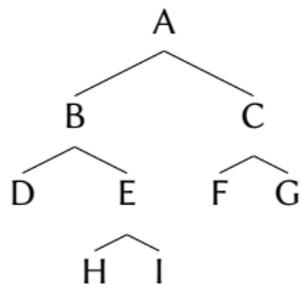
A node α c-commands a node β iff (a) or (b) hold:

- a. β is the sister of α .
- b. β is dominated by the sister of α .

C-Command

Abstract example:

(13)



- 1) A c-commands nothing.
- 2) B c-commands C, F, G.
- 3) D c-commands E, H, I.
- 4) H c-commands I and vice versa.
- 5) E c-commands D.
- 6) C c-commands B, D, E, H, I.
- 7) F c-commands G and vice versa.

C-Command: Reflexivization

Reflexivization:

- A first motivation for c-command comes from the conditions that govern *reflexivization* (illustrated for English).
- A reflexive pronoun (such as *himself*) can show up as the IA of a transitive verb (such as *shave*) if there is an EA that is interpreted as being coreferent with the IA (14-a), but not vice versa (14-b).

- (14) a. (Mary believes) [Max_i to shave himself_{*i*}].
b. *(Mary believes) [himself_{*i*} to shave Max_i].

Comments:

- α and β are coreferent if they refer to the same individual (which implies identity of features such as person, number, gender).
- Coreference is indicated by co-indexation.
- *Max* and *himself* in (14-a,b) are the EAs of the bracketed infinitives. Just assume that these are VPs, and ignore the little word *to* for the moment.

C-Command: Reflexivization

Hypothesis:

Reflexivization is governed by linear precedence.

(15) *Reflexivization-generalization:*

A reflexive pronoun must be coreferent with a *linearly preceding* category (its *antecedent*).

Problem:

The generalization in (15) fails to explain the ungrammaticality of the following examples, which involve complex NPs as EAs.

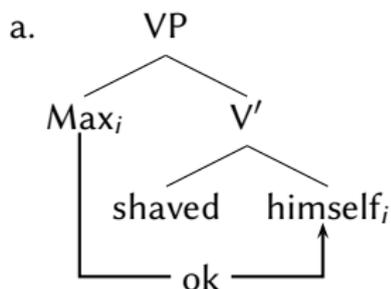
- (16) a. *_[NP His_i mother] hated himself_i.
b. *_[NP The man I_i met] shaved myself_i.

C-Command: Reflexivization

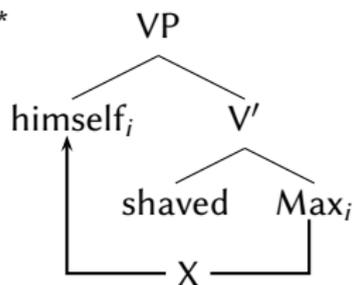
C-command accounts for the asymmetry:

- The alternative generalization in (18) exploits the fact that the EA asymmetrically c-commands the IA (given what we know from constituency tests).
- In what follows, c-command is indicated by arrows.

(17)



b. *



(18)

Reflexivization-generalization (revised):

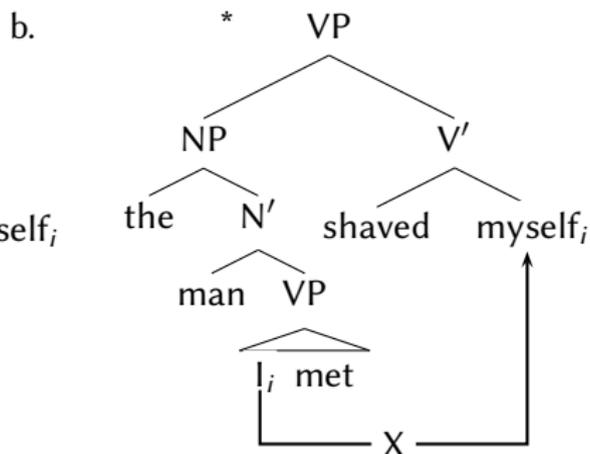
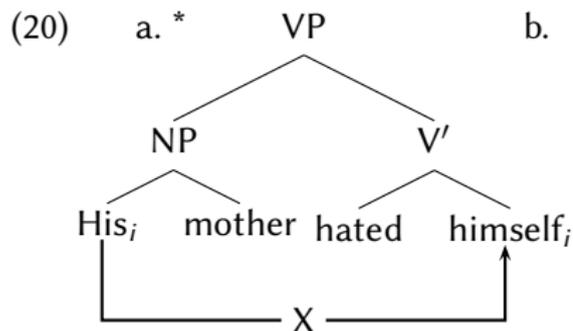
A reflexive pronoun must be coreferent with a *c-commanding* category.

C-command: Reflexivization

Moreover:

- (18) also covers the ungrammaticality of the examples in (19-a,b).
- Constituency tests indicate that the strings *his mother* and *the man I met* form constituents, accounting for the lack of c-command (20).

- (19) a. * $[_{NP} \text{ His}_i \text{ mother}] \text{ hated himself}_i$.
b. * $[_{NP} \text{ The man } I_j \text{ met}] \text{ shaved myself}_i$.



C-Command: Negative Polarity

Negative Polarity:

- Another domain (exemplified by English) that illustrates the relevance of c-command involves *negative polarity items* (NPIs; not to be confused with NP = *noun phrase*).
- An NPI as an IA is grammatical if the EA is a negative constituent (such as *no-one*), but not vice versa (21-a,b). An NPI that functions as an adverb such as *ever* is grammatical if there is clausal negation (but not if there is no negation, (21-c,d)).

- (21)
- *Any boy saw no-one.
 - No-one wanted any cake.
 - *I saw him ever.
 - I didn't see him ever.

C-Command: Negative Polarity

Hypothesis:

Negative polarity is governed by linear precedence.

(22) *NPI-generalization:*

An NPI must be *linearly preceded* by a negative category.

Problem:

The generalization in (22) cannot account for the contrast in (23-a,b), where (23-b) involves a complex EA (in contrast to (23-a)).

- (23) a. No-one wanted any cake.
b. *_{[NP} The picture of no-one] hung upon any wall.

C-Command: Negative Polarity

C-command accounts for the asymmetry:

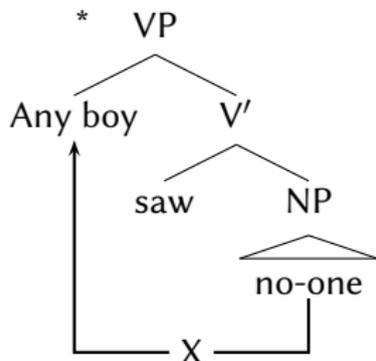
Again, the alternative generalization in (24) exploits that the EA asymmetrically c-commands the IA (25).

(24) *NPI-generalization (revised):*

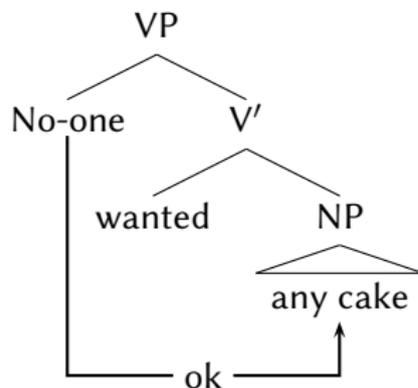
An NPI must be *c-commanded* by a negative category.

(25)

a.



b.



C-Command: Negative Polarity

Moreover:

- (26-b,c) suggest that *the picture of no-one* is a constituent containing *no-one*.
- It follows that *no-one* does not c-command *any wall* in (26-a) (although *no-one* linearly precedes *any wall*).

- (26)
- a. *_[NP The picture of no-one] hung upon any wall.
 - b. *What* hung upon the wall?
 - c. *The picture of no-one* and *the portrait of nobody* hung upon the wall.

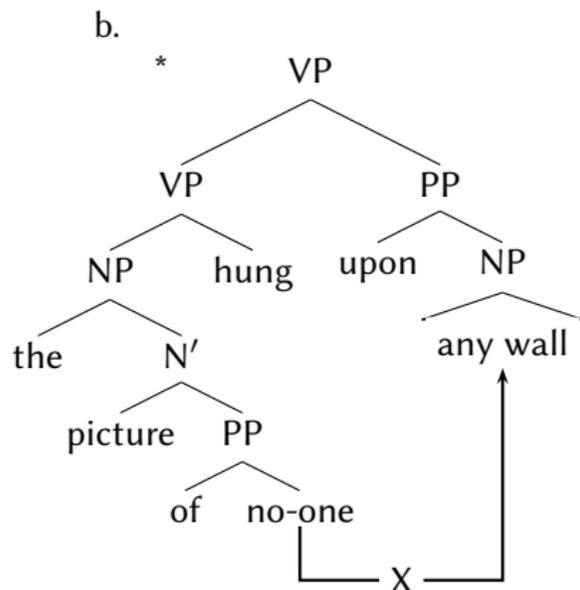
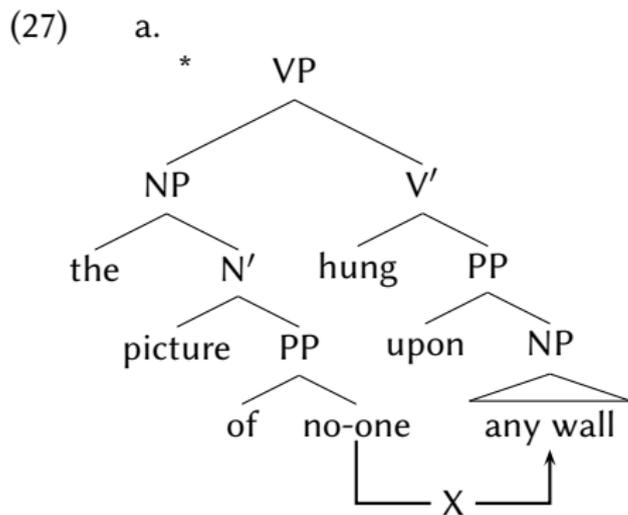
Aside:

- (27-a,b) illustrate two alternative analyses of (26-a). In (27-a), the PP *upon the wall* is analyzed as a complement to V. In (27-b) it is analyzed as an *adjunct*.
- Adjunction is a structure building mechanism that does not involve c-selection (or even Θ -role assignment). Accordingly, the complexity-level (XP vs. X' vs. X) of the projection of some host remains unaffected by adjunction to the host.

C-Command: Negative Polarity

Important point:

Whatever the right analysis ((27-a) or (27-b)), the negative constituent never comes to c-command the NPI.



C-Command: Variable Binding

Bound variable readings:

- (28-a) (from German) can be paraphrased as (28-c), where the pronoun *er* “he” shows up as a variable x whose interpretation is dependent on (*bound by*) the quantifier *jeder* “every-one”
- (28-b) cannot receive such a paraphrase. (29) offers a first generalization of this contrast (based on linear precedence).

- (28)
- a. weil jeder, dass er geeignet ist, glaubt
since every-one that he suited is believes
 - b. weil er, dass jeder geeignet ist, glaubt
since he that every-one suited is believes
 - c. For every x , x a person: x believes that x is suited.

(29) *Variable binding generalization:*

A pronoun P can be interpreted as a variable that is bound by a quantifier Q if Q *linearly precedes* P .

C-Command: Variable Binding

Problem:

(30-a) cannot be paraphrased as (30-c), but (30-b) can.

- (30)
- a. weil, dass jeder geeignet ist, er glaubt
since that every-one suited is he believes
 - b. weil, dass er geeignet ist, jeder glaubt
since that he suited is every-one believes
 - c. For every x , x a person: x believes that x is suited ist.

C-command does the trick:

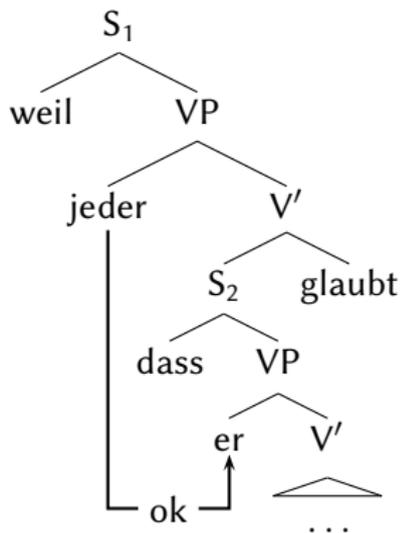
A superior generalization, which is based on c-command, is given in (31).

(31) *Variable binding generalization (revised):*

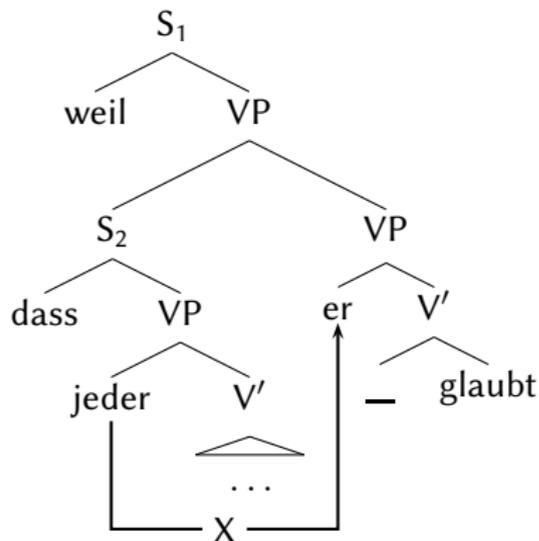
A pronoun P can be interpreted as a variable that is bound by a quantifier Q if Q *c-commands* P .

C-Command: Variable Binding

(32) a. (= (28-a))



b. (= (30-a))



Comments:

- S is a category that results from merging *dass/weil* with VP.
- S₂ in (32-b) (the IA) has been displaced across the EA *er* from the position marked by “_” and has been adjoined to VP.

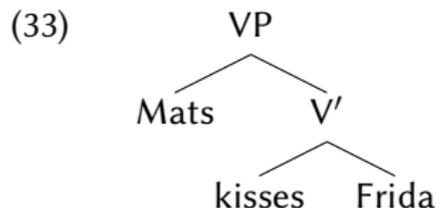
Take-home message

Take-home message:

- Syntactic phenomena (such as reflexivization, negative polarity, variable binding, etc.) are rarely (perhaps never!) governed by linear precedence.
- Rather, they are subject to principles that make reference to the hierarchical structure created by Merge via the notion of c-command.

Argument linking:

- Why is it not possible to express the proposition “Frida kisses Mats” by the structure in (33)?
- Interpretation: Not only must the Θ -roles of a lexical head X be assigned to some position within XP (due to feature checking locality). They also must be assigned to a specific position within XP (*argument linking*).
- In the case of a transitive VP: the theme-role is assigned to the IA (in the complement-position) of V, the agent-role to the EA (in the specifier-position of V).



A hypothesis:

- This association of phrase-structural position and Θ -role is to be generalized over different types of predicates within and across languages.
- The hypothesis that expresses this has become known as the *Uniformity of Theta Assignment Hypothesis* (UTAH, Baker 1988).

(34) *Uniformity of Theta Assignment Hypothesis:*

Identical thematic relations between predicate and argument are expressed by identical phrase-structural relations.

Unergative versus unaccusative predicates

Consequence (Perlmutter 1978, Burzio 1986):

- An intransitive verb that assigns a theme-role to its only argument (e.g., *die, fall, sicken, drown, arrive, collapse*, etc.) assigns this role to the complement position: *unaccusative verb*.
- An intransitive verb that assigns an agent-role to its only argument (e.g., *work, jump, call, dance, yell, run*, etc.) assigns this role to a specifier position: *unergative verb*.
- This phrase-structural difference between two classes of intransitive predicates has syntactic consequences.

Unergative versus unaccusative predicates

Auxiliary selection and agreement in Italian (Burzio 1986):

(35) *Unergative and unaccusative predicates behave alike:*

a. Molte ragazze telefonano.

many girls call

‘Many girls call.’

b. Molte ragazze arrivano.

many girls arrive

‘Many girls arrive.’

(36) *Unergative and unaccusative predicates behave differently:*

a. Molte ragazze hanno telefonato.

many girls have called-PRET.PART.3.MASC.SG

‘Many girls called.’

b. Molte ragazze sono arrivate.

many girls are arrive-PRET.PART.3.FEM.PL

‘Many girls have arrived.’

Unergative versus unaccusative predicates

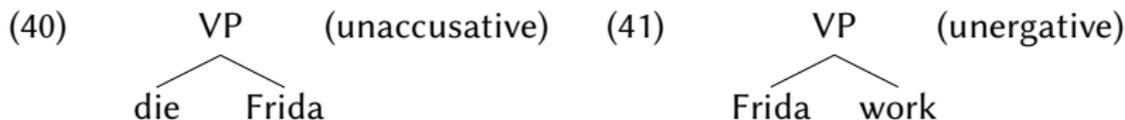
*Auxiliary selection, attributive participles, nominalizations in German
(Grewendorf 1989):*

- (37) a. Er hat gearbeitet.
he has worked
'He worked.'
- b. Er ist untergegangen.
he is drowned
'He drowned.'
- (38) a. *der gearbeitete Student
the worked student
'the student who worked'
- b. der eingeschlafene Student
the slept student
'the student who fell asleep'
- (39) a. Arbeit-er, Tänz-er
work-er, danc-er
- b. *Ankomm-er, *Fall-er
arriv-er, fall-er

Unergative versus unaccusative predicates

Problem (to be solved soon):

- While the difference between unergative (e.g. *work*) and unaccusative (e.g. *die*) intransitive predicates appears to be a real one, we cannot account for it in purely structural terms.
- If there is only one argument, Merge will automatically make this the IA of the predicate. In other words: specifier positions can only be created if there is already a complement present.
- Ways to analyse the position occupied by *Frida* in (41) as a specifier would be a) by making reference to linear precedence (under the assumption that a complement would have to appear to the right), or b) by assuming an “empty” complement position to be present (cf. Hale and Keyser 1993), both of which seem unattractive.



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