

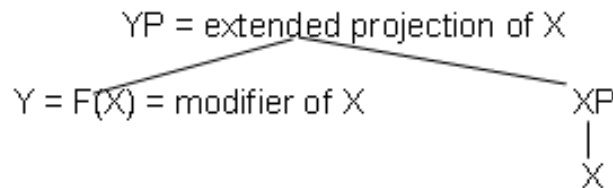
## MERGING SEMI-LEXICAL HEADS AND ECONOMY

Handout based on J. Emonds, "The Flat Structure Economy of Semi-Lexical Heads" *Semi-Lexical Categories: the Function of Content Words and the Content of Function Words*, Norbert Corver and Henk van Riemsdijk, eds., Mouton de Gruyter, Berlin, 2001.

### I. THE CATEGORIAL IDENTITY THESIS

An observation of van Riemsdijk (1996a): If parsimony forces us to assign modifiers  $F(X)$  of a lexical category  $X$  ( $=N, V, A, P$ ) to some  $X$ , then language always indicates that  $F(X) = X$ . For example, if we must assign DEG ("degree") to one of  $N, V, A, P$ , then DEG is an  $A$ .

(1)



(2) **Van Riemsdijk's (1996a) Categorial Identity Thesis (CIT):** "In the unmarked case the lexical head and the corresponding functional head have the same categorial features."

This paper stops short of assimilating  $D$  to  $N$  and  $I$  to  $V$ . Rather,  $D$  remains distinct from  $N$  and  $I$  distinct from  $V$ . For all other categories, it provides support for and elaborates the CIT.

### II. CONCEPTUAL BACKGROUND FOR FAMILIAR HIERARCHICAL STRUCTURES

Let  $X'$  be a phrasal projection of  $X^0$ , and let any maximal  $X'$  which doesn't project to a larger  $X'$  be notated  $XP$ . In a head-initial structure:

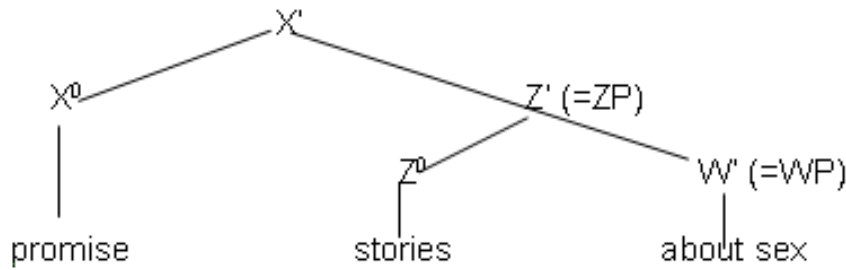
(5) **Bar Notation Remnant.** A phrase  $Y$  immediately dominating a head  $X^0$  must be an  $X^1$ .

(6) **Head-initial Parameter.**  $X^0$  merges only with *following* projections  $Z^k$ .

(7) **Theorem of the Extension Condition.** Merging  $X^0$  with some  $Z^k$  **extends a projection**, to the extent that a new  $X'$  then immediately dominates  $ZP$ . Cf. Chomsky (1995).

It will be important here that (7) is **not** an independent stipulation. It only holds so as satisfy the Bar Notation Remnant (5). Otherwise it violates Economy of Representation: "Use as little phrase structure as possible." We are used to (7); we think a new  $X'$  is "natural" as in the following:

(8)



Here are some typical V sequences ( $X = Z = V$ ) and N sequences ( $X = Z = N$ ) when  $X^0$  dominates open class lexical items.

- (9) a.  $[_{V=X} \text{promise}]$  to  $[_{VP=ZP} [_{V=Z} \text{sell}] [_{PP} \text{these apartments}]]$   
 b.  $[_{N=X} \text{evidence}]$  of  $[ [_{NP=ZP} [_{N=Z} \text{scandals}] [_{PP} \text{about sex}]]]$

The ZP in (9) have the familiar head-complement properties in (10).

- (10) a. **ZP can move as a unit.**  
 What we promised to do  $[_{VP} \emptyset]$  was  $[_{VP} \text{sell those apartments}]$ .  
 It's  $[_{NP} \text{scandals about sex}]$  that we have evidence of  $[_{NP} \emptyset]$ .  
 In Italian, VPs can also move to the front of a sentence as a focus (Rizzi 1978).
- b. **ZP can under certain conditions be ellipted as a unit.**  
 $[_{VP} \text{Speak of that to them}]$  if you have already promised to  $[_{VP} \emptyset]$ .  
 We have evidence of  $[_{NP} \emptyset]$  and punishments for  $[_{NP} \text{scandals about sex}]$ .  
 These new  $[_{NP} \text{scandals about sex}]$  are juicier than the preceding two  $[_{NP} \emptyset]$ .
- c. **ZP can block certain extractions.**  
 Every constraint on extracting phrases has been formulated in terms of phrases that block extraction from below them.
- d. **Only  $X^0$  enters into selection and agreement with elements outside  $X'$ .**  
 Scandals about sex { have/ \*has } never ending appeal.  
 He { promises/ \*promise } to { sell/ \*sells } those apartments.
- e. **When clitics have hosts of fixed category (e.g. Romance Vs), complements of  $Z^0$  cliticize onto  $Z^0$  not  $X^0$ .** French example, with the clitic *le* 'it':  
 Marie a décidé de le prendre.                      \*Marie l'a décidé de prendre.  
 'Mary decided to take it.'

- f. **Both  $X^0$  and  $Z^0$  can have the purely semantic features  $f$  characteristic of full lexical heads.** The examples in (9) show this.

The current universally presupposed (unproved) situation, which seems to "confirm" (7) and (8), is that "extending projections" **always** results from Merging. This paper denies this.

### III. DEFINING TWO KINDS OF FEATURES

(11) **Full lexical heads** are lexical items from the open classes N, V, A and P that contain non-syntactic, **purely semantic features** (script  $f$ ) which have a role in selection and interpretation but **not** in derivations (as for *scandals, sell, soft, aboard*, etc.).

(12) In addition (and contrast), **syntactic features** (upper case  $F$ ) on **all grammatical categories** play central roles in derivations, and in selection and interpretation as well.

No purely semantic features  $f$  at all appear on any categories other than N, V, A, P. But the most central N, V, A, P lack purely semantic features:

(13) **Semi-lexical heads (= grammatical heads)** are those N, V, A, and P which **lack purely semantic features  $f$** . (*people, thing, do, get, much, so, by, of*, etc.)

Probably there are no purely semantic features in the following whole sentence:

(14) Two more *people* will *come be* with us and then go *down with others* from here.

### IV. SOME SEMI-LEXICAL HEADS WHICH DO EXTEND PROJECTIONS

Jackendoff (1973) examines a range of P complements of P, to show that, contra traditional grammar, Ps do not invariably take nominal complements. *To/from* are one such type:

- (15) a. They moved a car [<sub>P</sub> **from** ] [<sub>PP</sub> (right) near the barn ] ([<sub>P</sub> **to** ] [<sub>PP</sub> by the fence ]).
- b. They took the cat [<sub>P</sub>  $\emptyset$  ] [<sub>PP</sub> in(**to**) the house ].

English can strand the first P in these recursive PPs, but not the second P.

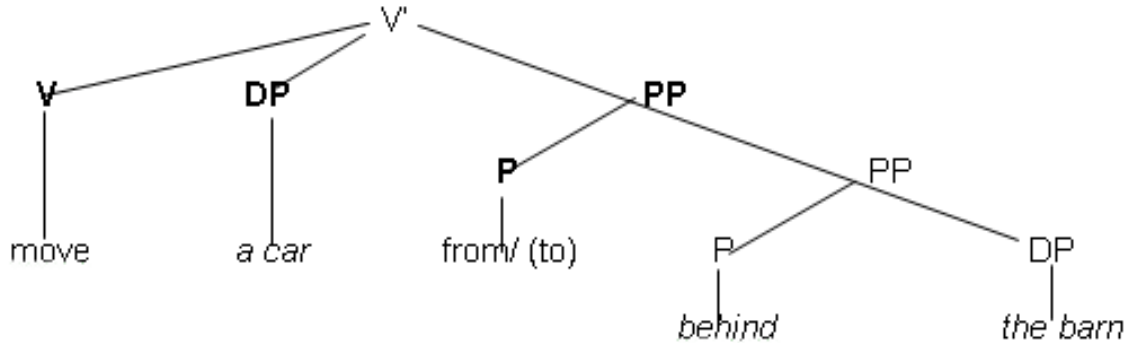
- (16) a. Where they moved it from [<sub>PP</sub>  $\emptyset$  ] was near the barn.  
It's by the fence that they should move it to [<sub>PP</sub>  $\emptyset$  ].
- b. \*What they moved it [<sub>PP</sub> from [<sub>PP</sub> near [<sub>DP</sub>  $\emptyset$  ] ] ] was the barn.

\*It's the barn that they moved it [<sub>PP</sub> from [<sub>PP</sub> near [<sub>DP</sub> Ø ] ] ] .

Thus, the embedded PPs both move (10a) and block extractions (10c).

The main V selects & assigns a semantic role to the first P (directional), not the second (10d).

(17)



“Sometimes PLACE and PATH are conflated in the position of P<sup>0</sup>, but when the two are separated, it is always PATH which is ‘externalized’ to a functional position.” (van Riemsdijk, 1996b)

(18) a. French: Nous avons mis *le chat* [<sub>P</sub> *en*] [<sub>PP</sub> *dehors de la maison*].  
‘We have put the cat to outside of the house.’

b. Japanese: [<sub>PP</sub> *le no soto*] [<sub>P</sub> *ni*] *neko o dasu*.  
house GEN outside to cat ACC take  
‘They take the cat to outside the house.’

Is the recursive or “articulated” PP structure of (17) just “automatic”? Or do *to/from* extend the lower PP to a higher PP for a reason?

In my view, the “directional” P in (15) and (17)-(18) is an intermediate head *imposed* by (19):

(19) **Revised Theta Criterion (RTC)**. There cannot be a theta relation between two phrases which both stand in theta relations to a third element.

There is an italicized theta relation (via predication) between the direct object DPs in (15) and (17)-(18) and **the lower PPs**. So by (19) **these lower PPs cannot be theta related to the main V**. An extra higher P solves this problem, because it has no relation the object DPs. The indexed triplets in (20) also violate the RTC (Emonds, 1985, Ch. 2; 2000, Ch. 7)

(20) \*We [ { discouraged/ prevented } ]<sub>1</sub> [ Mary ]<sub>2</sub> [ taking that job ]<sub>3</sub>.

\*He [ described ]<sub>1</sub> [ his family ]<sub>2</sub> [ { hopeless/ without roots/ a mess } ]<sub>3</sub>.

\* [ The girl ]<sub>1</sub> [ decided ]<sub>2</sub> [ smoking cigars ]<sub>3</sub>.

\*The girl [ persuaded ]<sub>1</sub> [ her boyfriend ]<sub>2</sub> [ smoking cigars ]<sub>3</sub>.

The extra intermediate grammatical P and I heads in bold in (21) have the same role as the Ps in (17)-(18) in "rescuing" the triplets in (20) from the RTC (19):

- (21) We { discouraged/ prevented } Mary **from** taking that job.  
 He described his family **as** { hopeless/ without roots/ a mess }.  
 \*The girl { decided/ persuaded her boyfriend } **to** smoke cigars.

In (22a) there is no RTC violation because *consider* and *his family* are not in a theta relation. (22b) has no violation because *caught* and *found* are not in a theta relation with *sleeping*.

- (22) a. He [ considered ] [ his family ] [ { hopeless/ without roots/ a mess } ].  
 b. The girl { caught/ found } her boyfriend sleeping soundly.

*The question thus is, exactly when do grammatical heads extend projections and when not?*

- (23) **Main Claim. Merging extends a projection only when some principle of grammar requires it**, such as the Revised Theta Criterion (19) or the Bar Notation Remnant (5).

In fact, this Main Claim follows from--or simply just "is"--Economy of Representation.

## V. SEMI-LEXICAL HEADS WHICH *DON'T* EXTEND PROJECTIONS

Why does the branching resulting from the Extension Condition, usually binary, seem so natural?

- (24) **Tree Growth.** Each new extension of a projection (7) contains at most **one full lexical head** (11).

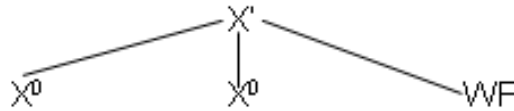
Minimalism has wrongly assumed "every new head, full or semi-lexical, extends projections."

Suppose we have an  $X^1$  and we wish to Merge it with a new semi-lexical head  $X^0$  as in (13).

- (5) **Bar Notation Remnant.** The phrase  $Y'$  immediately dominating a head  $X^0$ - must be  $X^1$ .

(6) **Head-initial Parameter.**  $X^0$  merges only with *following* projections  $Z^k$ .

We must put a head  $X^0$  leftmost in English and rightmost in Japanese. We can, in fact must, merge it **under  $X^1$** , since a "flat structure" satisfies **both** (5) and Economy of Representation: (25)



This "flat" structure for semi-lexical heads can emerge only **if X and Z in (6) are the same category**. Tree Growth (24) doesn't apply. (Of course, the RTC must also sanction a flat structure.)

What do we expect empirically if, counter to recent generative analyses, flat structures exist?

In flat structures  $[_{XP} X^0_1 \dots X^0_n \dots WP \dots]$ , let Y stand for the sequence  $X^0_n \dots WP \dots$ . Then the Main Claim (23) predicts that **flat structure behavior will contrast sharply with those in (10)**:

- (26)
- The sequence Y doesn't move as a unit.
  - The sequence Y can't be ellipted as a unit.
  - The sequence Y fails to block extractions.
  - $X_1$  or  $X_n$  can enter into selection and agreement with elements outside  $X'$ .
  - When clitics have hosts of category X, complements of  $X_n$  cliticize on  $X_1$  not  $X_n$ .
  - Among  $X^0$ , only  $X_n$  can have the purely semantic features  $f$  of full lexical heads.

In fact, the many paradigms that support Van Riemsdijk's CIT suggest that flat structures (= "unextended projections") occur **only when  $X^0$  is a semi-lexical head rather than a full lexical head**, since precisely in these cases traditional grammar speaks of "modifiers of X."

## VI. EXAMPLE 1: FLAT STRUCTURES WHEN X = PREPOSITION

Jackendoff (1973) observes further P-P sequences as in (27a). (27b) shows the larger PP moves.

- (27)
- They left that  $[_{PP} \text{ over near the couch }]$ .  
Put the linens  $[_{PP} \text{ down under this bed }]$ .  
Mary pushed her toys  $[_{PP} \text{ away (*right) under the bathtub }]$ .  
They ordered more agents  $[_{PP} \text{ out (*right) into the Rockies }]$ .
  - Where they left that was  $[_{PP} \text{ over near the couch }]$ .

It's [<sub>PP</sub> down under this bed ] that the linens have always been put.  
 Where Mary pushed her toys was [<sub>PP</sub> away under the bathtub ].  
 It was [<sub>PP</sub> out into the Rockies ] that they ordered more agents.

As for properties (26a) and (26c), the second P clearly heads no PP that would allow moving the sequence Y as in (28a) or blocking extractions as in (28b):

- (28) a. \*Where they left that over was *near the couch*.  
 \*It's *under this bed* that the linens have always been put down.  
 \*Where Mary pushed her toys away was *under the bathtub*.  
 \*It was *into the Rockies* that they ordered more agents out.
- b. ?What they left that over near was the couch.  
 (Response to: They left that over near something, but I don't know what.)  
 ?It's this bed that the linens have always been put down under.  
 ?What Mary pushed her toys away under was the bathtub.  
 ?It was the Rockies that they ordered more agents out into.

Nor is there any phrasal ellipsis (26b) of the sequence Y that starts with the second P:

- (29) Some agents have gone out [<sub>PP</sub> to the Rockies ]. \*Should others travel over [<sub>PP</sub> Ø ]?  
 \*Put the toys over [<sub>PP</sub> Ø ] and the linens down [<sub>PP</sub> under the bed ].

As allowed by property (26d), the main verb selects and assigns a semantic role to the **second** P:

- (30) Sew these strips ( { up/ together/ along the opening/ onto the edge/ \*out/ \*apart/  
 \*away from the opening/ \*off the edge }.

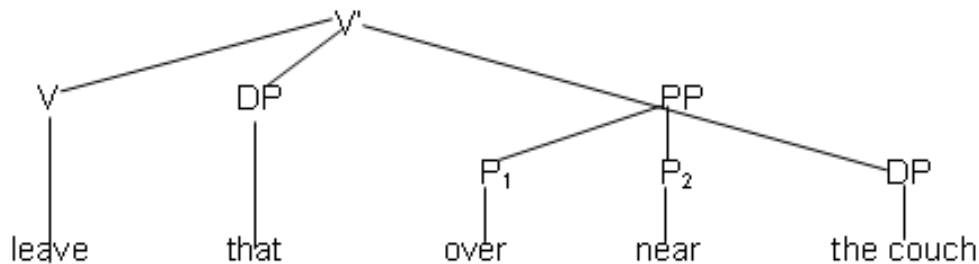
Along the lines of requirement (26e), the modifier *right*, which typically has a P host, modifies only the first P, as shown in (27a).

In accord with (26f), the first P in the sequence X<sup>0</sup> can't have the purely semantic features *f* characteristic of full lexical heads. The choices for P<sub>1</sub> are a few pairs: *up*, *down*, *away*, *back*, etc.

These paradigms all empirically confirm the CIT and that we have a special case of tree (25).

This result is a correct prediction of the Main Claim (23): **semi-lexical heads X need not extend a projection X'**. Moreover, there are no extra theta roles to violate the RTC (19).

- (31)



A necessary (but not sufficient) condition for flat structures: *The two "heads" must be of the same category, and all but the rightmost must be semi-lexical (no semantic f).*

## VII. EXAMPLE 2: FLAT STRUCTURES WHEN X = ADJECTIVE

Grammatical modifiers of A ("degree words") as in (32) themselves exemplify the category A when used alone (33).

(32) She seemed { real/ pretty/ awful/ dammed/ so } {upset/ happy }.  
How upset did she seem today?

(33) She seemed { real/ pretty/ awful/ dammed/ so}.  
How did she seem today?  
Is that house shabby now? It { got/ seemed/ remained } so last year.  
Their living in it made it so. I found it so, I must say.

Certain French modifiers of A exhibit the same dichotomous behavior:

(34) a. Cette histoire semble { fort/ bien } intéressante.  
'That story seems { strong/ well } interesting.'  
b. Pierre semble { fort/ bien }.  
'Peter seems { strong/ well }.'

Modifiers of A like *very*, *how*, *so*, etc. have certain A properties and other special properties:

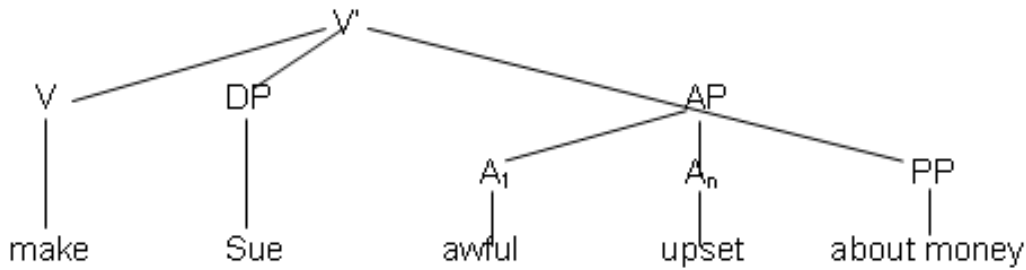
(35) How very sad! So very sad. Very very sad.  
\*Too so sad! \*So how sad.  
John seemed confused. How so? \*Very so? Yes, quite so. Yes, even more so.

For example, *very* and *too* must take an A complement: +\_\_\_A.

In contrast, *how* is listed as A, WH, +\_\_\_(A). Its complement can be *very* but not *too* or *less*.

Most but not all modifiers of A are **mutually exclusive**, as in early bar notation studies. The hypothesis here doesn't at this point explain why these items so rarely modify each other.

(36)



The many empirical properties in (26) hold for structures like (36), where  $X_n = \textit{upset}$  and  $Y = \textit{upset about money}$ . Such a sequence  $Y$  doesn't move (26a), stranding the modifiers (37a). Nor does it ellipsis (26b), as seen in (37b):

(37) a. \*What that report will make Sue { awful/ quite/ real/ too } is upset about money.

b. Is it shabby now? \*It got { awful/ very/ so/ quite/ pretty/ real/ too } last year.

No paradigms suggest that modifiers of A block extractions that are otherwise possible (26c). Finally, only the final  $A_n$  in (36) can have the purely semantic features of full lexical heads (26f).

Further confirmation of flat structure: Certain grammatical A, in particular the comparatives *more* and *less*, allow measure phrase specifiers MP. The fact that MP+A or A+A are not constituents in flat structures accounts for some paradigms in Corver (1997):

(38) a. [<sub>MP</sub> How many IQ-points ] is John less smart (than Bill)?

\*How many IQ-points less is John smart (than Bill)?

b. John is so { much/ extremely } afraid of spiders that he won't go there.

So { much/ \*extremely } is John afraid of spiders that he won't go there.

## VIII. AN AUXILIARY HYPOTHESIS ON "ADJUNCTS"

Finally, (only)  $A_n$  in (36) enters into selection and agreement with items outside AP (26d).

We might wish to know why  $A_1$  never seems to enter into such selection and agreement.

First, A and P seem to share a feature, call it +A for "adjunct." (i) Adjuncts take only the surface forms of AP or PP. (ii) Adjuncts can coordinate. (iii) Neither have extended projections with **overt** internal subjects. [In my (controversial) view, AP and PP have **no internal subjects of any type.**]

An auxiliary hypothesis is necessary to account for the fact that a modifier such as DEG can't be the head of AP at LF. That is, it is never the element in AP that enters into selection:

(39) That { day/ \*girl/ \*color/ \*attitude } seemed [<sub>AP</sub> [<sub>A</sub> **so/ pretty** ] { eventful/ long }].

(40) **Anti-headedness. Modifying categories (i.e., [X, +A] ) can head phrases in LF only if they extend projections.**

That is, without extending projections, adjuncts can only be interpreted as further specifying X.

### IX. EXAMPLE 3: FLAT STRUCTURES WHEN X = NOUN

A central basis for Van Riemsdijk's CIT (2) is that quantity "modifiers" in noun phrases are clearly nouns, argued in both Jackendoff (1977) and Selkirk (1977).

This holds even for numerals; Babby (1987) and Veselovská (2001) have argued that high numerals in the richly inflected Slavic systems must be of category N.

In a similar vein, Kubo (1996) has argued that Japanese numeric classifiers  $N_{cl}$  are grammatical N, i.e. lacking the purely semantic features  $f$  of (11). Based on the pseudo-partitive construction, **Japanese classifiers  $N_{cl}$  are right hand heads with (flat)  $N^0$  complements.**

Therefore, **both numerals and numeric classifiers are also candidates for grammatical N.**

Let's re-examine English pseudo-partitives with quantity nouns, looking for flat structure behavior:

(41) A *pile* of counterfeit bills { was/ were } found behind the door.  
Another *bouquet* of roses with long stems { <sup>o</sup>khas/ \*have } arrived.  
A lot of Christmas leftovers { \*is/ <sup>o</sup>kare } being eaten.

These examples suggest that **pseudo-partitives exhibit flat structures iff any literal interpretation of some + $f$  associated with a quantity N is missing.** (Some  $N_Q$  like *a lot* never have a semantic + $f$ .)

Movement (26a): An NP extraposes (a lower NP exists) only if [ N,+ $f$  ] is interpreted literally:

(42) A pile {was/ \*were} discovered of counterfeit bills. (*pile* must be literal)  
A bouquet has arrived of roses with long stems.  
\*A lot is being eaten of Christmas leftovers.  
\*A lot was eaten of leftover turkey. (Selkirk, 1977)

Ellipsis (26b): Similarly, only literal quantity Ns permit a pseudo-partitive NP to ellipsis:

- (43) Roses with stems are hard to find, but we found a load [NP Ø] in the market.  
 Two dollar bills are rare, but there was a pile [NP Ø] on that table.  
 Some red wine is cheap, but a {corked/ \*dry} bottle [NP Ø] would impress them.

Blocking Extraction (26c): A literal quantity N is incompatible with extraction from a subject:

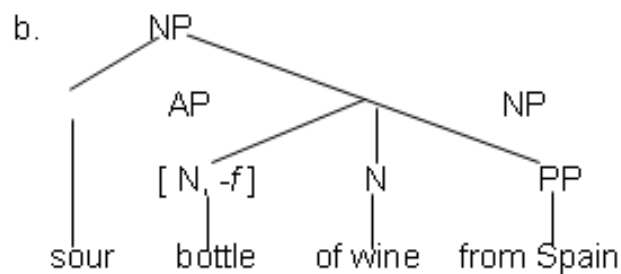
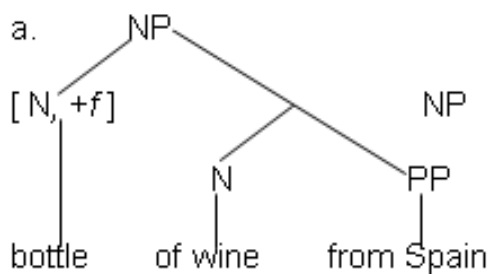
- (44) Take a sip of this wine that a bottle of [NP Ø] was spoiled.  
 \*Take a sip of this wine that a bottle of [NP Ø] was painted black.

Embedded NPs block agreement and selection (26d): As seen in (41)-(42), a plural second N is accessible for external agreement only in flat structures, when the quantity noun is not literal.

Selectional restrictions and full semantic features (26d, f): Only literal quantity N—*bottle* in (45a)—or a full lexical N—*wine* in (45b)—enter into selection restrictions:

- (45) a. We broke a { green/ hand-blown/ \*sour / \*aromatic } bottle of Spanish wine.  
 b. We sipped a { \*green/ \*hand-blown/ sour/ aromatic } bottle of Spanish wine.

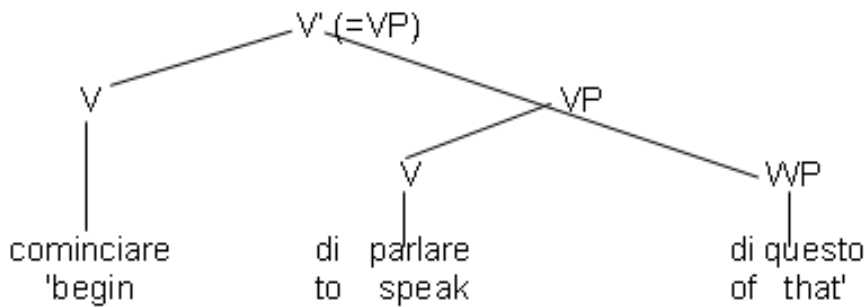
(46)



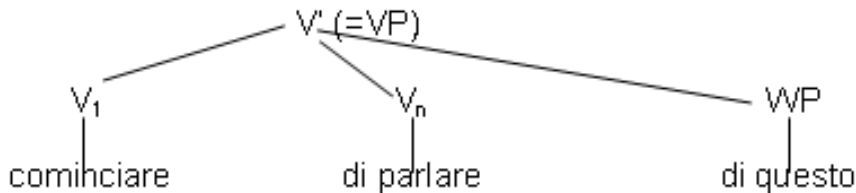
## X. EXAMPLE 4: FLAT STRUCTURES WHEN X = VERB

The Italian V-V “restructuring” sequences of Rizzi (1978) and the V-V causative sequences in all of Romance **both nicely exemplify** dual structures throughout derivations:

(47)



(48)



All Romance restructuring verbs (translations of *can, should, want, go, come, start, go on, finish*, etc.) and “causative” verbs (translations of *make, let, see, hear, feel*) are **semi-lexical verbs, in that all their features are plausibly F and not purely semantic f.**

*Lack of +f is the **only** criterion that characterizes these V as a natural class.*

Anti-headedness (40) applies only to AP and PP modifiers, so it allows **either** V in (48) to have head properties, unlike with A or P.

All differences between restructuring and causative verbs are due to the lower subject being empty (co-indexed with the higher subject) with restructuring V, but disjoint in reference with the causative verb’s subject (Zagona, 1982; Burzio, 1986).

The only reason for hesitating over the flat structure (48) is the following: *Where structurally is a subject of the second V so that (47) and (48) contain identical predications?*

Otherwise, **all the paradigms assembled by studies of Romance restructuring and causatives verbs support an alternation between flat and non-flat structures.**

**Let's repeat the flat structure criteria; Y = the second V + its complements and adjuncts:**

- (26)
- The sequence Y doesn't move as a unit.
  - The sequence Y can't be ellipted as a unit.
  - The sequence Y fails to block extractions.
  - $X_1$  or  $X_n$  can enter into selection and agreement with elements outside  $X'$ .
  - When clitics have hosts of category X, complements of  $X_n$  cliticize on  $X_1$  not  $X_n$ .

- f. Among  $X^0$ , only  $X_n$  can have the purely semantic features  $f$  of full lexical heads.

When any of the following tests indicates either an articulated or a flat structure in Romance, **other tests confirm the same structure**. The diagnostics can't "mix" in one example.

- 26a. The lower VP in (47) can move as a unit, but V+WP in the flat (48) cannot:  
E.g., Italian focus fronting, right node raising, complex NP shift, and WH-fronting in restrictive relatives. (Rizzi on restructuring and Burzio on causatives)
- 26b. Irrelevant, as VPs in Romance do not allow ellipsis (Zagona, 1982).
- 26c. The lower VP in (47) plays a role in blocking clause-mate extractions, but these are permitted in (48). E.g., middle formation with *si* 'self' and the *easy to please* construction. (Rizzi; Abeillé, Godard and Miller)
- 26d. In (48): (i) A causative or restructuring  $V_1$  agrees with and selects a **preceding** subject.  
(ii) The complement  $V_x$  selects the **following** lower subject in causatives.  
(iii) The last  $V_x$  in a restructuring sequence selects between the Italian perfect auxiliary *avere* 'have' or *essere* 'be' (Rizzi, 1978).
- 26e. **Complements (and adjuncts) always cliticize within "the lowest VP."** In the flat structure (48) clitics are on  $V_1$ , but certain adverbial clitics *y* and *en* and reflexive *se* can cliticize onto the second  $V_n$ . (Rouveret and Vergnaud, 1980; Milner, 1982)
- 26f. Only the final  $V_n$  in (48) can have some  $+f$  with "higher semantic specificity." (Burzio)

Many further comparisons confirm the contrasting in the structures (47)-(48):

- g. The Italian bi-syllabic enclitic *loro* 'to them' is phrase-bound (Rizzi, 1978); it can attach only to the second V in the articulated (47) but to either V in the flat (48).
- h. Word orders in complex **causatives with postposed subjects**, a sign of a flat structure (48), are correct only if treated as originating in a single VP. (Miller, 1992)
- (49) Jean a fait faire sauter le pont à son fils. (French example from Kayne, 1975)  
John has made make explode the bridge to his son  
'John has made his son make the bridge explode.'
- i. As predicted for a flat (48), only one accusative case is available in causatives. (Burzio)
- j. Under certain conditions, Italian past participle Vs agree with their object DPs.  $V_1$  agrees in this way in a flat structure (48) but never in (47). (Burzio, 1986)

k. Postposed lower subjects in the flat (48) can appear as datives in French only if  $V_1$  is subcategorized to take a dative. This leads to the conclusion that these causatives must contain a single VP. (Herschensohn 1981, Milner 1982)

- (50) a. J'ai laissé { mes biens/ gaspiller mes biens } (à mes enfants).  
'I've left/let { my possessions/ waste my possessions } to my children'
- b. J'ai entendu { la porte/ ouvrir la porte } (\*à mes enfants).  
'I've heard { the door/ open the door } (to my children)'

**It seems that the trees (47) and (48) are a systematic but apparently optional alternation.**

For an answer to where the subject of the second verb is in these flat structures (i.e. for how to remove the only real argument against them), see Emonds (2000, Ch. 6).

## XI. A RESIDUAL PROBLEM

*Recall that I am claiming: some principle of grammar must **require** semi-lexical head Vs to extend projections, as in the articulated (47). Otherwise we expect flat structures for grammatical heads.*

(23) **Claim. Merging extends a projection only when a principle of grammar requires it.**

Under the theory developed here, the flat structure (48) should be the *only* permitted option unless some principle of grammar requires the recursive structure in (47) *and thereby excludes (48)*.

(51) Suggestion. A focus feature FOC can be associated only with heads or phrases in LF.

Thus, a feature FOC can be associated with the lower VP complement in (47) but not with the  $V_n$  complement, since the latter is neither a head nor a phrase **in LF**. Under this view, **an articulated lower VP in (47) focuses the second V. If not, a flat structure must be used.**

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