

## Merge, conflation, and head movement: The First Sister Principle revisited

Heidi Harley, Nov. 9, 2003  
NELS 34, SUNY Stony Brook

### 0 What I'll say

- HM a problem, conflation mechanism lets it be 'phonological' in the right way
- Locality for HM follows from conflation mechanism, not minimality considerations
- conflation mechanism can capture sisterhood effects in English compounding

### 1 Introduction: Head Movement is a Problem

#### (1) Well-known issues with head-movement in the Minimalist Program:

##### a) Brody (2000)

→ If the lexicalist, 'checking'-style approach to head-movement of Chomsky 1993 is adopted, many extra stipulations required to get the Mirror Principle to fall out, lots of duplication of effort in the morphology and the syntax.<sup>1</sup>

→ No obvious reason why heads shouldn't be able to excorporate

b) Head movement is counter-cyclic—can't be a 'normal' instance of Merge, unlike XP movement, doesn't Extend Target, violates Structure Preservation

c) Syntactic head-movement<sup>2</sup> incompatible with Bare Phrase Structure; given contextual definitions of 'phrase' & 'head', violates Chain Uniformity (Chomsky 1995: 321:

“We have so far sidestepped a problem that arises in the case of ordinary head adjunction. Take  $\square$ , K to be  $X^{\circ}$ s in (120) [they're sisters], with  $\square$  raising to target K, which projects, forming  $L - \{ \langle H(K), H(K) \rangle, \{ \square, K \} \}$ . Since K projects,  $\square$  is maximal. Thus,  $\square$  is both maximal and minimal. If that is true of  $t$  as well (e.g. in the case of clitic raising), then CH[ain] satisfies the uniformity condition. But suppose  $t$  is nonmaximal, as is common in the case of V-raising to I or to V. Then, under a natural interpretation, [chain uniformity] is violated; CH is not a legitimate object at LF, and the derivation crashes.”)

→ This theory-internal consideration, plus the fact that he can't get V2 word order to work out properly, leads Chomsky to assert that head-movement phenomena are 'phonological', rather than syntactic

#### (2) Well-known benefits of head-movement in syntactic theory:

→ It has tremendous explanatory power!

#### (3) Some kinds of approaches to eliminating head-movement:

→ Kayne, Mahajan: (massive) remnant XP-movement lines heads up

→ Brody: syntax projected from pre-built morphological structure

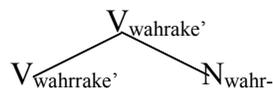
---

<sup>1</sup> Warning: The main motivation for the 'check-my-morphology' account of HM — the visible tense marking on VP-internal English Vs — will still be a problem for the mechanism presented in this talk. I assume a morphological-adjacency account like that of Bobaljik 1994 must be correct.

<sup>2</sup> As long as it's adjunction-style HM



- (6) a.  $N_{wahr-}$  merges with  $V_{-rake}$   
 b. Because  $V_{-rake}$  has a ‘defective’ p-sig, the p-sig of  $N_{wahr-}$  copies into the p-sig of  $V_{-rake}$   
 c. the head, now with the P-sig  $V_{wahrake'}$ , projects (i.e. is used as a label, forming the set  $\{V_{wahrake'}, \{V_{wahrake'}, N_{wahr-}\}\}$ , or, in tree-terms



- d. For economy reasons (because  $V_{wahrake'}$  is pronounced),  $N_{wahr-}$  is not.

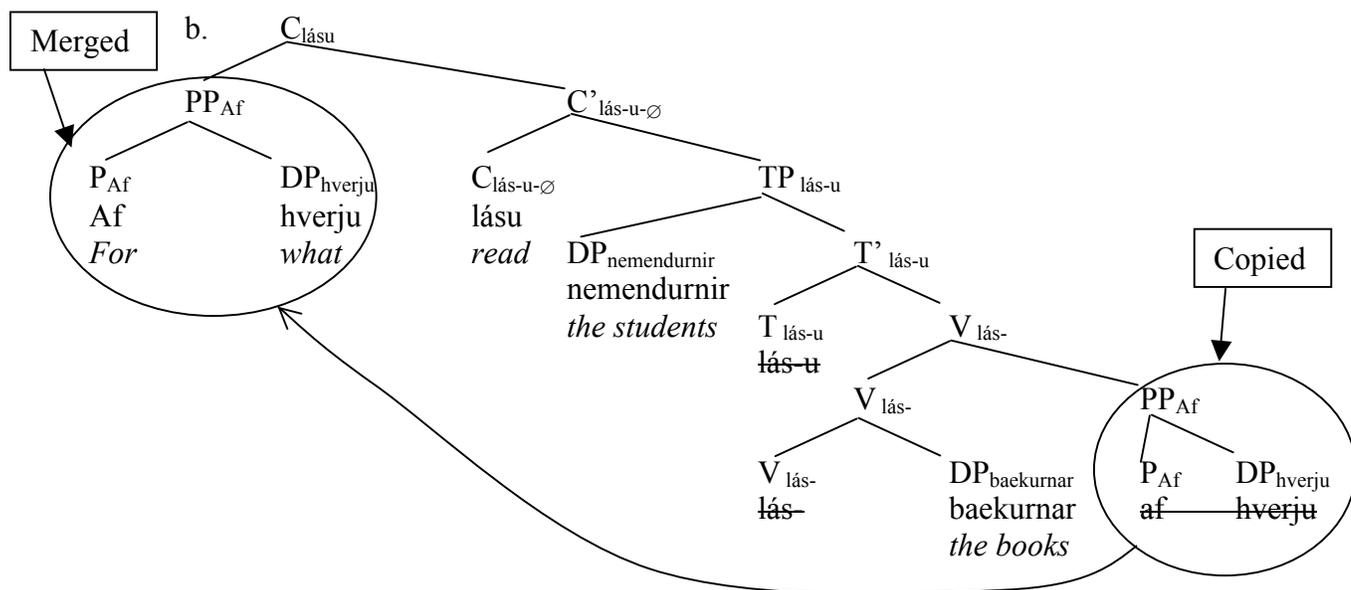
(BPS reminder: Xs undominated by copies of themselves are XPs, Xs dominating no copies of themselves are  $X^0$ s.)

- (7) How to extend this to regular cases of head-movement:

→ the insight: in the theory of Bare Phrase Structure, the p-sig of the head of a complex constituent is a sister of the new head it’s Merging merging because the label of the complex constituent is just a copy of its head.

→ let’s do an instance of V-to-T-to-C movement, as in Icelandic:

- (8) a. Af hverju lásu nemendurnir bækurnar  
 for what read.fin the.students the.books  
 "Why did the students read the books?"



- (9) a. The verb  $lás-$  ‘read’ merges with the (independently constructed) DP  $bækurnar$  ‘the books’. Neither P-sig is defective, and no copying occurs. The whole constituent is labelled with the p-sig of its head,  $lás-$   
 b. The verb phrase labelled  $lás-$  merges with the adjunct PP  $af\ hverju$ , ‘for what’. Neither of the p-sigs of the labels of these constituents is defective, so no copying occurs. The whole constituent is labelled with the p-sig of its head,  $lás-$ .  
 c. The verb phrase labelled  $lás-$  merges with an element from the numeration, a [+finite] T element,  $-u$ . This element’s p-sig is defective. Consequently, the p-sig of the verb phrase —  $lás-$  — is copied into the defective p-sig of

- the T element, giving *lás-u*. Then, the whole constituent — a projection of T — is labelled with the p-sig of its head, *lásu*.
- d. The TP labelled *lásu* merges with the subject DP, *nemendurnir*, ‘the students’. (Note: this could be a copy of *nemendurnir* from down in the VP, if we’re assuming the VP-internal subject hypothesis). Neither p-sig is defective, so no copying occurs. The whole constituent — a projection of T — is labelled with the p-sig of its head, *lásu*.
  - e. The TP labelled *lásu* is merged with a [+wh] C element, whose p-sig,  $\emptyset$ , is defective. Consequently, the p-sig of the TP, *lásu*, is copied into the defective P-sig of C. Then the whole constituent, a projection of C, is labelled with the P-sig of its head.
  - f. Finally, the [+wh] PP *af hverju*, ‘of what’, is copied from its position inside the VP and Merged with the [+wh] CP, checking its [+wh] feature. No defective p-sig is present, so no copying occurs; the whole CP is labelled with the p-sig of its head, *lásu*.

→ This mechanism essentially lets us retain the idea that head-movement is ‘phonological’, while ensuring that it is *local*, and only triggered by appropriate items higher in the tree (i.e. it’s an instance of Enlightened Self-Interest, violating Greed).

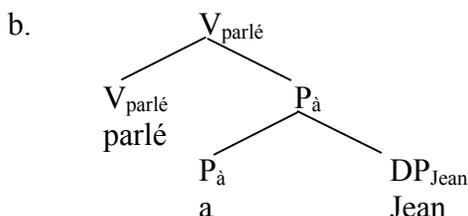
→ I will call heads with ‘defective’ p-sigs [+affix] heads; this is just for convenience. As we’ll see, I’m not suggesting that such heads are necessarily morphophonologically affixal, though in canonical cases they are.<sup>6</sup>

Locality: Notice that this mechanism derives the the Head Movement Constraint, but it has nothing to do with the Minimal Link Condition!

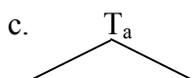
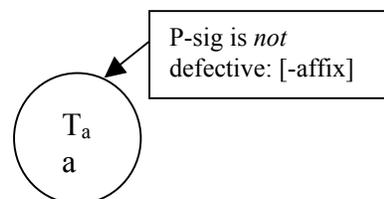
(10) → only the p-sig of the label of its sister may be copied during merge of a [+affix] head. The copied p-sig is a copy of the p-sig of the *head* of the larger constituent. Any p-sigs within that constituent, that are not in its head, will not make it into the label.

(11) Example: Consider the derivation of a French *passé-composé* clause, like that below, at the point where the vP (labeled with the verb’s p-sig) merges with T<sup>7</sup>:

- a. Marie a parlé à Jean  
Mary has spoken to John.



+

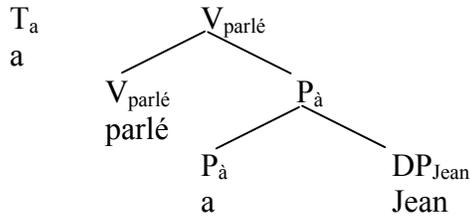


No copying of V into P-sig of T because T not defective. V’s p-sig now ‘locked’ downstairs, not visible in any label dominating it. Head-movement *must* be to a immediately c-commanding head.

[±affix] only one

<sup>6</sup> Many discussions of the HMC and triggers for head-movement (see, e.g., Carnie 2000) as a trigger for movement that does not involve any actual *movement* at all, making

<sup>7</sup> Or Asp or another v or whatever your favorite category for the *avoir* auxiliary is.



(12) No excorporation: Because there's no provision for 'partial' copying of a P-sig, there can be no excorporation without special effort.

(13) No semantic effects of head-movement: Because HM is only movement of phonological material, it can't, for instance, change scope relations. There's no V>Neg/Neg>V effect in the classical verb-raising-past-negation cases:

Jean ne parlait pas français.	Jean n'as pas parlé français.
J. speak.IMP not French	J. has not spoken French.

→ But: What about when negation piggy-backs on auxiliary head-movement?

(14) Something weird happens.

- a. Every key didn't work
- i. = Not every key worked.
  - ii. = No key worked.
- b. Didn't every key work?
- i. ≠ Is it the case that not every key worked?<sup>8</sup>
  - ii. ≠ Is it the case that no key worked?<sup>9</sup>
  - iii. = Is it the case that every key worked?<sup>10</sup>

(Pointers to literature appreciated; only started thinking about this *very* recently).

### 3 Deriving the First Sister Principle: Conflation and Compounding

(15) English incorporation in nominalizations

- It's well-known that English has a very productive object-incorporation process in *-er* and *-ing* nominalizations ('synthetic compounds') (Roeper and Siegel 1978; Selkirk 1982)

a. *-er* nominalizations

*paper-cutter, can-opener, door-stopper, housekeeper, page-turner, truck-driver, scriptwriter, tiebreaker, mind-reader, homemaker, name-caller, storyteller, noisemaker, blood donor*

b. *-ing* nominalizations

*paper-cutting, can-opening, housekeeping, page-turning, truck-driving, script-writing, tiebreaking, mind-reading, name-calling, storytelling, noisemaking, fact-checking, fact-finding*

(16) Deriving these incorporations through conflation

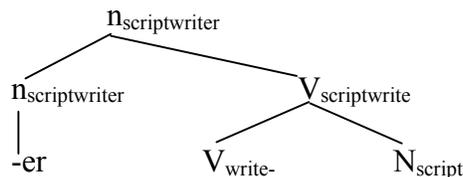
- a. Select *write* with +affix features in the numeration.
- b. Merge *write* and *script*. Copy the p-sig of *script* into *write* during Merge (by Conflation Economy).
- c. Project the head (i.e. label the whole thing with the head's features)
- d. Merge [*scriptwrite*] with *-er* (also selected with a +affix feature). Copy the p-sig of *scriptwrite* into that of *-er* during Merge (again by CE)

<sup>8</sup> Felicitous answers: "Yes. For instance, key #2 didn't work." or "No. Every key worked."

<sup>9</sup> Felicitous answers: "Yes. No key worked." or "No. For instance, key #2 worked."

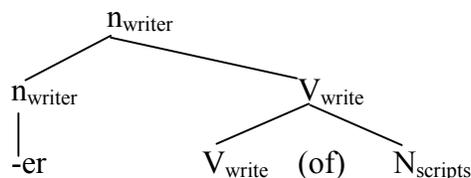
<sup>10</sup> Felicitous answers: "Yes. Every key worked." or "No. For instance, key #2 didn't work."

- e. Project the head.  
 f. Pronounce entire structure as *scriptwriter*  
 g.



- (17) Contrast that with a derivation where *write* starts with a -affix feature:

- a. Merge *write* and *scripts*.  
 b. Project the head (*write*), i.e. label the whole structure with *write*'s features.  
 c. Merge [write scripts] with *-er*. Copy the p-sig of *write* into *-er*  
 d. (Insert genitive *of* for free to case-mark argument of *write*)  
 e. Pronounce entire structure as *writer of scripts*.  
 h.



*The payoff*: deriving Roeper and Siegel 1978:208 First Sister Principle<sup>11</sup>

**Conflation Economy:** *Conflation must occur as early as possible. That is, a [+affix] p-sig must copy the p-sig of its sister during Merge; it cannot 'wait' to copy some later available p-sig.*

- By Conflation Economy, [+affix] heads *must* get a p-sig from their sister at Merge
  - This means that *no conflation can 'wait'*. If you have a [+affix] V, you have to copy the p-sig of the first thing it merges with into V's label.
  - (side note: it also derives a ban on head-lowering—V couldn't remain defective all the way through the derivation until it got to T, and then copy T's P-sig into *its* label.)
- (18) \*Dative compounds:
- a. Consider the following: *drug-pusher, errand-runner, truck-driving, horse-jumping*
  - b. These are all formed from verbs which have good (resultative) argument structures with a Goal PP:  
*push drugs to children, run an errand to the store, drive trucks across the country, jump the horse over the fence.*
  - c. Their nominalizations, however, do NOT allow the goal PP to be included:  
*\*drug-pusher to children, \*errand-runner to the store, \*truck-driving across the country, \*horse-jumping over fences* (cf. Selkirk 1982:37)
- d. Similarly for resultative & V-particle constructions: *washing dishes clean & dishwasher* are fine but *\*dishwashing clean; eating apples up & apple-eating* but *\*apple-eating up...*

<sup>11</sup> Selkirk's 1982:37 version of this is the First Order Projection Condition, but here I think the First Sister principle is really the thing at work, given BPS, as we'll see in a minute.

e. However, if the object is *not* incorporated, modification of the nominalization by a result or goal secondary predicate is ok (at least, better): *painting of houses red, washer of dishes clean, running of errands to the store, driving of trucks across the country.*

→ The impossibility of secondary predication in these incorporation structures follows from Conflation Economy, because 'inner subjects' (specifiers, subjects of predication) can't incorporate by themselves unless the predicate is complementless; if the predicate has a complement, it must also incorporate if the specifier is going to.

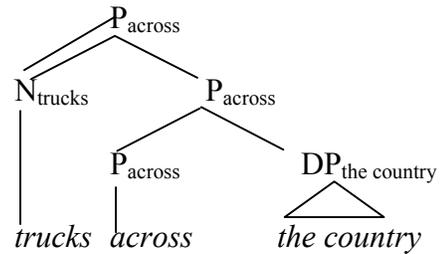
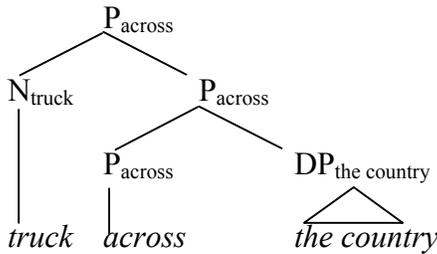
(19) Compare the derivation of *\*truck-driving across the country* and *driving of trucks across the country*: Let's try to derive them by generating *drive* with a +affix feature in the first case and not in the second:

a. Numerations

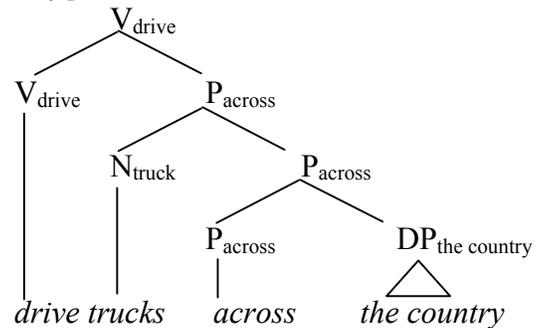
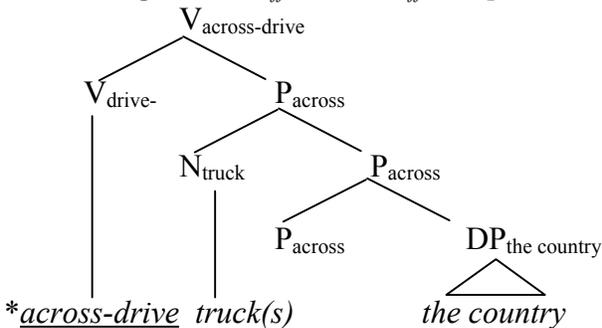
{drive-, [+affix] 'drive'} vs. {drive, [-affix] 'drive'}

b. Make your P' by Merging *across* and [*the country*]

c. Merge: *truck* and [*across the country*]<sup>12</sup>    □ N.B. the P is the head of the resulting SC!

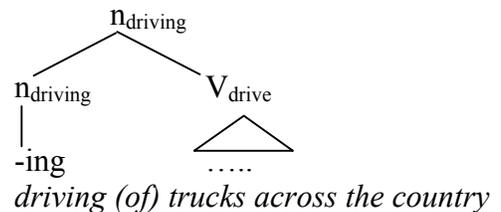
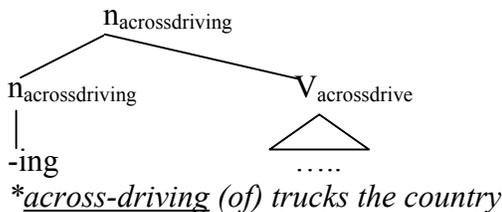


d. Merge: *drive*<sub>+aff</sub> or *drive*<sub>-aff</sub> and [*truck across the country*]



NOT *truck-drive across the country*

e. Merge *-ing* with [*acrossdrive truck the country*] or [*drive trucks across the country*]



<sup>12</sup> Also note: if we'd tried to do this derivation with a [+aff] feature on *truck*, we'd get *truck-across* at this point.

(20) What's wrong with *acrossdriving of trucks the country*?

2 possibilities:

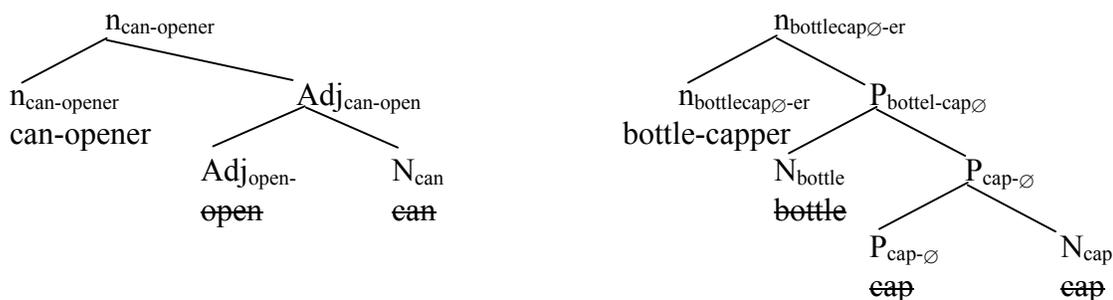
- English doesn't have any appropriate [+affix] form vocabulary item for *across* (it's not in the limited set of English Ps that can compound (e.g. *outrun*)).
- Somehow, case-checking of *the country* is tied to the phonological realization of the P that it is the complement of (not unreasonable since it has long been hypothesized that case-checking is necessary to license the realization of DPs phonologically).

→ I'm going to assume that (a) is the answer, in fact I think I'm going to make a principle of it:

Affixal Determinism: At least functional vocabulary items (f-morphemes; the VIs that realize T, D, C, v, P at least) are specified as morphophonologically bound or free or both; if conflation applies to a p.o.e. that can only be realized as a free morpheme, insertion fails.<sup>13</sup>

→ Conflation Economy ensures that incorporation of internal subjects can happen in cases where the complement of the predicate incorporates, but not otherwise.

(21)



→ This is why dative objects can't form synthetic compounds; they have a first-sister Theme.

- (22) a. give orphans a gift                      *but not*                      orphan-giving  
 b. read children a story                      *but not*                      children-reader

#### 4 Adverbial synthetic compounds and BPS

→ Roeper & Siegel (1978) show that synthetic compounds can occur between *any* two things that are first sisters, not just verbs and objects. As long as a verb doesn't have an object, adverb-verb synthetic compounds are possible:

- (23) a. quick-acting baking powder (It acts quick(ly)) (examples from R&S 1978)  
 b. fast-falling snow (It falls fast)  
 c. snappy-looking suit (It looks snappy)  
 d. light-stepping horse (It steps lightly)  
 e. odd-seeming sentence (It seems odd)  
 f. late-bloomer (He blooms late)  
 g. well-written story (It's written well)  
 h. oft-heard motto (It's heard often)  
 i. early-riser (She rises early)

→ This very nice for BPS, of course.

→ And, if a complement is included, the compound of course is ill-formed.

<sup>13</sup> It may be that roots are variable in their affixal properties, or that they're always bound. See below.

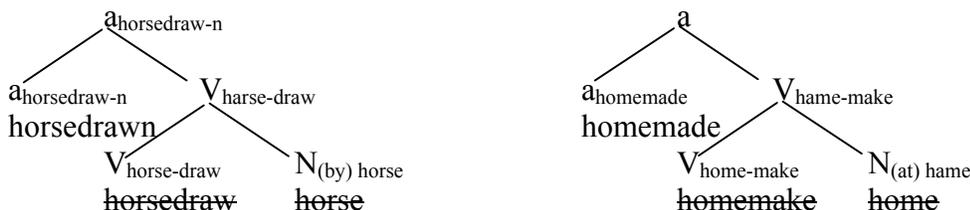
→ If the adverb was incorporated into a verb with an object, without incorporating the object (even a null object), Conflation Economy would be violated.

- (24) a. The farmer grows wheat quickly.  
 b. a wheat-growing farmer.  
 c. \*a quick-growing farmer  
 (bad where it's the things he's growing that grow quickly)  
 (e. The wheat grows quickly  
 f. quick-growing wheat)

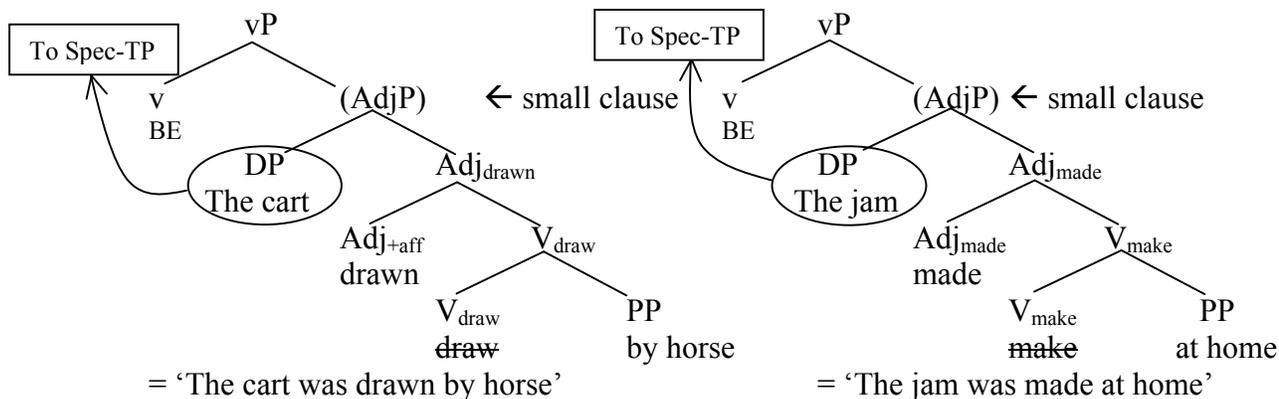
→ leads to a funny conclusion about the structure of adjectival passives: internal argument is 'inner subject' of (resultative) adjectival small clause, not sister of root, since instrumental/locative/comitative synthetic compounds are possible; these, interestingly, either involve P-deletion or else the P is present in the verbal equivalents only for Case purposes:

- (25) (Examples from R&S 1978 again)  
 a. 'by' cases: *starstruck, wolf-reared, rebel-held, horse-drawn, expert-tested, frost-bitten*  
 b. 'at, in, to' cases: *homemade, panfried, land-based, deskbound, jungle-trained, California-grown*

(26) Synthetic compound with adjectival passive:



(27) Corresponding verbal structures:



- (28) The \$64,000 question: Why can (certain) a and n heads in English accommodate a conflated object or adjunct (i.e. a compound) but v heads can't? Not because they're not affixal—non-compound sister labels conflate with them just fine, and necessarily. Sadly, I have no good answer. As above, 2 possibilities:

- a. V's p.o.e. has a prosodic template associated with it, no compounds allowed. Perhaps not as crazy as it sounds; like what Hale 2001 does for Navajo (strict CVCCVC template for verbs; morphemes discarded as necessary to fill it up)
- b. Case-related: if object incorporates, v won't be able to assign it's +acc case. (But leaves unergatives and unaccusative verbs' failure to incorporate adverbs unexplained — *\*The snow fast-fell*, despite *fast-falling snow*.)

## 5 Re-affixation

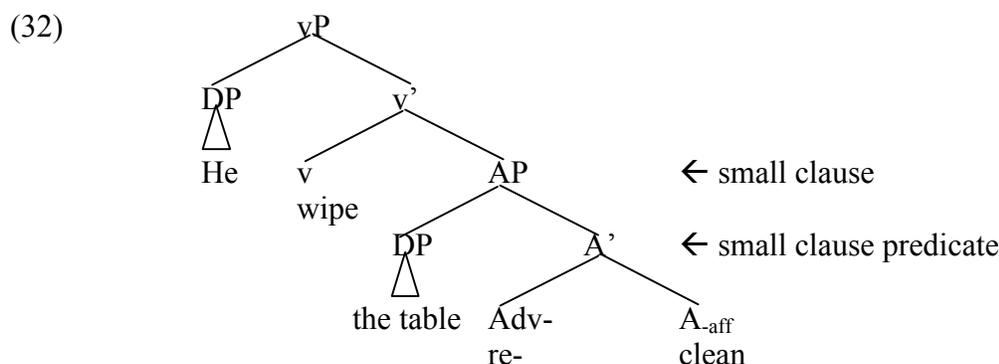
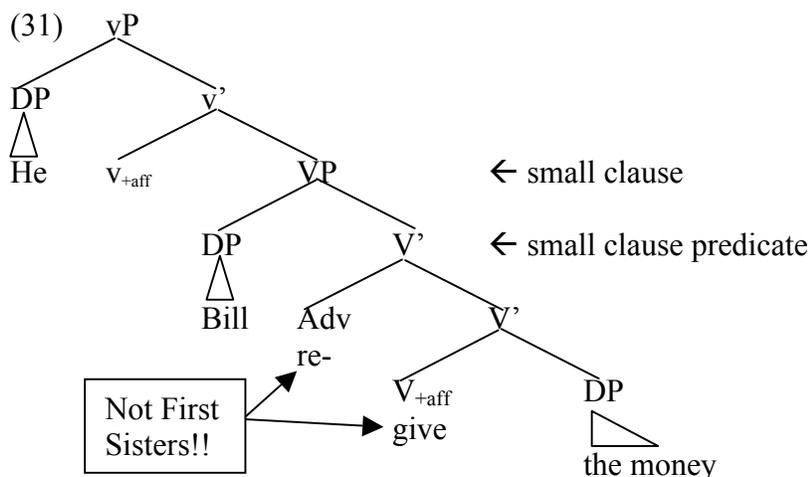
- If we treat *re*-affixation as adverbial modification of the predicate part of a small clause structure, with a [+affix] V predicate, we'll capture all the blocked cases discussed in Keyser and Roeper 1992.
- By the same logic as for adverbial synthetic compounds, above, *re*-affixation should be blocked when the V takes an 'inner object' or takes a true sister object (V+bare N idioms). When there is a separate resultative predicate, or a particle, *re* would have to attach to the predicate or particle.
- (29) Keyser & Roeper's observation:
- a. *Good re-affixations*: retied the shoe, regrouped the troops, restarted the car
- b. *Bad re-affixations*: \*regave the money, \*releft a note, \*rethrew the ball
- The bad cases have appropriate (telic) semantics, so semantic explanation out
- The bad ones have potential double-object dative structures (throw him the ball, leave her a note); the good ones don't (\*tie him his shoes, \*group him his troops, \*start him the car.)

(30) <u>More</u> :	<u>Bad</u> <i>Allow a benefactive structure</i> *refund an island *rebought a car *reshowed his paintings <i>V+Particle</i> *resold his friend out *reopened the door up *rewrote the idea down <i>Motion V + Goal PP</i> *rejump over the fence *rerun to the store <i>V+Resultative</i> *redrive someone crazy *remake someone sick *rewipe something clean	<u>Good</u> <i>Don't allow such a structure</i> rediscovered an island repurchased a car reexhibited his paintings <i>V without particle</i> resold the car reopened the door rewrote the idea
--------------------	--	--

- Generalization: *re*-modification only good with change-of-state Vs where the V itself encodes the change-of-state; no 'remnant' of the small clause can be left downstairs — no Theme in a double-object construction, no particle, no resultative predicate.<sup>14</sup>

<sup>14</sup> K&R consider a version of this hypothesis, put forward by Kayne 1985, but dismiss it based on examples like *wall-repapering* (vs. *\*chess-replaying*). You can repaper walls to your heart's content, though, but you can't *replay chess*—you have to *replay a game of chess*. The bare interpretation of the incorporated noun is at fault. In any case, the proposal here is not that *re-* \*is\* a small clause predicate, just that it has to modify (and affix to) one.

→ What happens if you try to affix *re-* in these cases?



(33) Another \$64,000 question.: What's wrong with *He wiped the table reclean*? That is, why can't *clean* be generated with a [+affix] feature?

→ Possible answer: Morphological subcat problem with *re-* (wants to be in a [v] structure)?

→ What about the following:

- |      |    |              |    |                         |    |               |
|------|----|--------------|----|-------------------------|----|---------------|
| (34) | a) | Unergative V | b) | Object Drop V           | c) | V+Bare N      |
|      |    | *relaugh     |    | John likes to (*re)fold |    | relose touch  |
|      |    | *rework      |    | It pays to (*re)think   |    | restrike back |
|      |    | *resneeze    |    | It's fun to (*re)work   |    | reshake loose |

→ a) don't have an appropriate small clause predicate for *re-* to modify,

→ b) (K&R's proposal) have a null, bare N object, in which case Conflation Economy will rule them out,<sup>15</sup> or

→ c) require the V+N pair to be first sisters for the idiomatic interp, in which case modification of the predicate by *re-* would wreck the idiom.

<sup>15</sup> This is an example how a p.o.e. with a null realization can block confluations, since we're assuming that it's a syntactically present null indefinite object blocking conflation in the (b) cases here. I think it's another reason to prefer the late-insertion view of things, perhaps.

(35) Final thought: Deriving the Canonical Use Constraint (Kiparsky 1999, McIntyre 2000):

→ Perennial question for H&K analysis of denominal roots: Why can you *bank the money* but not *church the money*? Why can you *fertilize the bushes* but not *bush the fertilizer*?

→ Kiparsky's answer (in the context of arguing for a truly lexicalist theory of denominal verbs): Denominal verb construction is subject to the (quintessentially lexical) Canonical Use Constraint: true denominal verbs can only be formed from nominals that are being put to their canonical use.

→ The true generalization: Some f-morphemes' p-sigs can't be copied even into a [+affix] sister's p-sig: D and C particularly. (Plus, of course, v doesn't like more than one free morpheme in the p-sig it gets).

→ Consequently, denominal verbs must be formed from *bare* Ns, not from complex NPs or DPs

→ Bare Ns in English are subject to a Canonical Use Constraint even when *not* incorporated:

- (36) a. go to school vs. go to the school.  
b. watch television vs. watch the television

## 6 Conclusions

→ I hope to have shown that:

- i. There are good reasons to wonder if/hope that head-movement could be 'phonological'
- ii. H&K's conflation mechanism has the right properties to be a general theory of head-movement
- iii. It could give us a handle on how to do certain kinds of productive compounding and affixation in the syntax.

### Some references:

- Brody, Michael. (2000) "Mirror Theory: Syntactic representation in perfect syntax," *Linguistic Inquiry* 31(1), 29-56
- Collins, C. (2002). "Eliminating labels," in Epstein and Seely, eds., *Derivation and explanation in the Minimalist program*, pp. 42-64. Cambridge: Blackwell.
- Hale, K. and S. J. Keyser (2002). *Prolegomenon to a theory of l-syntax*. Cambridge, MIT Press.
- Keyser, S. J. and Roeper, T (1992). "Re: The Abstract Clitic Hypothesis," *Linguistic Inquiry*, 23.1, 89-125
- Roeper, T. and M. E. A. Siegel (1978). "A lexical transformation for verbal compounds." *Linguistic Inquiry* 9(2): 199-260.
- Mahajan, A. "Eliminating Head Movement," The GLOW Newsletter # 44, 2000, 44-45.