

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.¹

→ 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-movement² 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° 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:

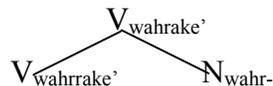
→ Kayne, Mahajan: (massive) remnant XP-movement lines heads up

→ Brody: syntax projected from pre-built morphological structure

¹ 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.

² 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.

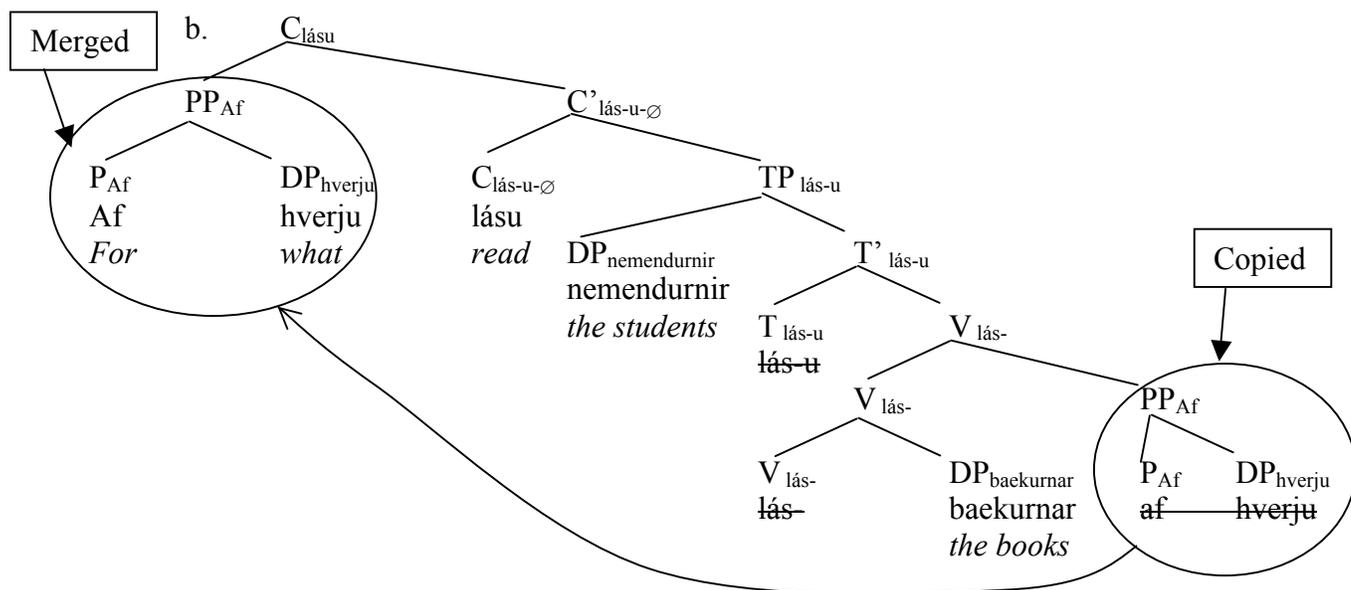
(BPS reminder: Xs undominated by copies of themselves are XPs, Xs dominating no copies of themselves are X^0 s.)

- (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).

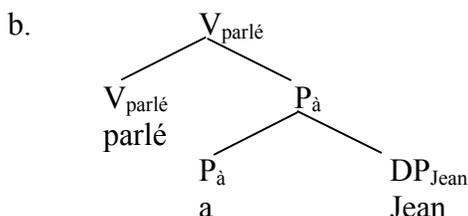
→ I will call heads with ‘defective’ p-sigs [+affix] heads; this is just for convenience. As we’ll see, I’m not suggesting that such heads are necessarily morphophonologically affixal, though in canonical cases they are.⁶

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

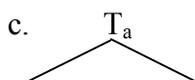
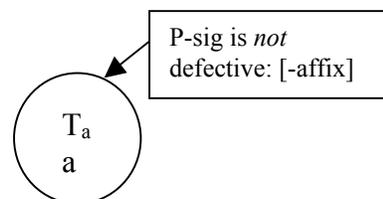
(10) → only the p-sig of the label of its sister may be copied during merge of a [+affix] head. The copied p-sig is a copy of the p-sig of the *head* of the larger constituent. Any p-sigs within that constituent, that are not in its head, will not make it into the label.

(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 T⁷:

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



+

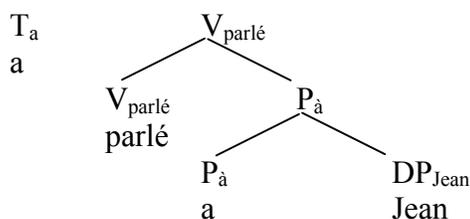


No copying of V into P-sig of T because T not defective. V’s p-sig now ‘locked’ downstairs, not visible in any label dominating it. Head-movement *must* be to an immediately c-commanding head.

[±affix] only one

⁶ 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

⁷ 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?⁸
 - ii. ≠ Is it the case that no key worked?⁹
 - iii. = Is it the case that every key worked?¹⁰

(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

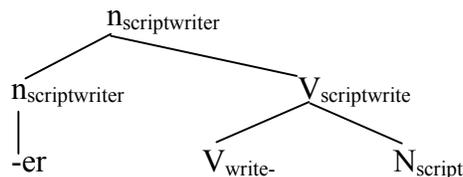
- a. Select *write* with +affix features in the numeration.
- b. Merge *write* and *script*. Copy the p-sig of *script* into *write* during Merge (by Conflation Economy).
- c. Project the head (i.e. label the whole thing with the head's features)
- d. Merge [*scriptwrite*] with *-er* (also selected with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

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

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

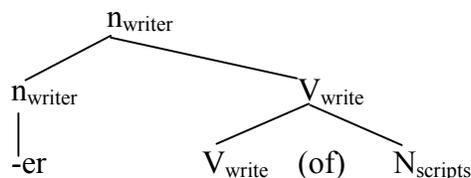
¹⁰ Felicitous answers: "Yes. Every key worked." or "No. For instance, key #2 didn't work."

- 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 Principle¹¹

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...*

¹¹ 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.

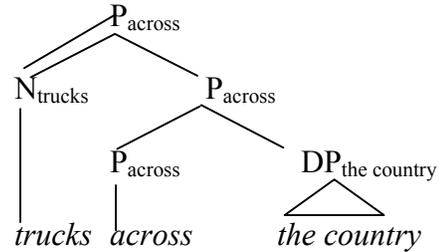
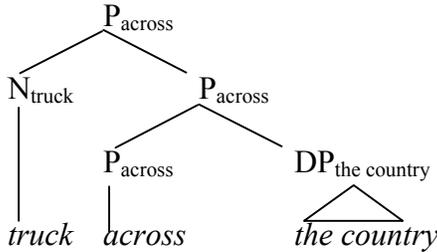
(19) Compare the derivation of **truck-driving across the country* and *driving of trucks across the country*: Let's try to derive them by generating *drive* with a +affix feature in the first case and not in the second:

a. Numerations

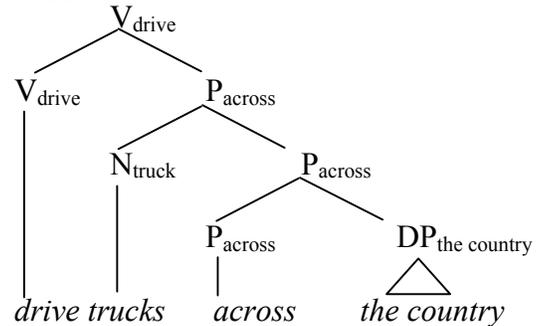
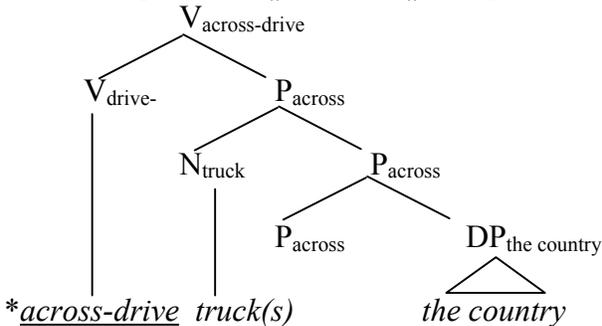
{drive-, [+affix] 'drive'} vs. {drive, [-affix] 'drive'}

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

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

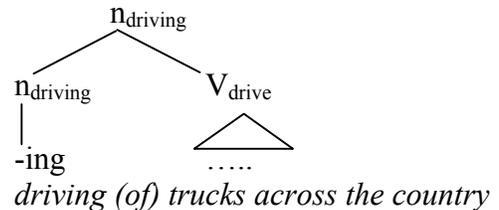
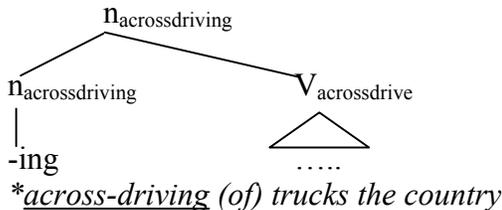


d. Merge: *drive*_{+aff} or *drive*_{-aff} and [*truck across the country*]



NOT *truck-drive across the country*

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



¹² 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:

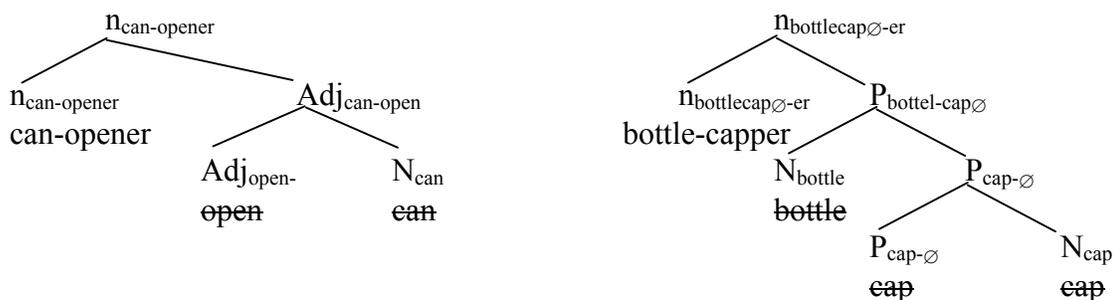
- English doesn't have any appropriate [+affix] form vocabulary item for *across* (it's not in the limited set of English Ps that can compound (e.g. *outrun*)).
- Somehow, case-checking of *the country* is tied to the phonological realization of the P that it is the complement of (not unreasonable since 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.¹³

→ 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.

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

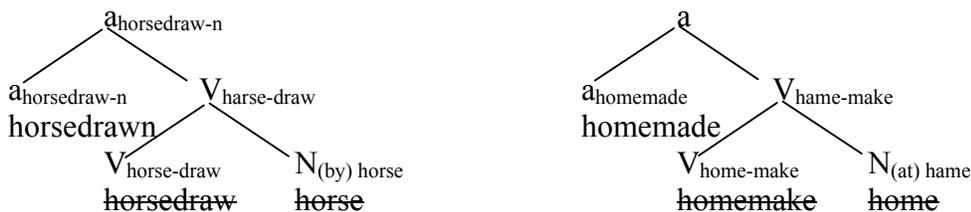
→ If the adverb was incorporated into a verb with an object, without incorporating the object (even a null object), Conflation Economy would be violated.

- (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)

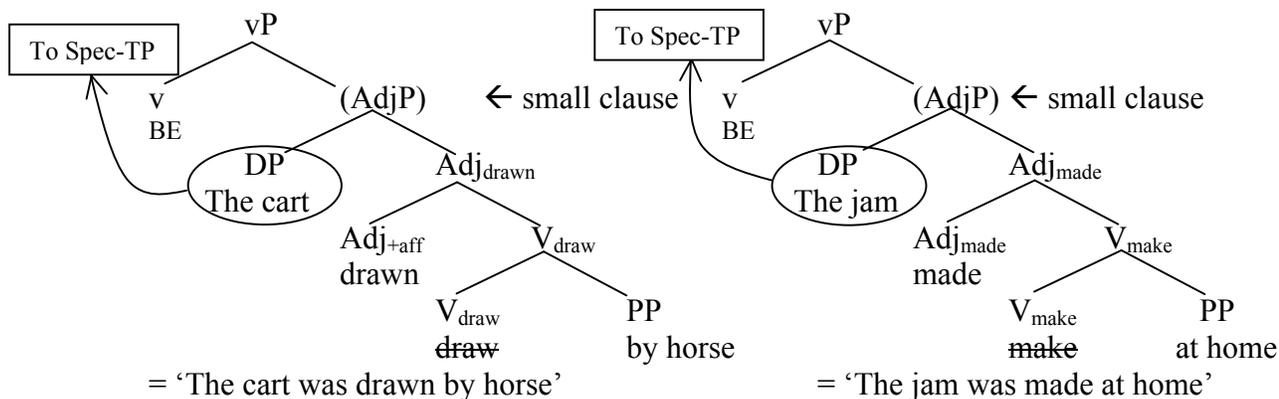
→ leads to a funny conclusion about the structure of adjectival passives: internal argument is 'inner subject' of (resultative) adjectival small clause, not sister of root, since instrumental/locative/comitative synthetic compounds are possible; these, interestingly, either involve P-deletion or else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

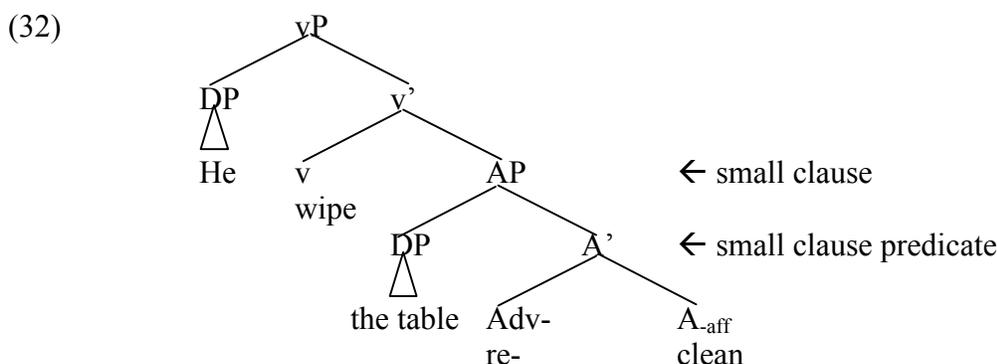
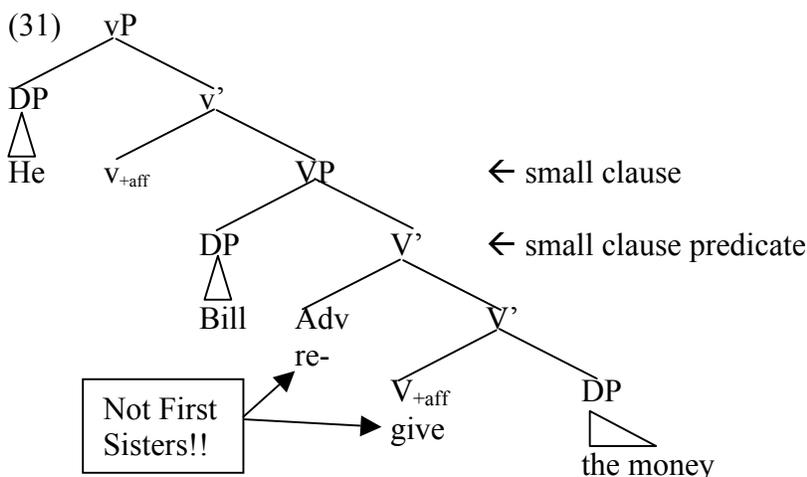
- If we treat *re*-affixation as adverbial modification of the predicate part of a small clause structure, with a [+affix] V predicate, we'll capture all the blocked cases discussed in Keyser and Roeper 1992.
- By the same logic as for adverbial synthetic compounds, above, *re*-affixation should be blocked 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
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- 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.¹⁴

¹⁴ 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,¹⁵ 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.

¹⁵ 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:

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