

**A Minimal(ish) Linking Theory\***  
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➤ **Pre-Minimalism Theta Theory**

1. *Pre-Minimalist θ-theory*: A lexical entry, ready for projecting:

PHON: kiss  
 SYN: V (it'll have accusative case, too)  
 SEM: [Agent, Patient] (or: [1, 2], or [kisser, kissee])  
 + some notion of what 'kiss' means

2. *A Generative Lexicon*: lexical entries are derived from/related to others by redundancy rules, e.g. 'passive', which can have morphological and semantic effects

- a. PHON: kissed  
 SYN: V (no accusative case)  
 SEM: [Patient] (or: [1], or [kissee])  
 + some notion of what 'kissed' means

- b. Another one: an 'agentive nominalization' rule might produce this:

PHON: kisser  
 SYN: N  
 SEM: (indexed -role of the V, say; either  $\left\{ \begin{array}{l} \text{Agent}_i \\ \text{Instrument}_j \end{array} \right\}$  )

+some notion of what 'kisser' means (notice that there are two possibilities, both available in English; both are possible 'causers' of kissing. Examples like 'transmission' are similar, only with different possibilities for the indexed -role: Event<sub>i</sub>, Theme<sub>i</sub>, or Instrument<sub>i</sub>.)

3. *Where the action is*:

- Principles like Baker's UTAH or Tenny's Aspectual Mapping Hypothesis or Levin & Rappoport's linking rules ensure that the appropriate participant in the event ends up in the appropriate place in the syntactic tree, accounting for theta-role/syntactic structure regularities.
- The Theta Criterion ensures that no predicate can end up with the wrong number of arguments, and no argument can end up without an interpretation.

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\* Thanks to Mark Baker for extensive discussion of many of the issues raised here. I would like to dedicate this talk to the memory of Ken Hale, who I was constantly wishing to consult with when constructing it, and on whose theoretical and empirical work this presentation is based. Its shortcomings, of course, are entirely my responsibility.

4. *(Some) concerns:*

- On a Fregean view of syntacticosemantic composition, as noted by Heim and Kratzer 1998, the Theta-Criterion doesn't do much work; not very Minimalist.
- In many languages the lexical redundancy rules introduce a LOT of morphology, which behaves fairly compositionally, i.e. syntactically, most of the time. Not so much morphology is involved in English, but on the other hand there must be a separate lexical entry for each syntactic environment a given root occurs in. Lots of duplication of effort.

2. **A minimal  $\theta$ -theory: none**

Instead: syntax merges (externally and internally) and checks bundles of morphosemantic features, which have phonological and semantic properties that will need to be satisfied for the derivation to converge at PF and LF. Ontology of and licensing restrictions on Roots will account for the verb class effects that were previously accounted for by similar  $\theta$ -grids or LCSs.

FYI: some of the more contentful morphosemantic primitives that we'll meet later:  
(SKIP 5-8, COME BACK TO 'EM LATER)

5. *Little vs*

## a. "Agentive" little v

PHON:  $\pm$ affix

SYN:  $v^1$

SEM: [  $y$   $D_{\text{Things,Events\&States}}$  • [  $x$   $D_{\text{Entities}}$  • [  $e$   $D_{\text{Events}}$  :  $e$  is an event of  $x$  bringing about  $y$  ]

- I'll gloss this  $v$  below variably as MAKE, DO, or CAUSE, depending on whether what's being brought about/brought into existence is a Thing, Event, or a State. (Don't let's be fussy about my funny domains here for the moment; just trying to spell out my intuition that  $v$  means the same thing in all cases; also see Harley 1995; Harley 2001. Gentle guidance from real semanticists is very welcome. What I'm trying to convey is that  $v$  takes functions  $f$  of type  $\langle s,t \rangle$  as complements, and says there's a (possibly caused) event of making  $f$  true. The idea is that a 'true' "Thing" or "Event" is just one that exists, i.e. is instantiated, hence when it's a sister to  $v$  it gets a 'creation' reading.)

## b. "Unaccusative" little v

PHON:  $\pm$ affix

SYN:  $v$

SEM: [  $y$   $D_{\text{Things,Events\&States}}$  • [  $e$   $D_{\text{Events}}$  :  $e$  is an event of  $y$  coming about ]

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<sup>1</sup> This  $v$  will also have an ACC case feature, if Burzio's Generalization is true and there are no AgrPs or TransPs; ditto for the P elements in c. and d. Similarly, the SYN part of the label will need to include any Probe features that these elements are looking for other elements to check, and any features that they have that may be Attracted by other functional categories.

- I'll gloss this v below variably as BECOME or HAPPEN, depending on whether what's coming about is a Thing, Event, or a State (mostly States, although see below).
- There might also be a v that just asserts existence (of a state, event or thing), which turns up as 'be' in many lgs.
- The event variable introduced by these vs will usually be bound by existential quantification

6. *Relations*

a. PHON: ±affix

SYN: P

SEM: [ y x( e): (e is an event of) x at/on/in y]

(maybe x here can sometimes be a 'Path', created by another P, "to"?)

b. PHON: ±affix

SYN: P

SEM: [ y x( e): (e is an event of) x have y]

- I'll gloss these as LOC and HAVE, respectively.

(Re: propositions vs entities as arguments: Propositions can obviously fit in most places in the argument structure; they can be causes (subject of e.g. *surprise*: prop CAUSE STATE), and themes (complement of, e.g. *say* : DO + prop, and *tell* : CAUSE X HAVE prop). Prob. restrictions on their appearance have to do mostly with Case and animacy effects.)

7. *Roots*

PHON:±affix

SYN:

SEM: of {Things &amp; Events}

- It's also possible that there are roots that name adjectival properties, which themselves are one-place predicates.
- Roots are the elements that occur in the Encyclopedia, where idiosyncratic information is attached to them (e.g. what they mean). Could be Fodor's atoms.

8. *States*

- States are essentially small causes. A saturated P is a state (X HAVE Y, X LOC Y). So is an X+ADJ construction, if adjectival properties occur as primitives (in which case I'll need to include 1-place Root functions above). If they aren't primitives, all apparent adjectives are really half-saturated Ps: P+Y confluents. Doesn't matter which is true for current purposes.

9. *The upshot: what happens in the syntax*
- a. Net effect of all the above bits + conceptually necessary Internal and External Merge + Full Interpretation: the syntax generates vP frames by Merging all of the above, embedded in the TP&CP complex and checking the uninterpretable features that need it (Case features on DPs, EPP & Agr, features on functional projections, etc.) Chomsky 2001: External merge → 'argument' merge (broadly construed); Internal merge → everything else.
  - b. These frames will carry some very generalized meanings, along the lines of X CAUSE Y HAVE X, or X DO ACTIVITY, or BECOME X LOC Y (cf. Construction Grammar, Goldberg 1995).
  - c. “-role” is the result of the order in which (place) a DP has been merged with a particular morphosemantic primitive (An "Agent" is the last DP to be externally merged with CAUSE, for example).
  - d. Argument structure alternations will be syntactic in nature, the result of merging extra or different *vs* at various points

*What's coming up:*

- Hale and Keyser's general program, how it allows elimination of *-theory*
- What conflation really is, the mysterious [ $\pm$ affix] feature, economy principles governing conflation, Eng. nominalization with object incorporation, Persian specific objects
- Semanticizing the I-syntax frames: what it buys
- Kill isn't 'cause to die', it's 'make dead', in English and Japanese

### 3 Hale and Keyser

10. *The original explanandum: Why so few theta-roles?*

- H&K originally started out asking why there are only 6 or 7 good candidates for real theta-roles. Why not as many theta-roles as, say, 50 or 60? Even 10 or 12 would be more like the number of case-markers or prepositions or classificatory verb stems. Further, many of the well-motivated extant 6 or 7 seem to come in roughly animate/inanimate pairs: Agent/Causer, Patient/Theme, Experiencer/Goal/Location, plus perhaps Incremental Theme. As argued in Baker 1997, it really looks like theories with three Dowty-like ‘macroroles’ are adequate for most *syntactic* purposes. To the extent that finer-grained divisions or LCS-like semantic structures are motivated, they are motivated for semantic, not syntactic, purposes.

11. *An interesting data set: Jemez, many other lgs.* (Hale and Keyser 1993)

Basque

a. sæ'-a  
work-do  
“work”

b. zæi'-a  
song-do  
“sing”

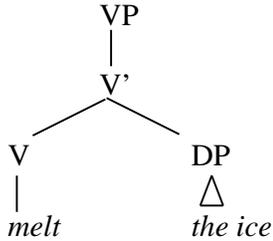
Jemez

c. se-ʔa  
word-do  
“speak”

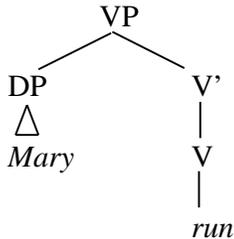
12. Plus: zero-derived nature of unergatives in English:  
*to laugh, a laugh; to walk, a walk; to run, a run; to work, work; to swim, a swim; to dance, a dance; to whistle, a whistle; to sneeze, a sneeze; to scream, a scream; to shiver, a shiver...*

13. Plus: problem of intransitive D-structures

a. Unaccusatives: single argument merged as complement to V



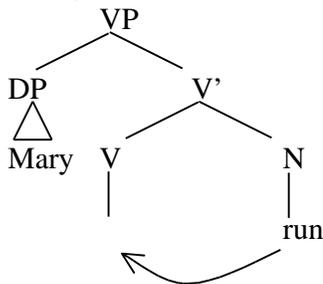
b. Unergatives: single argument merged as spec of VP:



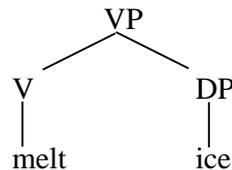
- Without the convention of bar-notation, these would be indistinguishable; worse, before H&K got to it the Unaccusative Hypothesis was instantiated as just a stipulation in the grids of these verbs: *run* had a single underlined -role, while *melt* had a single non-underlined -role

14. *A powerful idea:* If, underlyingly, unergative verbs in English, as well as those in Basque and Jemez, are transitive structures with incorporated bare N objects, all of the above questions are resolved: The English N-V correlation in unergatives would be explained, a single structure would account for English, Basque and Jemez, and there would be a substantial structural distinction between the two classes of intransitive verbs (thereby making the later development of BPS possible):

a. *Unergatives*



b. *Unaccusatives*



c. Same structure as a. for verbs of birthing: *calve, pup, whelp, foal, spawn*

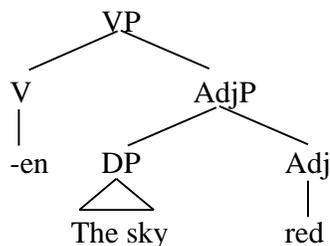
15. *Another, similar correlation:* adjectives and inchoative verbs

➤ In more languages than not, it seems, many inchoative verbs meaning something like ‘become ADJ’ are related to or derived from the adjectival form. Some familiar English examples are below, as are some examples from Hiaki (Yaqui), an Uto-Aztecan language of Sonora, Mexico.

<u>Verb</u>	<u>Adj</u>	<u>Verb</u>	<u>Adj</u>
to redden	red	sikisi	siki
to fatten	fat	awia	awi
to soften	soft	bwalkote	bwalko
to sharpen	sharp...	bwawite	bwawi
warm	warm	sukawe	suka
....			

16. *A slightly modified version* of H&K’s adjectival structure:

If inchoative verbs based on adjectives are derived by incorporating the underlying adjective into a verbalizing head, again an explanation can be found for their morphological relatedness, as well as the additional morphology that shows up on the verbal form. Essentially, they proposed that deadjectival verbs are conflated versions of unaccusative resultative constructions:



equivalent to *The sky turned red(er)* or *The sky got/became red(er)*

(The modification I have introduced here is just to turn H&K's complement clause from a mediated predication (with a lower V equivalent to something like Bowers 1993's PredP) to a small clause; for the moment I intend this as innocent, it makes exposition easier).

17. *A syntactic notion of "θ-role"*

➤ At this point, we can see the beginnings of a way to get rid of  $\theta$ -roles. In 14b and 16, there is no specifier of VP, and there is no Agent in the structure — and in both cases, it can be freely added: *The sun melted the ice*, *The sun reddened her cheeks*, to create a causative version. In 14a, on the other hand, there is necessarily a specifier of VP, which receives an Agentive interpretation.

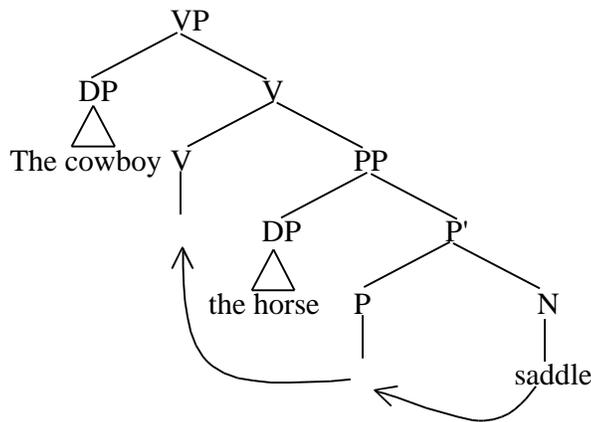
- Hypothesis: being an Agent simply means being in the specifier of VP, no more, no less. In the same way that identifying tense and agreement morphemes with functional syntactic heads renders the Mirror Principle unnecessary as a principle of the grammar (it becomes a descriptive statement that is explained by the syntactic process of head-to-head movement), identifying *-roles* biuniquely with syntactic position renders UTAH unnecessary (it also becomes a descriptive statement).

18. *A missing category of V complement*

In the structures above, we have seen what happens when an N is the complement of V (paraphrase: 'X DO an N'), as well as what happens when an adjectival predication is the complement of V without a spec (paraphrase: 'X BECOME Adj'). Are there cases where a PP is the complement of V? (Likely paraphrase: 'X CAUSE Y P Z' = 'x put y on z', maybe?)

Locatum: bandage, bar, bell, blindfold, bread, butter, clothe, curtain, dress, fund, gas, grease, harness, hook, house, ink, oil, paint, pepper, powder, saddle, salt, seed, shoe, spice, water, word.

19. *Locatum* cases:           The cowboy saddled the horse = fit the horse with a saddle  
   The cowboy buttered the bread = smear the bread with butter



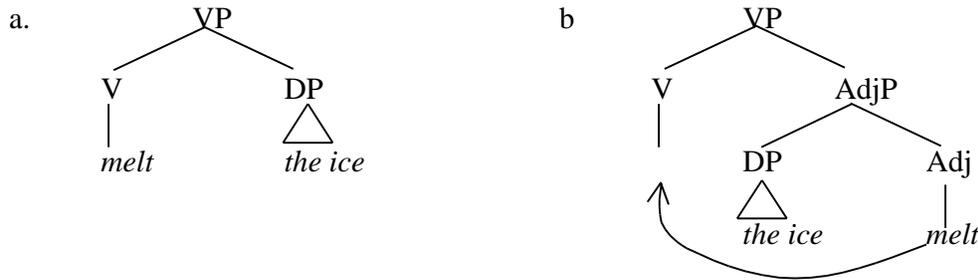
20. *Themes as Inner Subjects, Goals as "Inner Objects"*

If "Agents" are spec-VP, what are Themes? In all the cases with *overt* direct objects above, the direct object undergoes a change of state or location, a canonical Theme quality. In both 16 and 19, the direct object is the 'inner subject': the subject of an embedded predication. H&K proposed that Theme=Inner Subject.

Goals/Locations/Locatum, then, will be "Inner Objects": complements to P embedded under VP.

21. *A conceptually necessary alteration*

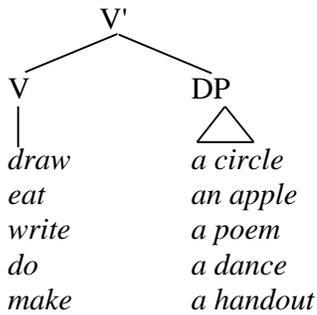
In order to have a consistent purely *structural* definition of Theme, 14b has to be fixed. 14b is repeated below:



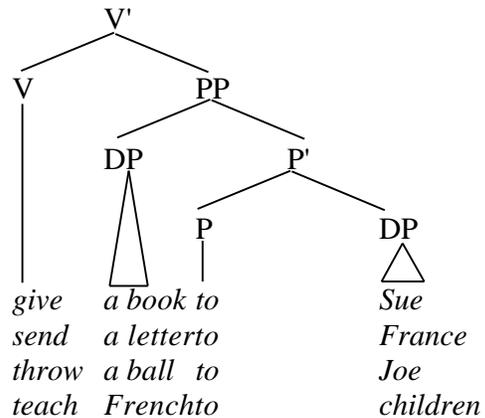
This makes *melt the ice* consistent with other unaccusative change-of-state verbs, at the cost of assuming a gap in the morphology: there's no underived adjectival form of *melt*. Now all Themes truly are Inner Subjects (because subject of a predication in the complement of V).

22. *Verb phrases with the same structures as above (but without Conflation of an argument):*

a. Verbs of creation/consumption  
= Unergative verbs:

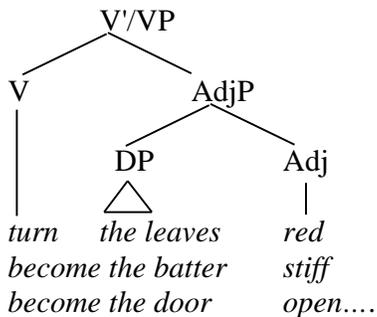


c. Verbs of transfer  
= Location/Locatum verbs:



N.B.: the unincorporated 'unergative' structures above contain the only direct objects in H&K's framework that are not 'inner subjects' These are the true Incremental Themes

b. Verbs of change of state  
= Unaccusative verbs



- From now on, I will notate  $V$  as  $v$ , and usually notate downstairs AdjPs and PPs as SCs (small clauses). Nonbranching elements downstairs will continue to be N.

Some positional equivalents of  $\theta$ -roles, more or less:

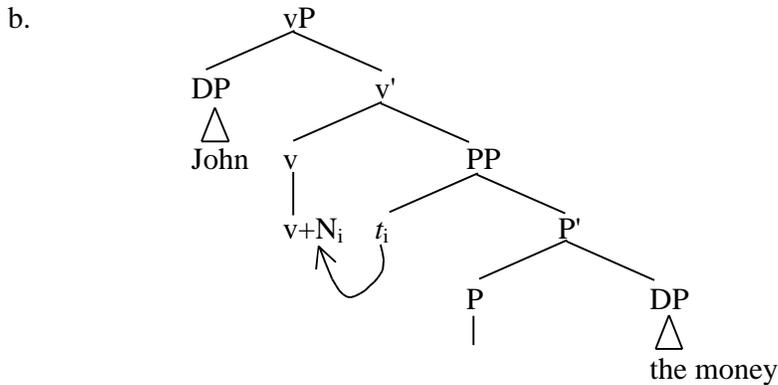
$\theta$ -role	Position of DP
Agent	Spec-vP
Theme	Spec-SC ("Inner Subject")
Goal	Comp-SC
Incremental Theme	Comp-vP

- A note: lack of productivity of agent-adding/deletion has always been a fundamental question in this type of framework. It occurs to me that the non-agentive counterparts to unergative verbs like *calve* or *dance* are the weather verbs: *it rained*, *it snowed*.; they simply represent incorporation of a bare N head into the non-agentive  $v$  BECOME.
- Besides permitting BPS to forge ahead unobstructed and eliminating  $\theta$ -theory as an independent component of the grammar, H&K's approach allows a transparent account of certain kinds of morphosyntactic phenomena, some of which we've seen above and some of which we'll see later (e.g. morphological causatives), and as we'll see in section 5, can, with caution, be exploited to explain a lot of semantic effects.
- But first, a technical excursus: why *l-syntax*? and what's the nature of conflation?

#### 4 Conflation

##### 23. *Why is it 'syntax'?*

- Of course, *l-syntax* *must* be syntactic if the explanation of the properties of unergative verbs above is correct: the covertly transitive nature of unergative verbs is precisely what ensures that their subject is an Agent.
  - a. H&K originally had another reason to think that syntactic operations were involved: conflation seemed a lot like head-to-head movement, as constrained by Travis's HMC, boiled down by Baker to the ECP. They exploited this idea to explain the pooriness of *\*John churched the money* to mean 'John gave the church the money', which, they thought, would have had the structure in b (again, I've altered their structure somewhat, removing the inner "pred" V; see Hale and Keyser 1993:63 for details):



24. 2 problems:

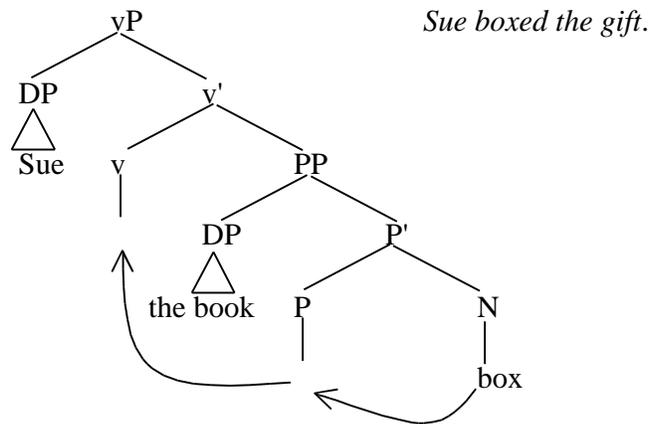
a. As Uriagereka 20?? points out, in fact movement like that illustrated in (23b) wouldn't leave an ungoverned trace, under standard assumptions about government. In particular, (23b) is essentially the configuration in which ECM used to be supposed to occur, under government, in cases like *John made Bill go* and similar. (Alternatively, under an m-command def. of government, Spec-PP could incorporate into P and thence to v; either way the trace is governed and the HMC is respected).

b. There *are* verbs that seem to be exactly like *\*churched the money* — location verbs: *bag, bank, bottle, box, cage, can, corral, crate, floor (opponent), garage, jail, kennel, package, pasture, pen, photograph, pocket, pot, shelve, ship (the oars), shoulder, tree*

25. H&K's response: They still resist the idea that a conflation like 23b. is possible after all, and resist generating the Location verbs in 23b that way.

- Rather, they claim that conflation IS still limited to the direct complement position, as they originally proposed, but that this restriction does not follow from the ECP.
- Location verbs have the *same* structure as locatum verbs, but a different paraphrase is appropriate: *fit the horse with a sadde* (locatum) but *put the computer in a box* (location).

The structure for the locatum, verbs, then, is the same as for location verbs, below:



## 26. Question: why insist?

- Incorporation, as characterized by Baker 1988, can *definitely* occur from the 'inner subject' position (as well as from the 'true' direct object position, as in 22a):

- |      |  |                              |
|------|--|------------------------------|
| i.   | Hrao- <u>nuhs</u> -rakv ne [sawatis t]<br>3m- <u>house</u> -white NE John<br>"John's house is white" | Mohawk: Baker 1988:65        |
| ii.  | Ka- <u>hsahe</u> ?t-ahi-hw-i<br>3N- <u>bean</u> -spill-CAUS-ASP<br>"The beans spilled."              | Onondaga: Baker 1988:87      |
| iii. | We- <u>fan</u> -lur-mi<br>C.NEG- <u>snow</u> -fall-PRES.NEG<br>"Snow isn't falling"                  | Southern Tiwa: Baker 1988:88 |
| iv.  | simiyeeni-sgu-m- <u>hoon</u><br>smoke-APASS-ADJ- <u>fish</u><br>'to smoke fish'                      | Nisgha: Baker 1988:138       |

27. The same is true of English object incorporation in nominalizations:  
*can-opener, weed-thinning, mind-enhancing, space-heater, house-cleaning, heartbreaker, pipe bender, etc. etc.*

H&K end up concluding (in Chapt. 7 draft of their 2001 book ms.) that incorporation and conflation are two distinct processes. Incorporation is syntactic and subject to the ECP, conflation is something else — something more lexical — and subject to other restrictions.

- I will argue here that they are wrong to distinguish the two. H&K propose a Minimalist conflation mechanism, which they end up discarding, I think way too quickly. Using their conflation mechanism for incorporation, and indeed, head-to-head movement quite generally, will allow a Minimalist account of these two phenomena, which are otherwise mysterious.
- Their mechanism, I will argue, *does* block incorporation from the inner subject position in most circumstances — and this is a desirable result, 26 and 27 notwithstanding.

28. In Chapter 7 of their 2001 book manuscript, H&K first propose a new conflation mechanism, but then end up concluding that conflation doesn't really exist after all. Let's have a look at their initial thoughts on the mechanism of conflation:

We would like to take seriously the idea that Conflation is a concomitant of Merge, the operation which is fundamental in defining the projection of syntax from the lexicon (Chomsky, 1995). [...] To say that Conflation is a

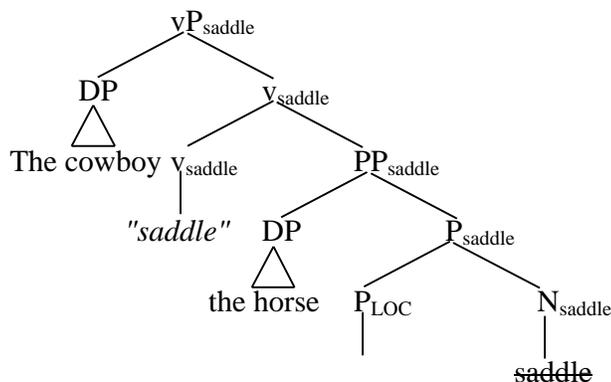
concomitant of Merge is to say that it is in some intimate manner bound up with Merge, that it is a part of Merge in some sense.

- Associating conflation with Merge gets their desired result, which is that only sisters can conflate. Specs of the lower SC are not sisters of  $v$ , and so cannot conflate with it.

29. *Key assumptions for H&K 2001 conflation:*

- The label of any constituent has ALL the features of the head, including some representation of a phonological matrix, which H&K call the 'p-sig' of the head.
- Conflation occurs when a constituent is merged with a sister head whose p-sig is 'defective'. The p-sig of is merged into the defective p-sig of .
- For Economy reasons, the copied p-sig is only pronounced once, in its uppermost position, as the  $v$  *saddle*.

30. Consider what will happen in the derivation of *The cowboy saddled the horse*.



- saddle* merges with  $P_{LOC}$ , whose p-sig is defective.  $P_{LOC}$  gets the p-sig of *saddle*.
- $P_{LOC}$  projects, as the head of the constituent. The label of the larger constituent, then although syntactically a PP, has the p-sig 'saddle'.
- The PP constituent labelled P 'saddle' merges with a separately assembled DP constituent, [DP *the horse*], whose p-sig is not 'defective', so no p-sig copying operation occurs.  $P_{LOC}$  again projects, so the entire constituent [PP *the horse* [P'  $P_{LOC}$  [ *saddle*]]] has the p-sig 'saddle' in its label.
- The entire PP constituent labelled P 'saddle' merges with  $v$ , whose p-sig is also defective, by hypothesis. The p-sig of  $v$ 's sister, *saddle*, is copied to the p-sig of  $v$ .

- e. The projection of v+PP is merged with [<sub>DP</sub> *the cowboy*]. Again, no p-sig copying occurs because the p-sig of *the cowboy* is not defective.
- I propose to represent the notion of a 'defective' p-sig by a feature  $\pm$  affix, freely generated on any head.
  - A +affix feature will trigger the p-sig copying operation from its sister's label at Merge.
  - If appropriately affixal Vocabulary Items are available at Late Insertion to realize the heads that have been generated with a +affix feature, the derivation will converge. Otherwise those heads will not receive a PF interpretation, and the derivation will crash.
  - The inventory of Vocabulary Items in different languages will differ, resulting in the appearance of different conflation structures.

**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.*

31. *English incorporation in nominalizations*

- It's well-known that English has a very productive object-incorporation process in *-er* and *-ing* nominalizations of verbs ('verbal 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*

32. Nominalizations, not gerunds

- Just in case it seems like the examples in 31b might be gerunds rather than nominalizations, try the adjectival/adverbial modification test developed by Lees 1970. Gerunds can be adverbially modified (*Thoroughly mixing the flour and eggs is a bad idea*), while nominalizations must be adjectivally modified (*Thorough mixing of the flour and eggs can cause problems; \*Thoroughly mixing of the flour and eggs can cause problems*). All the *-ing* forms in 31b must be adjectivally modified:

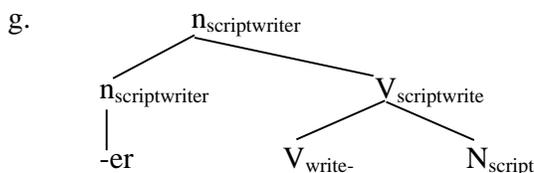
*good housekeeping, \*well housekeeping, fast truck-driving, \*quickly truck-driving, skillful scriptwriting, \*skillfully scriptwriting...*

- This is the case with nonce compounds of this type as well: *quick letter-typing, \*quickly letter-typing, thorough typo-checking, \*thoroughly typo-checking, etc.*
- The other clue, of course, is that they're (mostly) not wellformed verbs: *\*John fact-found, \*Mary truck-drove, \*Bill page-turned*. (Some have been back-formed, of course, so *to*

*housekeep* doesn't sound so bad to me, nor does *to scriptwrite* or *to mind-read*.) The crucial thing for this argument is that nonce incorporations of this type should all be nouns.

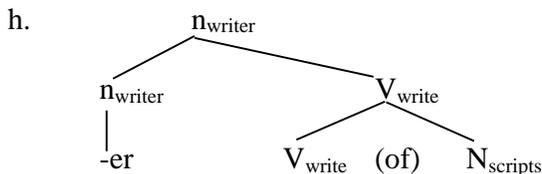
33. *Deriving these incorporations through conflation* (I'm abstracting away from Late Insertion here for ease of exposition; I can explain how it really works with abstract heads and Vocabulary Items later, if you want):

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

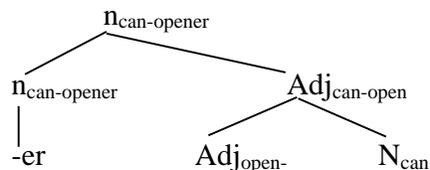


34. Contrast that with a derivation where *write* starts with a -affix feature:

- 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*.



35. *This will work the same with adjectival roots — no problem that it's an 'inner subject':*



36. *The payoff*: deriving Selkirk's 1982:37 First Order Projection Condition, Roeper and Siegel's 1978:208 First Sister Principle

- By Conflation Economy, +affix heads *must* get a p-sig from their sister at Merge

- This means that *no conflation can 'wait'*. If you want to incorporate an 'inner subject', *you must also incorporate the whole predicate that is its complement*. That is, in a PP or adjectival small clause, you can't incorporate the inner subject without the 'inner object'.
- a. Consider the following: *drug-pusher, errand-runner, truck-driving, horse-jumping*
- b. These are all formed from verbs which have good 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 constructions: *washing dishes clean & dishwasher* are fine but *\*dishwashing clean; painting houses red & house-painting* but *\*housepainting red...*
- e. However, if the object is *not* incorporated, modification 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 can't incorporate by themselves. Here's why:

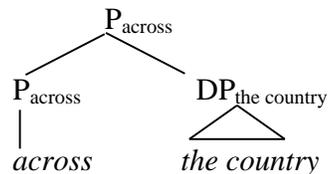
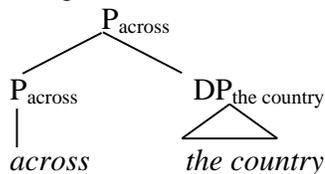
37. Compare the derivation of *\*truck-driving across the country* and *driving of trucks across the country*: Let's try to derive them by generating *drive* with a +affix feature in the first case and not in the second:

a. Numerations

[+affix] 'drive'
[-affix] 'drive'

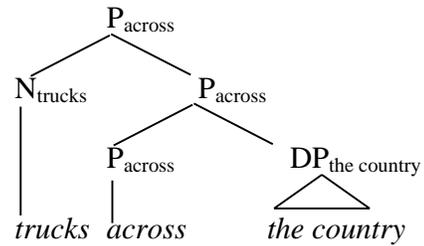
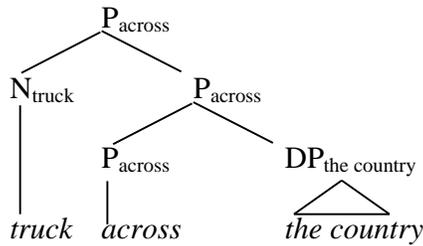
{drive-, [DP the country], across, truck, -ing} vs. {drive, trucks, across, [DP the country], -ing}

b. Merge: *across* and [*the country*]

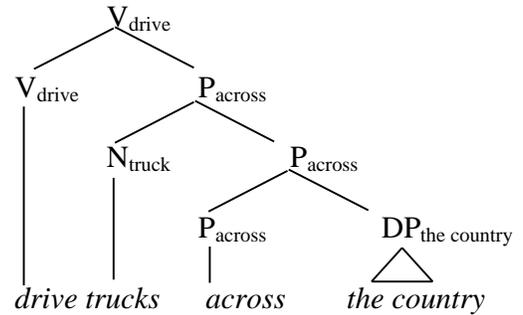
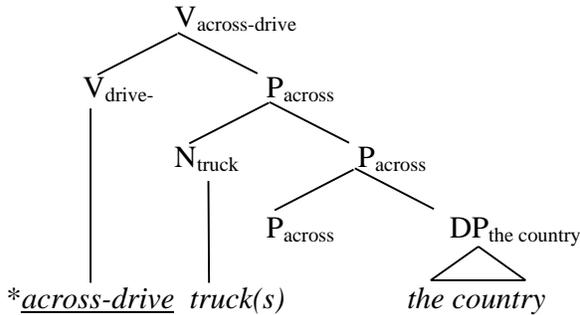


c. Merge: *truck* and [*across the country*]

N.B. the P is the head of the result!!

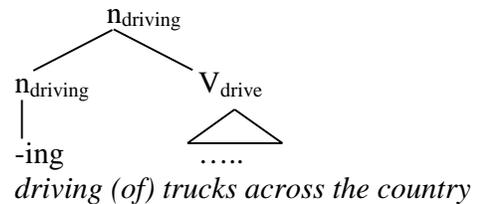
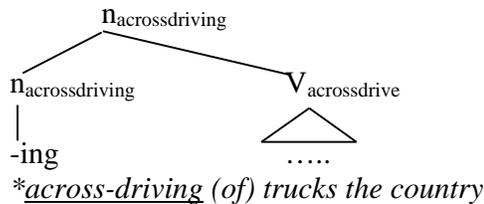


d. Merge: *drive-* or *drive* and [*truck across the country*]



NOT *truck-drive across the country*

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



38. What's wrong with *acrossdriving* of trucks the country?

2 possibilities:

- a) English doesn't have any appropriate conjunct-form vocabulary item for *across*, so the derivation fails when Late Insertion fails to realize that node.
- b) 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).

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

40. *More payoff*

Head-to-head movement is essentially impossible to treat in bare-phrase-structure terms, which has led Chomsky to assert, largely without any independent support, that it must be a PF phenomenon (for an empirical argument in favor, though, see Boeckx and Stjepanovic 2001).

- H&K's conflation mechanism, tied to Merge, is exactly what is needed to do head-to-head movement as a "PF-y" phenomenon in Minimalism
- Notice that it will ensure the Head Movement Constraint is respected: only the p-sigs of the label may be copied during merge of a [+affix] head; the label is crucially a copy 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.

Example: if a [-affix] head like an auxiliary Merged in between a verb root and Tense in a normally verb-raising language — i.e. in a language where Tense only has [+affix] realizations — the result will be that the verb root's P-sig does not get copied into the head of the phrase projected by the auxiliary. When that auxiliary-projected phrase merges with Tense, only the p-sig of the auxiliary will be copied into the p-sig of Tense. If no [-affix] element is Merged between the verb root and Tense, however, the verb's p-sig will make it all the way up the tree to be copied into the p-sig of Tense, giving the effect of verb-raising. No adjunction is necessary, and no head/phrase conundrum is created, since all that is at issue is PF well-formedness.<sup>2</sup>

41. *Questions for further research*

Why is this process not productive in English verbal constructions, as well as nominalized constructions? Hypothesis: something to do with case-checking. No *v* in nominalizations, as argued in Harley and Noyer 1998; Harley and Noyer 2000. If agentive *v* in English must contain a [+ACC] feature, à la Burzio's generalization, then if the verb is generated as +affix and the object's p-sig is copied, no phrase will be available to check the case-feature of the verb (again assuming that case-checking has to do with licensing of phonological features). Problem: unergative verbs have an agentive little *v*, by hypothesis. What happens to its [+ACC] feature? Other questions: cognate objects, modifier stranding, cf. 26i above, Goal incorporation., KP, DP and N-movement, the vocabularies of N-classifier languages vs. mass/count languages and NumP, LF-incorporation and non-specific readings, why is a clause usually a boundary for head-to-head movement... and tons more.

## 5 Semantic effects of the H&K analysis

- H&K are very careful to avoid providing a specific 'gloss' of their external-argument-introducing V head. They paraphrase it variously as *do* (*a dance*), *put* (*the computer in a box*), *get*, *fit* (*the horse with a saddle*), and *have* (*a calf*), as well as others, but they clearly intend it to be the same element in all cases.

<sup>2</sup> Many discussions of the HMC and triggers for head-movement have made an appeal to something like a [ $\pm$ affix] feature (see, e.g., Carnie 2000) as a trigger for movement. As far as I know, though, H&K's proposal is the only one that does not involve any actual *movement* at all, making use of the P-label-merging device outlined here.

- Especially in the case of the causativized deadjectival verbs, like *The wind opened the door*, the temptation to understand the *v* as making a contribution like CAUS is irresistible.

42. Nice semantic result the first:

- von Stechow 1995 resurrects a Generative Semantics analysis of variable scope for adverbials like *again*:
  - a. John opened the door again
    - i. [[<sub>SC</sub> the door open] again] → the door was open before, and now it's open again
    - ii. [[<sub>v</sub> CAUS [<sub>SC</sub> the door open]] again] → John opened the door before, and he did it again
  - b. The door opened again.
    - i. [[<sub>SC</sub> the door open] again] → the door was open before, and now it's open again
    - ii. [[<sub>v</sub> BECOME [<sub>SC</sub> the door open]] again] → the door has opened before, and has done so again.

(N.B. In (a, b: i), there's no implication that the door has undergone the change of state before — it might have been built open, e.g.)

43. Nice semantic result the second:

- Kratzer 1996 points out that if external, agent arguments are in fact arguments of a separate "Voice" functional projection (equivalent to *vP*, or to a neo-Davidsonian predicate *Agent(x, e)*), then Marantz 1984's generalization about the restrictions on idiomatic composition can be explained.
- Marantz noted that while verb-object idioms are ubiquitous in language (43a), verb-agent idioms (that exclude the subject) are apparently nonexistent.

- |    |                     |   |   |
|----|---------------------|---|---|
| a. | kill a bug          | = | cause the bug to croak                      |
|    | kill a conversation | = | cause the conversation to end               |
|    | kill an evening     | = | while away the time span of the evening     |
|    | kill a bottle       | = | empty the bottle                            |
|    | kill an audience    | = | entertain the audience to an extreme degree |

- Kratzer notes that if the subject and the object both compose directly with the verb *kill*, there is no principled reason why there shouldn't be as many subject-verb idioms as there are verb-object ones. If, however, Agents compose with a separate light verb and are then conjoined with the lower predicate via a process she calls Event Identification (essentially, conjunction of the functions and coindexing of the event variables), the necessity of compositionality of Agent arguments is expected. Event Identification combines the denotation of *v* (type  $\langle e, \langle s, t \rangle \rangle^3$ ) with the denotation of the SC, (type  $\langle s, t \rangle$ ), to produce a function of type  $\langle e, \langle s, t \rangle \rangle$ . This operation can be seen in b. below (Kratzer's ex. 19):

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<sup>3</sup> e = individuals, s = events, t = truth values

b.	(Voice)	(VP)	→	Voice'
	f	g		h
	<e,<s,t>>	<s,t>		<e,<s,t>>
	x <sub>e</sub> e <sub>s</sub> Agent(x)(e)	e <sub>s</sub> wash(the clothes)(e)		x <sub>e</sub> e <sub>s</sub> [Agent(x)(e)&wash(the clothes)(e)]

➤ It's important to note that Kratzer's treatment of Marantz's generalization only works if the object of the verb is truly an argument of the verb, composing with it directly. A really Neo-Davidsonian analysis where there is, e.g., a function Patient(x)(e) and a separate Manner function that introduces the contribution of the verb root won't work, or rather, will make the wrong prediction.\

44. Nice semantic result the third:

- In Harley 2001, I argued that assuming an underlyingly transitive structure for unergatives, and an underlyingly ditransitive structure for location/locatum verbs, makes the prediction that the telicity of the verb event should be affected by the boundedness of the incorporated argument in the same way that the telicity of the paraphrase is affected by the boundedness of the unincorporated argument, as they both may be 'Measuring-Out' arguments in the sense of Tenny 1992). This seems to be true:

#### *Unergative verbs of creation*

[+b]	a.	The mare foaled <i>or</i> The mare had a foal	#for 2 hours/in 2 hours
	b.	The cow calved <i>or</i> The cow had a calf	#for 2 hours/in 2 hours.
[-b]	c.	The athlete sweated <i>or</i> The athlete dripped sweat	for 2 hours/#in 2 minutes
	d.	The wound bled <i>or</i> The wound oozed blood	for 2 minutes/#in 2 minutes
	e.	The salmon spawned <i>or</i> The salmon made spawn	for 2 minutes/in 2 minutes

#### *Location/Locatum verbs*

[+b]	f.	Sue boxed the computer <i>or</i> put the computer in a box	#for/in 2 minutes
	g.	Sue saddled the horse <i>or</i> fit the horse with a saddle	#for/in 2 minutes
[-b]	h.	Sue watered the garden <i>or</i> sprayed the garden with water	for/in 2 minutes
	i.	Sue greased the chain <i>or</i> smeared the chain with grease	for/in 2 minutes

- Without an argument-structural source for *saddle* or *blood*, the fact that the paraphrase and the denominal verb have the same aktionsart properties would just be a coincidence

### **6 Why it's not *cause the door to become open*, or Three non-reasons for not analysing *kill* as *make dead***

45. *Paraphrasing v*

- Although it should be clear by now that the particular lexical item that ultimately realizes *v* is seldom, if ever, a 'pure' expression of *v*'s content, I have narrowed down my glosses for it to *cause*, *make* and *do* — where *make* is intended to express *v* in its 'creative' aspect
- *Make* in English, though, can also take a clausal complement, as in *Sue made Bill cry*.

- There's reason to believe, in fact, that '*make STATE*' is a better gloss of, e.g., *kill* or *open* than '*make BECOME STATE*' or '*cause TO BECOME STATE*'

46. *Generative Semantics*: 'kill' = 'cause to die' (or even 'cause to become not alive')

- One particularly famous *Generative Semantics* analysis was to treat 'kill' as a conflation of a 'cause' predicate and the unaccusative 'die' predicate:

DS: CAUSE Bill TO DIE → SS: kill Bill

47. Fodor's atomicity and the "plus-X" problem:

- For essentially independent reasons, Fodor 1970 wanted (and still wants) to believe that monomorphemic lexical items must represent monomorphemic concepts, i.e. there's no decomposition of concepts. He had three empirical reasons to object to analyses like the one in 46. Since whatever CAUSE TO DIE is, it's not *cause to die*, Fodor argued, the generative semanticists suffered from an irreducible 'plus-X' problem: *kill* is *cause to die* plus X.
- CAUSE TO DIE (i.e. *kill*) is not *cause to die* for the following three reasons:
  - a. Although elliptical reference to the embedded event is ok in (i) and (ii), it's not in (iii):
    - i. Floyd melted the glass<sub>i</sub>, and I was surprised that it<sub>i</sub> would (do so).
    - ii. John caused Mary<sub>i</sub> to die, and I was upset that she<sub>i</sub> did (so).
    - iii. \*John killed Mary<sub>i</sub> and I was upset that she<sub>i</sub> did (so)
  - b. Although distinct temporal frames are possible in (i), they are not in (ii):
    - i. Mary caused John to die on Saturday by hitting him with her car on Friday
    - ii. \*Mary killed John on Saturday by hitting him with her car on Friday
  - c. Although the embedded subject of *die* is a possible controller for the by-phrase in (i), the object of *kill* is not a possible controller in (ii), despite the infelicity of the scenario on any indexing of *his*:
    - i. John<sub>i</sub> caused Bill<sub>j</sub> to die by PRO<sub>i,j</sub> swallowing his<sub>i,j</sub> tongue.
    - ii. John<sub>i</sub> killed Bill<sub>j</sub> by PRO<sub>i,\*j</sub> swallowing his<sub>i,j</sub> tongue.
- 48. Consider Fodor's tests applied to *make* with a *stative* complement, however (substitute *sick* for *dead* if it helps to make the sentences more natural; the judgements are the same):

- a. \*John made Mary dead, and I was upset that she did (so).  
 b. \*John made Mary dead on Saturday by hitting her with his car on Friday.  
 c. \*John made Bill<sub>i</sub> dead by PRO<sub>i</sub> swallowing his tongue.
49. As far as these tests go, then, there is no reason not to analyze ‘kill x’ as ‘make x dead’. Note that as soon as the unaccusative verb *die* is inserted, the problems re-emerge, so the source of the problem is the eventiveness of *die*, not the choice between *cause* or *make*:
- a. John made Mary die, and I was upset that she did (so).  
 b. John made Mary die on Saturday by hitting her with his car on Friday.  
 c. John made Bill<sub>i</sub> die by PRO<sub>i</sub> swallowing his tongue.
50. All of these facts ensue quite naturally if we assume that *die* contains its own v projection (BECOME), which contributes the change-of-state part of the event structure of *die*. *Dead*, on the other hand, does not. *Make die* is two events, *make dead* is one.
- a. *do (so)* is epenthetic for v, not the SC predicate.  
 b. since *die* is a separate event, it may be separately temporally modified.  
 c. Hypothesis: *by*-phrases adjoin to v. In *make dead* there is no lower v, and hence PRO may only be controlled by the subject of the upper v; in *make die* the alternative adjunction site and control possibilities are available.
51. We can verify this result in a language with morphologically complex lexical causatives like Japanese (the language, in fact, that was the original motivation for the generative semantics treatment)<sup>4</sup>:
- In a plain transitive clause, only the subject may be interpreted as the doer of the TE-phrase (a) while in a syntactic causative, either the matrix or embedded subject may be the doer (b). We can be sure that the (b) case is a syntactic causative because the embedded verb is agentive; the difference between (a) and (b) is not just a transitivity effect, because in a syntactic causative of an agentive intransitive verb (an unergative verb), both matrix and embedded subjects may still be the doer of the DE-phrase (c):
- a. Taroo-wa koron-de Hanako-o koros-ita  
 Taro-TOP fall-TE Hanako-ACC kill-PAST  
 "Taro killed Hanako by falling"  
 Taro falling OK, \*Hanako falling, no change even if Hanako is scrambled leftwards.
- b. Taroo-wa utat-te Hanako-ni hanasi-o tutae-sase-ta  
 Taro-TOP sing-TE Hanako-DAT story-ACC convey-CAUS-PAST  
 "Taro made Hanako convey a story by singing"  
 Taro singing OK, Hanako singing OK, even without moving Hanako leftwards

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<sup>4</sup> Many thanks to Kazutoshi Ohno, without whose extensive help these examples would not exist; also to Mizuki Miyashita, Tetsuya Sato, Yuka Murasugi and Kumiko Nakamura for their patient judgements.

- c. Taroo-wa arui-te Hanako-o ik-ase-ta  
 Taroo-TOP walk-TE Hanako-ACC walk-CAUS-PAST  
 "Taro made Hanako go by walking"  
 Taro walking OK, Hanako walking OK

52. With an inchoative/lexical causative like *ori/oros*, *hie/hiyas*, though, even though the causative is morphologically constructed, and even if we pick a TE-phrase that the subject of the inchoative can felicitously do, the only available doer in the transitive version is the external causer, not the inner subject, which is what we expect if the inner subject is the subject of a SC, rather than containing its own vP:

- a. Hanako-wa tukare-te ori-ta  
 Hanako-TOP tired-TE come.down-PAST  
 "Hanako came down because of tiring"  
 (lit: Hanako came down by tiring)  
 Hanako tired OK
- b. Taroo-wa tukare-te Hanako-o oro-s-ita  
 Taro-TOP tired-TE Hanako-ACC come.down-CAUS-PAST  
 "Taro put Hanako down because of tiring"  
 (lit: Taro put Hanako down by tiring)  
 Taro tired OK, \*Hanako tired
- c. Hanako-wa nure-te hie-ta  
 Hanako-TOP wet-TE cool-PAST  
 "Hanako ('s body) cooled because of getting wet"  
 Hanako wet OK
- d. Taroo-wa nure-te Hanako-o hiy-as-ita  
 Taro-TOP wet-TE Hanako-o cool-CAUS-PAST  
 "Taro cooled Hanako by getting wet"  
 Taro wet OK, \*Hanako wet

## 7 Conclusions

- No theta-theory is more Minimalist than some theta-theory
- H&K's proposed structural sources for theta-theoretic effects work and are interesting
- H&K's proposed conflation mechanism in fact is head-movement Minimalist-style
- Semanticizing H&K's structure, in the appropriate way, gives robust and interesting results.
- Worth noting: H&K in later work were wishing to explain the observed restriction on the maximum number of arguments that a single verb can have (apparently around 3). With X-bar theory, the most arguments that could be involved in the lower SC was two: a Spec and a Comp. Without X-bar theory, both the vP and the SC in theory might contain an arbitrary number of arguments. Granting the unexplained restriction to Spec and Comp, however, H&K have explained why there are so few  $\theta$ -roles, which is what they originally set out to do.

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