

Implications of An Unrecognized Form of Merge: External Pair-Merge of Heads

INTRODUCTION: As Chomsky (2004, 2005) notes, set merge ‘can’t help’ but apply in two ways: externally (to two separate objects) and internally (one object contained within the other). We extend Chomsky’s argument to pair-Merge of heads; i.e. in the absence of a stipulation preventing it, pair-Merge ‘automatically’ will apply both internally and externally. We argue that external pair-Merge of heads, to our knowledge an unrecognized option, overcomes a potential problem concerning bridge verb constructions in Chomsky’s analysis, while also: (i) allowing for the elimination of the “strong vs. weak” v* distinction regarding the notion “phase,” and (ii) providing new insight on Icelandic dative subject constructions. More generally, we conjecture that Chomsky’s theory of ‘syntactic’ Merge subsumes morphology (by virtue of head-head external pair merge) automatically, with wide-ranging implications.

THE PROBLEM: Extending Chomsky (2013), Chomsky (2014) discusses an enduring problem regarding unvalued *phi*-features (uPhi) on bridge verbs (such as *think*). In (1), the matrix v*P phase of “John thinks that Sue won” (R is root THINK, v* is a phase head and verbal categorizer, EA is external argument),

(1) [EA [v* [_αR [_βC ...]]]] (*John thinks that Sue won*)

R inherits uPhi from v*, but the search domain of R, namely β, contains no element that agrees with R (and moves to Spec-R). Thus, (1) incurs: (i) a valuation failure; uPhi of R never gets valued, inducing crash; and (ii), label failure for α, see Chomsky (2014); α is not identified, and is predicted to be uninterpretable at the interfaces. We thus appear to have a serious undergeneration problem, and two incorrect predictions to overcome to correct it (for all bridge verb phenomena).

CHOMSKY’S 2014 (PROBLEMATIC) SOLUTION: Chomsky (2014) sketches a solution, but we believe it confronts a potential paradox. Compare (2), representing the v*P phase of a transitive sentence such as “John likes the dog.” (where R is the root LIKE, and *t* is a full copy of the internal argument IA), and (3), the analogous bridge verb v*P:

(2) [EA [<R, v*> [_αIA [R *t*]]]] (*John likes the dog*)

(3) [EA [<R, v*> [_αR [_βC ...]]]] (*John thinks that Sue won*)

In (2), (i) set-Merge externally forms {R, IA}, (ii) set-Merge internally merges IA to Spec-R, (iii) set-Merge externally merges v* to α and then Merges in EA (cyclically) yielding the v*P phase, (iv) R inherits uPhi from v*, (v) R agrees with IA, valuing Case, (vi) α is labeled <φ, φ> under minimal search, (vii) pair-Merge internally forms <R, v*> (= R with v* affixed), (viii) v* becomes invisible (and thus is no longer the phase-head), (ix) the phase-head status is activated on the copy of R, and (x) the complement of R, namely *t*, gets transferred. Importantly, notice that *in order to function as the “derived” phase-head, (which is necessary to permit object wh-extraction cases), the copy of R in α, left ‘behind’ by pair-Merge of R to v*, must be visible to minimal search.* Now let’s compare (3). In (3), (i) set-Merge externally forms {R, β}, and the derivation proceeds essentially as in (2). However, unlike the analysis of (2), the copy of R in α, left by pair-Merge of R to v*, is assumed to be **invisible** – which is necessary to allow α to be labeled. Given that no DP shifts to Spec-R, a <phi, phi> label (interpretation) for α, under phi agreement, is impossible (and recall R in English can’t serve as a label itself). With the copy of R invisible in (3), labeling by β (as C) is possible. This is Chomsky’s (2014) proposed solution to the bridge verb problem; the copy of R in α is invisible and that solves the label failure problem. To solve the (second) problem-- that v* phi never finds a DP to value its phi, it is proposed that ‘v*’ is rendered invisible by pair-Merge of R to v*. Thus, for α to be labeled by β, the copy of R in α, left by pair-Merge, must be **invisible** to minimal search. Thus, in Chomsky’s (2014) analysis, it is (implicitly) presumed that the R-copy left by R-to-v* is visible in (2), crucially to allow the copy of R to serve as the ‘derived’ phase head, yet it is invisible in (3) to avoid label failure. We confront then a possible unexplained, stipulated asymmetry regarding R-copy visibility.

AN ALTERNATIVE SOLUTION: We argue that the problem noted above dissolves by recognizing and applying what is an unrecognized entailment of the theory, namely that one kind of application of pair Merge is external pair-Merge of two heads. We assume that the four types of rule application are (simply) freely ordered; that is, freely applied set- and pair-Merge, regardless of whether external or internal, can apply in any order, with only certain choices converging. Let us now examine how repeated, free (set or

pair) Merge can generate a (convergent) derivation for “John thinks that Sue won.” Imagine that the CP “that Sue won’ has been built. Now, suppose R (THINK) and v* are each taken directly from the lexicon and *externally pair-Merged* together as <R, v*> (as opposed to R’s external set-Merge to CP, as in Chomsky (2014) illustrated above.). Suppose that this newly created ordered pair <R, v*> is then externally set-Merged with CP. Under this (free) ordering of independently motivated operations, the phase-head status of v* is cancelled prior to set-Merge of <R, v*> to CP because pair-Merge of R to v*, recall, makes v* (including its uPhi) invisible—we stress that invisibility of v* within <R, v*> is independently motivated in Chomsky (2013, 2014). In our derivation, notice that there is no ‘raising’ (i.e. internal pair-Merge) of R to v*. Consequently, there is no copy of R in the representation and hence it no longer needs to be stipulated that the copy of R is invisible in (3) but visible in (2), that is, the problem is averted. Continuing, the EA is set-Merged in, yielding (4):

(4) [EA [_α <R, v*> [_β C ...]]] (*John thinks that Sue won*)

In (4), there is no visible phase-head, provided that external head pair-Merge forming <R, v*> rendered v* (including its uPhi) invisible. With the (phase-head status of) v* now invisible, Transfer does not apply, and the derivation continues. Assuming with Chomsky (2014) that “although R cannot label, the amalgam [R-v*] can,” it follows that neither labeling of α nor valuation of uPhi poses a problem, because the amalgam [R-v*] can label α, and v* (that includes uPhi) is invisible. There is no need to stipulate any rule-ordering of set-Merge or pair-Merge. Phase-cancellation by external head pair-Merge is possible only when there is no need to transmit uPhi to the head of the phase-head-complement for Case-valuation. So, for example, if pair-Merge cancels the phase-head status of v* in transitive sentences like (2), then Case on IA remains unvalued, causing crash.

SOME FURTHER CONSEQUENCES: The proposed analysis solves another enduring problem concerning the phase-head status of v*, stipulated to be either ‘strong’ or ‘weak’. We can eliminate this *ad hoc* distinction; i.e. there is just one v* in the lexicon and it is ‘strong,’ i.e. a phase head. In the event that this v* undergoes external pair-Merge creating <R, v*>, then the ‘weakness’ of v* follows from v* being syntactically invisible, as an (R-)affix. This also sheds new light on object agreement in Icelandic:

- (5) a. *John like these socks
 John.NOM like.PL these socks.PL.ACC
 b. * . . . T.PL . . . [_{v*P} v* [_{VP} V NP.PL.ACC]]
- (6) a. Jóni líkuðu þessir sokkar
 Jon.DAT like.PL these socks.PL.NOM
 b. . . . T.PL . . . [_{v*P} v* [_{VP} V NP.PL.NOM]]

Under the recognition of external head pair-Merge, such T-NP_{OBJ} agreement is possible only when R (LIKE) is taken from the lexicon and externally pair-Merged with v* also taken from the lexicon. This application of external head pair-Merge forms <R, v*> in (6) and cancels the phase-head status of v* because pair-Merge of R to v* makes v* (including its uPhi) invisible. Recall that phase-cancellation by pair-Merge will converge only when there is no need to transmit uPhi to the head of the phase-head-complement for Case-valuation. This option is available for Icelandic (6) with dative subject, but not for English (5) with nominative subject. The proposed analysis also explains why T-NP_{OBJ} agreement becomes possible with passive/raising verbs (an example discussed in Zanen, Maling, and Thráinsson 1985, also cited in Bobaljik 2008):

- (7) a. Um venturinn voru konunginum gefnar ambáttir
 In the winter were.PL the king.DAT given slaves.PL.NOM
 ‘In the winter, the king was given (female) slaves.’
 b. . . . T.PL . . . [_{v*P} v* [_{VP} V_{passive} NP.PL.NOM]]

In (7), phase-cancellation by external head pair-Merge is allowed because in passive/raising, (now derivable by this unrecognized form of rule application, creating the passivized morphological form of the verb) there is no need to transmit uPhi to the head of the phase-head-complement for Case-valuation.

Thus, Transfer does not apply, leaving the door open for subsequent T-NP_{OBJ} agreement. **Selected**

References Chomsky, N. 2013. Problems of projection. *Lingua* 130, 33-49. Chomsky, N. 2014. Problems of projection: Extensions. Unpublished manuscript, MIT.