Phase-Command and Minimal Binding: A Response to Bruening and Zwart

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Abstract: This note provides a brief review of Bruening's critique of c-command as a fundamental structuring constraint on syntactic derivations, assessing his arguments for phase-command and synthesizing his proposal with neighboring developments at the syntax-semantics interface.

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Over the past two decades there have been numerous attempts to reduce the canonical binding conditions, stated in (1) (Chomsky 1981), to more elementary operations of the language faculty:

(1) *Condition A:* An anaphor must be bound in its governing category.

Condition B: A pronominal must be free in its governing category.

Condition C: An R-expression must be free.

(2) *Binding:* α binds β iff α c-commands β , and α and β corefer.

The notions of *government* and *binding* rely crucially on c-command. Bruening (2014) has recently questioned the validity of c-command as a fundamental structural constraint on syntactic derivations (along with, for instance, Brody 2002), leading him to account for binding phenomena in phasal terms (Chomsky 2001, 2008; Gallego 2010), replacing (3) with (4):

(3) *C-command*:

α c-commands β iff the first branching node dominating α also dominates β .

(4) *Phase-command*:

X phase-commands Y iff there is no ZP, ZP a phasal node, such that ZP dominates X but does not dominate Y.

This is motivated primarily by the observation that conflicts between constituency and c(onstituent)-command should not exist by definition, yet various cases have been reported in the literature (Phillips 2003). Phase heads thus become the ‘commanding’ constituents, which for Bruening are C, *v* and N/D (*nP*, for Hicks (2009: 154)), commonly assumed to be implicated in successive-cyclic movement and Spell-Out (Abels 2012; Uriagereka 2012). More recently, phase-commanding nodes are assumed to be CP, VoiceP and NP (Bruening 2018). In concert with the notion of *precedence* (Langacker 1969), phase-command achieves ‘vastly superior empirical coverage in comparison with c-command’ (Bruening 2014: 343).

It is my intention in these comments to present and assess Bruening’s arguments for phase-command before synthesizing his proposal with neighbouring developments in phase theory and the syntax-semantics interface.

1. The argument from ‘command’

Bruening (2014: 344) reformulates the notion of *binding* as follows:

- (5) *Binding*: A binds B iff A and B are coindexed and A precedes and phase-commands B.

Incorporating this into Condition C, the following binding effects are accounted for:

- (6) a. * She_i likes $Alice_i$'s friends
b. Her_i mother likes $Alice_i$'s friends

In (6a), the pronominal phase-commands the R-expression because there is no CP, ν P or DP that dominates *she* but does not dominate *Alice*. This is not the case in (6b), in which D labels the XP dominating the NP *her*:

- (7) a. *[_{TP} [_{NP} she_i][_{ν P} likes $Alice_i$'s friends]]
b. [_{TP} [_{DP} [_{NP} her_i][_N mother]][_{ν P} likes $Alice_i$'s friends]]

Coreference is also banned between an R-expression in a PP which has been concatenated to VP and its object:

- (8) *[_{TP} [_T I_i][_{ν P} [_{ν} t_i][_{VP} [_{VP} [_V met][_{DP} him_j]][_{PP} [_P in][_{DP} Ben_j's office]]]]]]

Here the DP *him* precedes-and-(phase)-commands the PP, since they are both within the same ν P phase. Relatedly, contrasting cases of VP-adjunction such as (8) with the TP-adjunction in (9) reveals that if an R-expression is not contained in the same phase as a coreferential pronominal then a dependency relation is not forced:

(9) People [ν P despise him_i] in Blair $_i$'s native country

The pertinence of Bruening's claim for the CP phase can be seen by contrasting CP- with TP-coordination (2014: 352-3):

- (10) a. Mary said [_{CP} that he_i has a lot of talent] and [_{CP} that Peter $_i$ should go far]
 b. * [_{TP} He $_i$ has a lot of talent] and [_{TP} Peter $_i$ should go far]

In (10a), *he* and *Peter* are phasally independent, whereas in (10b) a dependency relation is established since T is not phasal.

In certain cases, such as (7b) and (11), phase-command and c-command make the same predictions, since the DP phase *her mother* does not contain *Alice* whilst it also fails to c-command it:

(11) [_{DP} Her $_i$ mother] loves Alice $_i$

But after detailing a series of alignments between (correct) c-command and phase-command predictions (345-6), Bruening (347) notes that c-command accounts fail in the domain of PPs, since a branching node hosting the object of the preposition would, under c-command, occur

to the left, with other material occurring on the right. But as the examples in (12) reveal, this is incorrect:

- (12) a. *The hall with her secret admirer Mary danced in
b. *It was the hall with her secret admirer that Mary danced in

The fundamental problem Bruening points to, then, is that ‘command and constituency are not sensitive to the same nodes’ (349).¹ Replacing the ‘fundamentally flawed’ (353) c-command with precede-and-(phase)-command permits Bruening to steer clear of the ‘phrase structure paradox’ identified by Pesetsky (1995), since only C, *v* and D nodes are implicated in establishing binding domains. In addition, within a phase only precedence, not hierarchy, is of any consequence for binding. This is supposedly why, as Bruening puts it, ‘command does not go backward’ (350):

- (13) I only think about John_i or wonder about his_i foibles near him_i

Modifications to c-command attempting to account for adjunction, coordination and other phenomena crucially rely on the stipulation that PP projections somehow do not count for c-command. Bruening sees this as an unhelpful and inelegant approach to the grammar, and consequently sees phase-command as a notion relying on a more fundamental architectural component, the derivational cycle. Yet if c-command arises from Merge, asymmetry is yielded by labeling and phases exist purely for reasons of computational efficiency, then I see no reason why they, and not another component (thematic domains, for instance) would regulate binding.

¹ For another serious criticism of c-command, see Brody (2002: 32), who points to its ‘arbitrary asymmetric conjunction’ of two differing notions of command.

We will explore these conceptual concerns in Section 4, but for now a deeper grasp of the empirical basis of Bruening's theory is called for.

2. Problems of prepositions

Bruening (356) reformulates c-command in (14) to deal with the problems of coordination and adjunction:

- (14) *C-command*: Node A c-commands node B iff the first branching node dominating A does not exclude B.
- (15) *Exclusion*: A excludes B iff no segment of A dominates B. (Chomsky 1986: 9)

However, as Bruening notes this definition still relies on the PP stipulation while facing the precedence dilemma (358-63). On the latter point, since c-command effects should be symmetric, backward Condition C effects are incorrectly predicted in the data given in (16):

- (16) a. Penelope cursed Peter_i and slandered him_i
b. Sue spoke to Bill_i's mother about him_i

Him c-commands *Bill* in (16b) because the first branching node dominating *him* does not exclude the PP *to Bill's mother*, and yet no Condition C violation occurs. Instead of relying on reformulations of c-command, which come with the additional burden of the precedence dilemma, Bruening opts for a precede-and-(phase)-command account. As Bruening reasons, even if c-command is modified to accommodate the problems with coordination and

adjunction, the high levels of embedding between the second object and the mother of the adjunct seen in ditransitives present a further problem for c-command.

If, as in Bruening’s model, ‘the grammar builds sentences from left to right’ (361), then when an argument is fronted it needs to be copied into an A-bar position to receive its thematic role. But this constraint does not apply to adjuncts, which simply have to occur in a position where they can semantically combine with the concatenated XP, leading Bruening to propose the following principle (362):

- (17) *Adjunct Reconstruction Principle*: An adjunct must reconstruct to the edge of the phase where it is semantically interpreted.

For instance, in (18) the moved PP needs to be interpreted with the vP, and hence is copied at Spec-vP – or, due to the elimination of the Spec-Head relation (Boeckx 2009; Chomsky 2013; Adger 2013), perhaps ϵ -vP is more appropriate, where ϵ denotes the phase edge in the standard [EDGE[INTERIOR]] model:

- (18) a. *In John_i’s house, he_i organised a meeting
 b. *[_{TP} [_{PP} In John’s house][_{TP} [_{DP} he][_{vP} [_{PP} in John’s house][_{V'} [_v [_{VP} organised][_{DP} a meeting]]]]]

A Condition C effect arises, then, since *he* precedes-and-commands the PP in ϵ -vP.

3. Problems of precedence

After presenting further arguments for precede-and-(phase)-command in the form of left-edge ellipsis phenomena, Bruening (366) proposes to build precedence in with Merge, which I take to be the computational operation defined in (19), putting aside more recent formulations considering workspace architecture for reasons of argumentation, although Bruening does not explicitly define or decompose it (into, for instance, Concatenate and Label/Project (Hornstein 2009, Svenonius 2012)):

(19) *Merge*:

Take two lexical items α and β and form the set $\{\alpha, \beta\}$:

$$f_{\text{MERGE}}(\alpha, \beta) = \{\alpha, \beta\}$$

Adding precedence to (19) permits ordering to be interpreted from every construction. Yet, as with what Adger (2013: 18-28) terms the ‘Labeling Problem’ (How is the head determined upon the merger of two objects?), Bruening’s proposal suffers from what we could call the Ordering Problem, stated in (20):

(20) *Ordering Problem*:

What determines which lexical item or XP precedes the other upon the application of Merge?

Bruening argues further (372-5) that the coreference effects discussed in Section 1 emerge not from a GB-style binding module, but from the left-to-right processing of discourse referents. He adapts Schlenker’s (2005) Minimize Restrictors principle to account for Condition C effects:

(21) *Principle C (Minimize Restrictors)*: A definite description of the form *the A* may not refer to a discourse referent in active set C if A could be dropped without affecting either (i) the denotation of the description or (ii) its various pragmatic effects.²

Perhaps Bruening's most central claim, the culmination of his precede-and-(phase)-command model, is that the active discourse referents in Set C can be moved to the background discourse, Set D, via the right edge of a phase, thus unifying core components of the grammar and the interpretive/pragmatic systems.³ It follows that coreference is permitted when an antecedent stands for a discourse referent from Set D, but not Set C. Yet a core problem with the proposal that the difference in acceptability between (10a) and (10b), repeated below in (22), is down to phasal structure comes from the insight, discussed by Zwart (2014b: 5-7) in the most recent version of his reply to Bruening, that speaker judgments improve in cases other than those in which a phase edge separates the binder and bindee:

- (22) a. Mary said [_{CP} that he_i has a lot of talent] and [_{CP} that Peter_i should go far]
 b. *[_{TP} He_i has a lot of talent] and [_{TP} Peter_i should go far]

While Bruening (363) emphasises that his 'precede-and-command theory IS able to explain the data' above, it yields the false prediction that, for instance, (23b) and (24b) will ban coreference since they have the same non-phasal status (TP) as (23a) and (24a), respectively:⁴

² Bruening consequently assumes that pronouns are effectively the outcome of minimizing restrictors in definite descriptions. For a related, Fregean perspective on the semantics of definite descriptions, see Elbourne (2013).

³ The neo-Gricean Levinson has proposed a similar restricting principle (2000: 289).

⁴ These examples are adapted from Zwart (2014a: 4), who in turn takes them from Bolinger (1977: 16). Although Bruening (p.c.) points out that there is a degree of speaker variation in the (un)acceptability of these constructions, I find Zwart's judgements to be sound.

- (23) a. *He_i flunked when David_i cheated
 b. He_i usually flunks when David_i tries to cheat
- (24) a. *I gave her_i the book that Sarah_i wanted
 b. I gave her_i the book that Sarah_i always wanted

The claim that phases have any impact on the grammar's 'choice' between pronouns or R-expressions when referring to discourse referents consequently appears unfounded, an issue well documented in Zwart's (2014b) recent manuscript. But there is another problem with Bruening's use of phase theory. Sentences may be parsed left-to-right, but under core minimalist assumptions the derivation proceeds bottom-up via phase, i.e. 'right' to 'left'. Phases may be 'closed off' during the derivational cycle, but Bruening provides no arguments for us to suppose that the parser also closes off interpretation when a phase boundary is reached during left-to-right processing, though he claims it (372-5). Perhaps experimental work might provide some empirical basis for his claims.

But even if we permit Bruening to integrate precedence into a phasal derivation, this model still incorrectly predicts that (8), reproduced in a simplified form in (25), cannot be improved, relying as it does on a phase-sensitive processor:

- (25) *I [_{VP} met him_i in Ben_i's office]

But the phase-internal nature of binder and bindee cannot prohibit coreference if we present the right context (Zwart 2014b: 7):⁵

⁵ See Bury & Reeve (2013: 128) for a similar criticism pointing to Bruening's failure to distinguish between coreference and dependence.

(26) [Ben is such a private person that he won't let anyone in his office]

So it was quite a thrill to actually meet him_i in Ben_i's OFFICE.

Precedence should bar coreference in this case because *Ben* is processed before the referent of the pronominal can be moved to Set D, due to *Ben* and *him* inhabiting the same phase.

Closing this section, we can conclude that there are serious empirical reasons to doubt the central importance of phasehood in determining coreference relations. We now turn to the more conceptual issues of phase-based theories of binding.

4. Economy and Simplest Merge

A major obstacle for phase-command appears to arise when we explore beyond the confines of the traditional binding conditions (concerned as they are with anaphors and R-expressions) and examine languages which mark reflexivity via verbal morphology (Baker 1996), clitics (Rivero & Sheppard 2003), focus markers (Liu 2003), and so forth. If Zwart's (2014b: 10) generalisation that reflexive marking universally affects the sister of the antecedent is accurate, then phase-command purely relies on the c-command relation between, for instance, and antecedent and its clitic. Phases would therefore be redundant in establishing reflexivity domains. The problem with this generalization, however, is that – as Bruening (2006) himself points out in unpublished work – while verbal reciprocals interact with other derivational morphology, *subject* is never the pertinent concept (causative-reciprocal interaction is a case in point).

In contrast to Zwart (2005, 2014a, 2014b), who unifies precedence with (asymmetric) Merge, I assume that linear order is imposed by the components of externalisation (the SM interface) following evidence discussed by Chomsky (2012), Berwick and Chomsky (2011) and Chomsky et al. (2019). When Bruening stresses that we only see forward command and not backward command, there is no conceptual reason why we need to build this notion into narrow syntax when it may be an SM interface property. Bruening’s theory of Merge departs from what Epstein et al. (2012; 2014: 464) call ‘Simplest Merge’ (functionally identical to the definition in (19)). Putting aside the interesting question of labeling (although see Adger 2013, Cecchetto & Donati 2015, Murphy 2015, 2020), many of language’s asymmetries, the binder-bindee relationship included, arise from c-command (which in turn arises from labeling). These observations immediately cast doubt on Bruening’s use of *precedence* in his precede-and-(phase)-command framework.

But what about the *phase* part of phase-command? It seems that another, more fundamental obstacle for Bruening comes from the observation that Merge followed by an asymmetric Label operation (either applied within narrow syntax (Svenonius 2012) or emerging at the interfaces (Boeckx 2015)) yields c-command relations as an epiphenomenon.⁶ Phases, on the other hand, enjoy a far less theoretically and computationally secure existence, with much controversy surrounding (i) what the phases are (Gallego 2010; Chomsky 2008), (ii) how they contribute to efficient computation (Gallego 2012; Boeckx 2015), and (iii) how they interact with and are constrained by the interfaces (Frascarelli 2006).⁷

⁶ This seems to vindicate Chomsky’s (p.c.) suggestion that c-command ‘is not likely to survive a serious analysis of the computational mechanisms of language’.

⁷ Epstein et al. (2014) even propose that, by extending Chomsky’s (2013) minimal search labeling algorithm to successive-cyclic A-movement, the postulate *phase* is rendered unnecessary in analysing cases of illicit A-movement, which can instead be reduced to labeling failures.

Aside from phase-command, recent phasal accounts of locality have been claimed to have repercussions for binding theory. If local domains are defined by the phase edge (ϵ) and complement/interior (ι), then phases replace the notion of *governing category* seen in (1). As Wurmbrand (2011, 2013) notes, if ι is impenetrable after Spell-Out/Transfer (Munakata 2009), then nothing should be capable of being bound outside it. Wurmbrand presents evidence of the kind seen below to argue for this position:

(27) a. Alice believes [_{vP} Ben to have presented himself well]	=PHASE
b. *Alice believes [_{vP} Ben to have presented herself well]	=PHASE
c. Alice believes [_{vP} herself to have presented Ben well]	≠PHASE
d. Alice believes [_{vP} herself to have presented herself well]	≠PHASE
e. Alice _i believes [_{vP} Ben to have presented her _{i/j} well]	=PHASE

However, it is not immediately clear why (c) or (d) should not be phasal, since the syntax should not be able to differentiate the featural variation between *herself* and *Ben* before Transfer has applied. With Wurmbrand, the binding conditions follow purely from arbitrary feature configurations, not from general architectural considerations. For instance, to explain the data in (27) Wurmbrand assumes that an interpretable unvalued feature in a phase head forces Transfer delay, and that PRO delays phasehood of vP .

In contrast to Bruening, Zwart and Wurmbrand, in Boeckx's (2012, 2015) bi-phasal theory if a phase head α labels the singleton β it is an 'intransitive' phase; if δ labels the two-member set $\{\gamma, \alpha\}$ it is a 'transitive' phase (2015: 44). This architecture is derived purely from applications of Merge and Label. Chomsky's (2008, 2013) feature valuation process limits valuation to transitive phases, and since feature valuation synchronises Agree and Transfer operations, it is only transitive phase domains which are host to agreement and binding.

Bruening claims that all nonphasal nodes are irrelevant for command, and hence binding. Yet if we embrace Boeckx's phase model, then the notion of phase-command cannot be limited to C, *v* and D.

Bruening notes that precede-and-(phase)-command 'relates binding to phase theory ... [unifying] command with all of the other phenomena that require phases' (358). Nevertheless, relation and mediation do not equal explanation. Bruening also assumes that 'binding holds at LF' (346), i.e. the C-I interface. But as Hicks (2009: 65) argues, this relegation is 'theoretically undesirable and empirically untenable'. Hicks reduces Condition A to applications of Agree between 'semanticocentric' features, while Condition B is reduced to an economy condition on Simplest Merge, Maximise Featural Economy (2009: 204). Bruening's treatment of Conditions A and B effectively reducing them to constraints on the pragmatic systems (2014: 377):

(28) *Binding Principle A*: If a newly processed NP N has the form of a local anaphor, it must denote a discourse referent in set A.

(29) *Binding Principle B*: If a newly processed NP N is to be interpreted as denoting a discourse referent R already in set A, then N must have the form of a local anaphor.

These reformulations of the binding conditions add no explanatory force to existing accounts, such as Hicks' (2009) Merge- and Agree-based models, or Reuland's (2011) detailed arguments from efficient computation. A wide variety of binding phenomena, such as the inability of 3rd-person pronominals to enter a chain with their antecedent, can be explained by referencing Reuland's (2011: 64) economy hierarchy:

(30) *Economy of Encoding*:

Narrow syntax < logical syntax (C-I interface) < discourse

Dependencies blocked by some principle at one level of the hierarchy cannot be overridden by operations at a higher level, and since Conditions A and B reduce to Agree and Merge (economy), as Hicks demonstrated, there is simply no need to resort to discourse-interpretive constraints. As Reuland (2011: 128) puts it, ‘If you are in variable binding mode, it is costly to switch to discourse’.

5. Conclusion

Hicks (2009: 66) was among the first to observe that ‘the binding conditions can no longer be viewed representationally, as narrow syntax provides no level at which some filter could apply’. Bruening’s precede-and-(phase)-command theory attempts to expand the explanatory reach of narrow syntax with its relegation of binding effects to phasal domains. Though the need to reduce locality to some form of derivational punctuation is legitimate and well-motivated, I hope to have shown that it is not at all clear that phases are the correct tool for the job. While binding domains may ‘coincide closely’ with phases (Hicks 2009: 98), investigation of binding proceeds on firmer ground if we use another minimalist notion – economy – as our primary explanatory tool. Note that these comments have merely questioned the validity of placing phases at the centre of an account of binding, and the well-known empirical and conceptual arguments for the existence of phases remain, so far as I can tell, intact.

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