Deducing Transfer Domain from Minimal Search*

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Abstract

Within the framework of the phase theory (Chomsky (2000) et seq.), this article tries to provide a principled account of why the phase-head-complement undergoes Transfer, by deducing the Transfer Domain (TD) from Minimal Search (MS) for Labeling. This article will define the TD as the domain within which MS may locate a pair of heads involving valued and unvalued features, with the path of search minimized. On the basis of this, this article also proposes a unified account for transparency of non-finite clauses and bound-pronoun effects.

***Keywords*:** phase, Transfer, Labeling, Minimal Search, transparency in finite/nonfinite clauses, the bound pronoun effects

1. Introduction

One of the most fundamental questions in generative syntax concerns the nature of the mechanism that gets the hierarchical structures accessed to the two language-external components, the systems of meaning and sounds. In minimalism, this question is addressed by the phase theory (Chomsky (2000) et seq.). According to this, structure building is carried out cyclically: once a unit called phase (CP or vP) is constructed, its interior (the phase-head-complement, TP or VP) is transferred to the Conceptual-Intentional (CI) interface and the Articulatory-

Explorations in English Linguistics, Number 34, November 30, 2020
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Perceptual (AP) interface (or, in the latest term, externalization). Once transferred, the interior is rendered inaccessible to any further syntactic operations (the Phase Impenetrability Condition (PIC)).

Chomsky (2015, 2020) proposes to construct a phase in a step-by-step manner, abandoning the view that phase level operations like Feature Inheritance, Agree, and Internal Merge are applied simultaneously (Chomsky (2007, 2008)). To form CP = [$_\gamma$ C [$_\beta$ EA [$_\alpha$ T [t_{EA} [v …]]]]], firstly T externally merges with vP, forming the set α. Secondly, the external augment (EA) in Spec-v internally merges to Spec-T, forming β. Third, C merges externally, reaching the phase level. Fourthly, the unvalued phi-features (uPhi) on C gets inherited by T. Fifth, β, the interior of C, undergoes Labeling. Finally, β gets transferred to the interfaces. Similarly, vP = [$_\gamma$ v [$_\beta$ IA [$_\alpha$ R t_{IA}]] is derived in the following way. First, the verbal root R externally merges with the internal argument (IA), forming α. Second, the IA internally merges to Spec-R, forming β. Third, v externally merges, reaching the phase level. Fourth, the uPhi on v get inherited by R. Fifth, β, the interior of v, undergoes Labeling. Finally, β undergoes Transfer[1.]

This article addresses the question of why the interior, not the phase itself, undergoes Transfer. This paper is organized as follows. Section 2 discuss a previous attempts to deduce Transfer Domain (TD) by Chomsky (2004) / Richards (2007), pointing out their problems. Section 3 attempts to deduce TD on the basis of the Labeling theory by Chomsky (2013, 2015) and Epstein, Kitahara, and Seely (2018). Section 4 considers empirical consequences of the proposed system, providing a unified account for transparency of non-finite clauses and bound-pronoun effects. Section 5 is a conclusion.

2. A Previous Approach

The question of why a phase-head-complement, not a phase itself, undergoes Transfer is addressed by Richards (2007), which proposes an analysis based on

Chomsky (2004). As quoted in (1), Chomsky states that the phase-head-complement β must be spelled out at a phase level in order for cyclic computation to be meaningful:

(1) "[W]e know that S-O [Spell-Out] cannot be *required* to spell out PH in full, or displacement would never be possible. Consider a typical phase (5), with H as its head:
(5) PH = [α [H β]]
Call α-H the edge of PH. It is a fact that elements of the edge may (or sometimes must) raise. **A natural condition, which permits spell-out of root phrases and allows for meaningful cyclic computation**, **is that β must be spelled out at PH, but not the edge**: that allows for head-raising, raising of Predicate-internal subject to Spec-T, and an "escape hatch" for successive-cyclic movement through the edge."
(Chomsky (2004: 4-5), emphasis by TN)

On the basis of this idea, Richards (2007) states that transferring the entire phasal category would exclude continuation of the computation:

(2) "[F]or cyclic computation to be meaningful, it cannot be the entire phasal category that is transferred, since **this would exclude any continuation of the computation beyond the first phase level**. For example, transfer of the entire phase would render the label […] of the phase head inaccessible to further computation and therefore preclude selection of the phase by a higher head […]. The edge […] of the phase head must therefore be carried over to the next phase, yielding an "escape hatch" for transphasal movement" (Richards (2007: 567), emphasis by TN)

In other words, if the entire phase underwent Transfer, it could not undergo merger with a higher category (i.e., merger of CP with R, vP with T) owing to the PIC, thereby preventing continuation of derivation. Accordingly, an interior of a phase, rather than the phase itself, must be subject to Transfer.

However, this does not account for why the interior β, not the set consisting of the phase head and β, must undergo Transfer. Consider (3).

(3) a. PH = {α, {H, β}}
    b. PH = {α, {H, β}}

In (3), α and β occupies Spec-H and Comp-H, respectively. If β undergoes Transfer as in (3a), continuation of derivation is possible. Notice, however, that Transfer of the set {H, β} as in (3b) also permits continuation of derivation, since the set PH remains accessible. Empirical facts seem to suggest that the phase head H is not subject to Transfer at the phase level PH. Assume with Citko (2014) that TD is diagnosed by ellipsis; that is, an elided phrase corresponds to TD. Then, (3b) incorrectly predicts that sentences with sluicing like (4) violate identity requirement of ellipsis, because the antecedent is headed by the declarative C *that* whereas the elided phrase is by interrogative C.

(4) John said [that Mary hired someone], but I don't know [who <~~C_Q Mary hired *t*~~>]

Similarly, (3b) incorrectly rules out sentences involving VP-ellipsis with voice mismatch like (12), because the antecedent is headed by an active v, but the elided phrase by passive v, thereby violating identity.

(5) The janitor must [v_{active} [remove the trash]] [whenever it is apparent that it should be [<~~$v_{passive}$ [removed *t*~~>]]]. (adapted from Merchant (2008: 169))

These facts seem to suggest that {H, β} in (3) does not undergo Transfer, and we have to explain why TD is the phase-head-complement, without recourse to continuation of derivation. In the next section, I will show that TD is deducible form Minimal Search for Labeling put forth by Chomsky (2013, 2015) and Epstein, Kitahara, and Seely (2018).

3. Proposal

3.1. Preliminary Assumptions

Before proposing an alternative analysis, let me first introduce some preliminary assumptions. First, I assume that syntactic features are divided into two types; +CI features that play some role at the CI interface, and -CI features that play no role there. For example, uPhi and uCase (unvalued Case features) are -CI, since they play no role in semantic interpretation. In contrast, unvalued wh-features on wh-phrases are +CI features, since, according to Chomsky (2015), they determine the interpretation of wh-phrases as relative, interrogative, or exclamative.

Second, I assume with Chomsky (2013, 2015) that a label of a syntactic object (SO) is determined by a fixed algorithm, Labeling Algorithm (LA). LA is an instantiation of Minimal Search (MS) to detect relevant heads, which works in the following ways: Given SO = {H, XP}, where H is a head and XP is a phrase, MS selects H as its label. When an SO is {XP, YP}, LA cannot uniquely locate a head that provides a label, but there are two ways to determine a label of the XP-YP structure. One case is when XP is moved out of the XP-YP structure. In this case, the lower copy of XP becomes "invisible" to LA, providing the label YP. Another case is when X and Y, heads of XP and YP, are "identical" in the sense that they involve identical agreement features F. Then, LA finds heads X and Y, providing

<F, F>, a pair of features shared between X and Y, as its label. Otherwise, an SO cannot bear a label, thereby violating Full Interpretation at the interfaces.

On the basis of LA, Epstein, Kitahara, and Seely (2018) propose to eliminate Agree (Chomsky (2000) et seq.) from narrow-syntax. They claim that Agree is a composite operation consisting of (i) probe-goal search and (ii) feature-valuation, reducing that the former to Minimal Search (MS) for Labeling (simultaneous search for relevant heads into an XP-YP structure carried out in a "top-down" fashion), and the latter to feature-assignment at the morpho-phonological component. Suppose, for example, we have an SO = {{$n_{[v\varphi]}$, RP}, {$T_{[u\varphi]}$, vP}}, which is created by free Internal Merge of an EA into Spec-T. Then, the "top-down" MS for Labeling simultaneously finds n and T involving valued and unvalued Phi. At the morpho-phonological component, feature assignment takes place between these two heads as a reflex of Labeling: uPhi on T gets valued, based on the relation between n and T established via MS.

Third, the Inclusiveness Condition (Chomsky (1995) et seq.) bars extraneous objects like traces, bar-levels, indices, and projections from being introduced during syntactic computation. A corollary of this is that Labeling must be simultaneous with Transfer. If Labeling took place before transfer, Inclusiveness Condition would be violated since it introduces projection to the syntactic structure. On the other hand, if Labeling took place after Transfer, Labeling could not feed interpretation at CI interface and externalization. Therefore, Labeling must be carried out as a part of Transfer.

3.2. Deducing Transfer Domain

With these assumptions in place, this section attempts to deduce the Transfer Domain (TD). The core proposal of this paper is (6).

(6) Transfer the minimal SO containing eliminable -CI features.

Let us define eliminability of -CI features as follows: -CI features F_{-CI} are eliminable iff MS for LA may locate the head involving unvalued F_{-CI} and the one involving valued F_{+CI} to provide the label <F, F>. In other words, (6) states that once an unvalued -CI feature enters into the configuration where the "top-down" MS may pair it with its counterpart, Transfer applies to the SO properly containing these features, eliminating F_{-CI} at the CI interface and assigning values to F_{-CI} at externalization. Consider (7).

(7) a. $\{T_{[uPhi]}, vP\}$
b. $\{\{n_{[vPhi]}, RP\}, \{T_{[uPhi]}, vP\}\}$
c. $\{C, \{\{n_{[vPhi]}, RP\}, \{T_{[uPhi]}, vP\}\}\}$

The SO in (7a) is not qualified for Transfer under (6) since uPhi on T is not eliminable: Within this domain, MS does not find out the head involving the +CI features to be paired with uPhi on T. The SO in (7b) is qualified for Transfer, since the "top-down" MS may simultaneously locate X with valued +CI features, on the one hand, and Y with -CI features, on the other, within this domain. (7c) is not qualified for Transfer, although uPhi on T is eliminable in this domain. This is because (7c) is not a minimal SO: (7c) is larger than (7b). Thus, (7b) is uniquely identified as TD.

A question immediately arises why the transferred SO must be minimal. I suggest that a principle of minimal computation like (8), presumably a third factor condition in the sense that Chomsky (2005) dictates that the path of MS to locate an eliminable -CI features must be minimized as far as possible.

(8) Minimize the path of MS within TD.

Let us define the path of MS as the sets dominating a relevant head. For example, in (7b), the number of sets dominating T is two: {T, vP} and {{n, RP}, {T, vP}}, whereas in (7c), the number of sets dominating T is three, {T, vP}, {{n, RP}, {T, vP}}, and {C, {{n, RP}, {T, vP}}}. Suppose also that the "top-down" MS is carried out in a step-by-step fashion: namely, it firstly locates the largest SO (= TD), and subsequently looks for a member of the set, a member of a member of the set, and so on (this procedure terminates when it locates a head involving $F_{\text{-CI}}$). Then, the principle in (8) selects (7b) over (7c), since the path (= the number of steps of the "top-down" MS) is minimized in (7b).

Let us see how the system works. Consider the derivation of vP = $[_{\gamma}$ v $[_{\beta}$ IA $[_{\alpha}$ R t_{IA}]]] (= *(John) met Mary*) in (9).

(9) a. {R, $\text{IA}_{[\text{vPhi}]}$} (= α)
b. {$\text{IA}_{[\text{vPhi}]}$, {R, t_{IA}}} (= β)
c. {$\text{v}_{[\text{uPhi}]}$, {$\text{IA}_{[\text{vPhi}]}$, {R, t_{IA}}}} (= γ)
d. {v, {$\text{IA}_{[\text{vPhi}]}$, {$\text{R}_{[\text{uPhi}]}$, t_{IA}}}}
e. {v, {$\text{IA}_{[\text{vPhi}]}$, {$\text{R}_{[\text{uPhi}]}$, t_{IA}}}}

Firstly, External Merge (EM) of the verbal root is firstly applied to the internal argument (IA) with valued phi-features (vPhi), forming the set α. At this point, nothing is transferred since the SO contains no eliminable $F_{\text{-CI}}$. Secondly, IA undergoes Internal Merge (IM) to Spec-R, forming the set β. Again, nothing qualifies for Transfer. Thirdly, v involving uPhi externally merges, forming γ. Here, the uPhi on v is not eliminable, and nothing undergoes Transfer. Fourthly, uPhi on v gets inherited by R. Then, the minimal SO containing $F_{\text{-CI}}$ is R, but uPhi is not eliminable within this domain. The next larger SO is α, but uPhi is not eliminable within α, either. The next larger SO is then β. Here, β qualifies for TD, since within β, MS may simultaneously locate R with uPhi, on the one hand, and the head of IA, n with vPhi, on the other, to provide the label <Phi, Phi>. Crucially, γ does not qualify for Transfer since it is not the smallest SO containing eliminable F_{-CI}: Locating R requires more steps of MS within γ then within β. Thus, we successfully deduce TD in the vP area from the principle in (6)[2, 3].

Let us next consider how the derivation proceeds in the CP area. The derivation of an embedded CP = [$_\gamma$ C [$_\beta$ EA [$_\alpha$ T [t_{EA} [v …]]]]] (= *(I think) that John met Mary*), is shown in (10).

(10) a. {T, $vP_{[vPhi]}$} (= α)
b. {$EA_{[vPhi]}$, {T, vP}} (= β)
c. {$C_{[uPhi]}$, {$EA_{[vPhi]}$, {T, vP}}} (= γ)
d. {C, {$EA_{[vPhi]}$, {T, vP}}}
e. {C, {$EA_{[vPhi]}$, {T, vP}}}

Firstly, EM of T forms the set α. Secondly, the EA in Spec-v undergoes IM to Spec-T, forming β. At this point, nothing is transferred since the SO contains no -CI features. Thirdly, C with uPhi externally merges, forming γ. Here, the minimal SO containing -CI features is C, but it is not eliminable. Then, nothing undergoes Transfer at this point. Fourthly, the uPhi on C gets inherited by T. The minimal SO containing -CI features is T, but uPhi is not eliminable within this domain. The next larger SO is α, but uPhi is not eliminable within α, either. The next larger SO is then β. β qualifies for TD, since within β, MS for Labeling may simultaneously locate T with uPhi, on the one hand, and the head of EA, n with vPhi, on the other, to provide the label <Phi, Phi>. Thus, we successfully deduce TD in the embedded CP area as well as the vP area[4].

One may wonder how to Transfer the root CP = [$_\gamma$ C [$_\beta$ $EA_{[vPhi]}$ [$_\alpha$ $T_{[uPhi]}$ [t_{EA} [v …]]]]]. Notice that if we transferred β, C would be left in the narrow syntax, thereby yielding no interpretation at CI and externalization. For this reason, transferring β is excluded from the options to converge the derivation. Then, the next larger domain γ is nominated as the domain within which the path of MS is minimized. Thus, transferring γ converges the derivation, as well as minimizing the path of MS as far as possible.

4. Some Consequences

The proposed system predicts that β in (9) and (10) is not counted as TD when T or R does not involve eliminable uPhi. This section verifies this prediction, by providing a unified account for transparency of non-finite clauses (section 4.1) and the bound pronoun effects (section 4.2).

4.1. Transparency of Non-Finite Clauses

Let us firstly consider the finite-nonfinite asymmetry with respect to transparency, illustrated in (11).

(11) a. ?*To whom$_j$ did you wonder what$_i$ they gave t_i t_j?
     b. To whom$_j$ did you wonder what$_i$ to give t_i t_j? (Cinque (1990: 52))

(11) shows that the wh-island violation is relaxed when the embedded clause is non-finite (Ross (1968), Chomsky (1986), and Cinque (1990), among others). Suppose that (11a) and (11b) have the structure (12a) and (12b), respectively.

(12) a. To whom$_j$ did you wonder [$_\gamma$ what$_i$ C [$_\beta$ they T gave t_i t_j]]?
     b. To whom$_j$ did you wonder [$_\gamma$ what$_i$ C [$_\beta$ T give t_i t_j]]?

In (12a), β is counted as TD owing to the eliminable uPhi on the finite T. Then, *to whom* must be extracted to the embedded Spec-C thanks to the PIC, but it is occupied by *what*, thereby causing the wh-island violation (assume that multiple Specs-C is not an option in English. See Nakashima (2020) for ban on multiple Specs). In

(12b), in contrast, β is not counted as TD, since the non-finite T lacks uPhi. Then, *to whom* does not have to be extracted to the embedded Spec-C, and hence wh-island violation is circumvented.

4.2. The Bound Pronoun Effects

Secondly, the proposed system accounts for the bound pronoun effects (BPE). As observed by Grano and Lasnik (2019), some clause-bounded constructions become transparent when a clausal subject is replaced with a bound pronoun. (13) illustrates the BPE in gapping constructions.

(13) a. Mary likes apples and Ann <~~likes~~> oranges.
b. *Mary claims that Jill likes oranges and Ann <~~claims [that Jill likes~~> oranges].
c. ?Mary$_i$ claims that she$_i$ likes oranges and Ann$_j$ <~~claims [that she$_j$ likes~~> oranges]. (Grano and Lasnik (2019: 466-467))

(13a) is a canonical case of gapping. (13b) shows clause-boundedness of gapping constructions. Crucially, as shown in (13c), clause-boundedness of gapping is relaxed when the pronoun *she* bound by *Ann* occupies the subject position of the embedded clause. Grano and Lasnik (2019) also observe the BPEs in *too/enough* movement, comparative deletion, antecedent contained deletion, quantifier scope interaction, and multiple questions.

Grano and Lasnik try to account for the BPE, assuming that (i) the CP phase is responsible for clause-boundedness, (ii) a bound pronoun may enter into the derivation without phi-feature values[5], (iii) unvalued features on the head of the phase-head-complement (i.e., uPhi on T) keep the CP phase open. Given these, the embedded CP in (13b) (= γ in (14)) is counted as a phase, since the uPhi on T undergoes deletion as a reflex of valuation from the vF on *Jill*. Therefore, the phasal CP blocks long-distance gapping.

(14) Mary claims that Jill likes oranges and Ann <claims $[_{\gamma}$ that $[_{\beta}$ Jill$_{[vPhi]}$ T~~$_{[uPhi]}$~~ likes> oranges]]

In contrast, the embedded CP in (13c) (= γ in (15)) is not counted as a phase, since the uF on T cannot be deleted owing to lack of vF on the bound pronoun *she*. Accordingly, uPhi on T keeps the CP open, thereby permitting long-distance gapping.

(15) Mary claims that Jill likes oranges and Ann$_i$ <claims $[_{\gamma}$ that $[_{\beta}$ she$_i$ T$_{[uPhi]}$ likes> oranges]]

Although the analysis by Grano and Lasnik is attractive, it is not without a problem. To be specific, they leave unexplained why unvalued features on the head of the phase-head-complement keeps the phase open. This stipulation is eliminated by the system proposed in this paper: β in (15) is not counted as TD when the uPhi on T cannot participate in feature-sharing owing to lack of vPhi on the pronominal subject. Thus, the proposed system provides a more principled explanation to the BPE.

5. Conclusion

The current phase theory (Chomsky (2000) et seq.) left the question unanswered why the phase-head-complement, not the phase itself, undergoes Transfer. In section 2, I pointed out problems with a previous analysis by Chomsky (2004) / Richards (2007). Section 3 proposed an alternative approach, claiming that the TD is deducible from MS: TD is a domain within which MS may locate a pair of heads involving ±CI features, with the path of search minimized. On the basis of this, Section 4 proposed a unified account for transparency of non-finite clauses and bound-pronoun effects. If this approach is on the right track, the stipulative definition of TD is eliminated, and it naturally follows from a principle of minimal computation, a third factor condition on language design.

*Acknowledgement: I am very grateful to Yoshiaki Kaneko and Esturo Shima for their invaluable comments and suggestions. I would also thank Takaaki Hirokawa, Jun Tamura, Hirokazu Tsutsumi for their helpful comments and discussions. All remaining errors and inadequacies are, of course, my own.

Notes

1) I put aside R raising to v, since it is controversial whether head movement is an operation at narrow syntax or morpho-phonological component (see Boeckx and Stepanović (2001), Chomsky (2001); see also Roberts (2010)). I do not discuss phasehood inheritance put forth by Chomsky (2015), either.

2) Notice also that uCase as well as uPhi successfully identify TD. Within β = $\{\{n_{[v\varphi][uCase]}, RP\}, \{R_{[u\varphi]}, t_{IA}\}\}$, uCase on n is eliminable since it enters into feature sharing with R. Therefore, uCase as well as uPhi forces β to be transferred.

3) One may wonder how to derive sentences with object wh-movement like *What did you buy t?*. In this case, vP is of the form $[_{\gamma}\ v\ [_{\beta}\ t'_{IA}\ [_{\alpha}\ R_{[uPhi]}\ t_{IA}]]]$, where *what* involving [vPhi] is escaped from Spec-R, and hence the uPhi on R cannot participate in feature-sharing with vPhi on the IA. This problem may be solved by the feature-splitting Internal Merge proposed by Obata and Epstein (2008) (although it remains

unclear whether it is compatible with the present framework by Chomsky (2013, 2015, 2020), where feature-driven IM is dispensed with). According to them, a copy of a wh-phrase in an A-position involves uCase and vPhi but lacks an interrogative feature Q, whereas the one in an A'-position has Q but lacks uCase and vPhi. Given this, *What did you buy t?* is structured like [what$_{[Q]}$ C … [$_{\gamma}$ what v [$_{\beta}$ what$_{[vPhi][uCase]}$ [$_{\alpha}$ R$_{[uPhi]}$ what]]]], where the lower copy of *what* in Spec-R involves vPhi and uCase. Given this, the lower copy of *what* participates in feature-sharing with R, thereby identifying β as TD.

4) One may claim that the proposed system predicts that γ undergoes Transfer when the EA is internally merged to Spec-C before inheritance, participating in feature-sharing with C. This unwanted option is excluded if we assume with Chomsky (2015) that T is too weak to provide a label without agreement with EA. That is, once the EA undergoes IM to Spec-C, the weak T cannot provide a label TP, thereby causing Labeling failure.

Notice that EA may be extracted to Spec-C if the vPhi undergoes feature-splitting (see footnote 3). To derive sentences like *Who do you think t is genius?*, *Who* in the embedded Spec-T moves to Spec-C, leaving its uPhi and uCase in Spec-T thanks to the feature-splitting IM. Then, the weak T successfully participates in feature sharing with the lower copy of *who* in the embedded Spec-T, providing the label <Phi, Phi>.

5) Grano and Lasnik assume with Kratzer (2008) that the feature values of an antecedent are “transmitted” to the bound pronoun under binding. Given this, the bound pronoun *she* in (13) receives its feature value after its binder *Ann* is introduced to the derivation. It shold be made precise how “feature transition” is implemented within the present minimalist framework, but I put aside this issue for the moment.

References

Boeckx, Cedric and Sandra Stepanović (2001) "Head-ing toward PF," *Linguistic Inquiry* 32, 345-355.

Chomsky, Noam (1986) *Barriers*, MIT Press, Cambridge, MA.

Chomsky, Noam (1995) *The Minimalist Program*, MIT Press, Cambridge, MA.

Chomsky, Noam (2000) "Minimalist Inquiries: The Framework," *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, ed. by R. Martin, D. Michaels, and J. Uriagereka, 98-155, MIT Press, Cambridge, MA.

Chomsky, Noam (2001) "Derivation by Phase," *Ken Hale: A Life in Language,* ed. by M. Kenstowicz, 1-52, MIT Press, Cambridge, MA.

Chomsky, Noam (2004) "Beyond Explanatory Adequacy," *Structures and Beyond*, ed. by A. Belletti, 104-131, Oxford University Press, Oxford.

Chomsky, Noam (2007) "Approaching UG from below," *Interfaces + Recursion = Language?: Chomsky's Minimalism and the View from Syntax-Semantics*, ed. by U. Sauerand and H.-M. Gärtner, 1-30, Mouton de Gruyter, Berlin.

Chomsky, Noam (2008) "On Phases," *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, ed. by R. Freidin, C. P. Otero, and M. L. Zubizarreta, 291-231, MIT Press, Cambridge, MA.

Chomsky, Noam (2013) "Problems of Projection," *Lingua* 130, 33-49.

Chomsky, Noam (2015) "Problems of Projection: Extensions," *Structures, Strategies and Beyond: Studies in Honor of Adriana Belletti*, ed. by E. Di Domenico, C. Hamann and S. Matteini, 1-16, John Benjamins, Amsterdam.

Chomsky, Noam (2020) "Puzzles about Phases," *Linguistic Variation: Structure and Interpretation. A Festschrift in Honour of M. Rita Manzini*, ed. by L. Franco and P. Lorusso, 163-167, De Gruyter Mouton, Berlin.

Citko, Barbara (2014) *Phase Theory*, Cambridge University Press, New York.

Cinque, Guglielmo (1990) *Types of A'-Dependencies*, MIT Press, Cambridge, MA.

Epstein, Samuel D., Hisatsugu Kitahara, and T. Daniel Seely (2018) "A Simpler Solution to Two Problems Revealed about the Composite-Operation Agree," paper presented at the Japanese Society for Language Sciences 20th Annual International Conference, held at Bunkyo Gakuin Univeristy, August 2-3, 2018.

Grano, Thomas and Howard Lasnik (2019) "How to Neutralize a Finite Clause Boundary: Phase Theory and the Grammar of Bound Pronouns," *Linguistic Inquiry* 49, 465-499.

Kratzer, Angelika (2008) "Making a Pronoun: Fake Indexicals as Window into the Properties of Pronouns," *Linguistic Inquiry* 40, 187-237.

Merchant, Jason (2008) "An Asymmetry in Voice Mismatches in VP-ellipsis and Pseudogapping," *Linguistic Inquiry* 39:169-179.

Nakashima, Takanori (2020) "The Symmetry Condition on Labeling," ms. lingbuzz/005108

Obata, Miki and Samuel D. Epstein (2008) "Deducing Improper Movement from Phase-Based C-to-T Phi Transfer: Feature-Splitting Internal Merge," *WCCFL* 27, 353-360.

Richards, Marc (2007) "On Feature Inheritance: An Argument From the Phase Impenetrability Condition," *Linguistic Inquiry* 38, 563-572.

Roberts, Ian (2010) *Agreement and Head-Movement: Clitics, Incorporation, and Defective Goals*, MIT Press, Cambridge, MA.

Ross, John R. (1967) *Constraints on Variables in Syntax*, Doctoral Dissertation, MIT.

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