

SYNCHRONIZING PHYSICAL AND LOGICAL PROPERTIES*

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1 Unsolved Mysteries in the Minimalist Program

In this work, we attempt to offer solutions to the theoretical problems under the current minimalist program listed below as (i)-(iv), providing straightforward accounts of the empirical puzzles associated with them: (i) The Visibility Condition involves "look-across" (to be defined below), (ii) Case adjacency is indefinable under the theory of Case, (iii) Prosody-*wh*-scope synchronization in Japanese involves "look-across," (iv) Overt movement, whether enacted by EPP or not, involves "look-ahead." We argue that all these problems can be solved when we reorganize the minimalist model of grammar on a small scale and formalize the way grammar synchronizes the physical and logical properties of linguistic expressions.

2 P(hysical)-legibility

2.1 Case Drop and Case Adjacency

We start our investigation by examining the subject-object asymmetry concerning the so-called Case drop phenomenon in Korean as observed in (1) (Ahn and Cho 2006).¹

- (1) a. Subject: **etten salam**-{i/* \emptyset } (10K) *ttwi-ni?* 'What kind of person runs (10K)?'
what person-{NOM/* \emptyset } (10K) *run-Q*
b. Object: *YengHi-ka mwue(s)*-{*ul / \emptyset* } *sa-ss-ni?* 'What did YengHi buy?'
YengHi-NOM what- {ACC / \emptyset } *buy-PAST-Q*

This paradigm can be further extended to incorporate (2) (cf. Takezawa 1987 on Japanese).

* We are grateful to Tom Grano, Hyun Kyung Hwang, Barbara Vance and the participants of WAFL 13, especially to Mira Oh and Satoshi Tomioka, for their useful comments.

¹ Case drop is permitted basically only in informal speech. We always use *wh*-interrogative arguments in our examination of case drop to make sure that what is missing is not the topic marker *-nun*, which is known to be rather freely dropped. A *wh*-interrogative as a focused NP is known to reject *-nun* (at least as a "thematic" topic marker).

- (2) a. Object with adjunct intervention:
 Jina-ka **mwue(s)**-{**ul** / * \emptyset } *chimtay-eyse* ilk-ess-ni?
 Jina-NOM **what**- {**ACC** / * \emptyset } *bed-at* read-PAST-Q
 'What did Jina read on the bed?
- b. Scrambled object:
mwue(s)₁-{**ul** / * \emptyset } *Jina-ka* **t**₁ ilk-ess-ni? 'What did Jina read?
 what-{**ACC** / * \emptyset } *Jina-NOM* | read-PAST-Q
 ↑ _____ |

A cursory glance at (1)-(2) tells us that: (i) an accusative case maker seems to be eliminable from an object argument when and only when the object is adjacent to a verb ((1b) vs. (2a-b)) while (ii) similar case drop seems to be prohibited from a subject argument irrespective of its position in a sentence ((1a)). A quick generalization we can draw from this observation is that case morphology and adjacency to a verb are fulfilling the same function and are generally compensating for each other. It remains mysterious, however, why the asymmetry exists between subjects and objects as has just been seen. We propose to account for the whole paradigm in (1)-(2) (and more empirical facts to be discussed below) as a specific and partial set of phenomena arising from a general interface constraint relevant to the sensorimotor system as in (3).

- (3) Each argument must be **physically-legible (P-legible)**, indicated by one or more of:
 a. Morphology b. Adjacency c. Prosody

We consider (3a-c) to be a potentially universal inventory of means to achieve P-legibility of arguments. (3) is further specified in (4) below for the P-legibility of object arguments.

- (4) **P-legibility** of an **object** is established by one or more of:
 a. Overt accusative marking (henceforth **ACC**)
 b. Adjacency to V (Revised below as "Cojacency to V")
 c. Prosodic marking (To be clarified below)

Note that all of (4a-c) (as specific cases of (3a-c)) provide **physically visible cues**, thereby making up a natural class rather than merely a list of heterogeneous notions. The notion of physical legibility here is not necessarily equal to "having phonetic contents" (i.e., being pronounced) at the surface but is somewhat more abstract and subsumes it.

We can now ascribe the first observation on (1)-(2) to (4a-b) — the object in (1b) may appear with or without ACC since it is P-legible due to its adjacency to the verb while the objects in (2a-b) must appear with ACC, since they are not adjacent to a verb. Since the effects exhibit themselves in (1)-(2) as the presence versus the absence of morphological case, let us refer to them as "morphological case adjacency effects."

We observe, however, that morphological case adjacency effects involving objects can be ameliorated when the object non-adjacent to a verb is accompanied by some specific type of prosody, as indicated by the box, arrow and slashes in (5a-b).

- (5) a. Object with adjunct intervention:

Yuna-ka *mw***UE-Ø**_{ACC} (//) *uyca wi-eyse* **ilk-ess-ni?**
 Yuna-NOM **what-Ø**_{ACC} chair on-at **read-PAST-Q**
 'What did Yuna read on a chair?'

- b. Scrambled object:

*mw***UE₁-Ø**_{ACC} (//) *Yuna-ka* [e]_I **ilk-ess-ni?** 'What did Yuna read?'
what-Ø_{ACC} Yuna-NOM **read-PAST-Q**

- c. Subject:

etten so*NYE-Ø**_{NOM} (//) *cwulo manhwachayk-ul* **ilk-ni?**
 what girl-Ø_{NOM} usually comic.book-ACC read-Q
 'What kind of girl usually reads comic books?'

In each example here, a box indicates that the last syllable of the *wh*-focus phrase is lengthened when ACC or NOM is missing. The arrow shows that the same syllable is accompanied by a distinctive rising intonation. The slashes in parentheses indicate that this prosodic pattern may be optionally followed by a pause. When such prosody accompanies the sentence, case drop in (5a-b) becomes tolerated even if the object is not adjacent to the verb. We have decided to call this prosodic pattern "Compensatory Strengthening" and regard it as yet another means available in Korean grammar to achieve P-legibility of objects ((4c)). The persisting unacceptability of case drop from a subject in (5c), however, suggests that Compensatory Strengthening works only for internal arguments. Reflecting such a limitation, we will use the abbreviation **CompStrength_{INT(ERNAL)}** to indicate this prosodic strategy.²

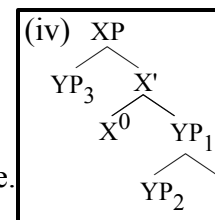
How can we account for the prohibition against the case drop from subjects as in (1a) under this approach? The clue comes when we observe that the so-called *Case adjacency requirement* must be satisfied by objects but not by subjects in English, as can be seen in (6) (Kitagawa 1997).

- (6) a. Object: *John read_v *carefully* the letter.
 b. Subject: **ok**John *probably* [I has] read the letter.

Note that the subject need not be adjacent to the INFL (or TNS) head, which has standardly been assumed to be the assigner of nominative case. This observation suggests that the traditional characterization of the Case adjacency requirement (Keyser 1968, Chomsky 1981, Stowell 1981) is flawed in some way.³ Furthermore, when we combine the observation on Case adjacency in English with those on the restricted case drop from subjects in Korean, a new and more general cross-linguistic view of the case-related paradigms arises.

We first supplement the approach in (3) with a finer analysis of the notion of adjacency:

- (7) Three subtypes of adjacency in binary-branching structures in (iv):
 (i) If YP₁ is at the periphery of X', the immediate projection of X⁰, then YP₁ is **cojacent** to X⁰, e.g., YP₁ as an object.
 (ii) If YP₂ is at the periphery of YP₁, the cojacent projection of X⁰, then YP₂ is **subjacent** to X⁰, e.g., YP₂ as a subject in a finite clause.



² CompStrength_{INT} alters the usual *wh*-focus prominence (rise+fall) in Seoul Korean. These two prosodic patterns can and should be clearly distinguished.

³ It also casts doubt on Bošković's (2007) characterization of EPP as "I need to be a Spec (of a Case assigner)."

- (iii) If YP_3 is at the periphery of XP , the projection dominating X' , then YP_3 is **superjacent** to X^0 , e.g., YP_3 as a moved *wh*-phrase.

Here, three subtypes of string adjacency are recognized with their hierarchical relations holding in binary-branching structures as in (7-iv) taken into consideration. Each of (7 i-iii) defines a subtype of adjacency to the head X^0 when a phrase is located at the periphery of X' , YP_1 , and XP , respectively, in (7-iv). First, (7-i) indicates that when the head X^0 and its complement phrase YP_1 are string-adjacent, YP_1 is characterized as being **cojacent** to X^0 . (4b) above should now be restated appealing to this finer definition of adjacency. Second, (7-ii) indicates that when the head X^0 and the phrase YP_2 are string-adjacent and YP_2 is the specifier in YP_1 , which is the complement phrase of X^0 , YP_2 is characterized as being **subjacent** to X^0 .⁴ As will be discussed shortly, we consider that this type of adjacency is required for establishing the P-legibility of the subject of a finite clause in some languages. Finally, (7-iii) indicates that when X^0 and its specifier phrase YP_3 are string-adjacent, YP_3 can be characterized as being **superjacent** to X^0 . It will be argued in Section 3 below that these subtypes of adjacency play an important role in characterizing the physical properties of various overt syntactic phenomena.

We now are ready to extend the approach introduced in (3)-(4) and offer (8) below, which specifies the means to achieve the P-legibility of subject arguments.

- (8) **P-legibility** of a **subject in a finite CP** is established by one (or more) of:
 a. Overt nominative marking (henceforth **NOM**)
 b. Subjacency to a finite feature (at the periphery of IP: **Fin** [_{IP} **Sbj** ...]) cf. Rizzi (1997)

Given (8a) and (8b), we can account for the whole case-related paradigm above involving subjects in a uniform way. First, Korean has an option of making subjects P-legible appealing to NOM ((8a)). Since Korean is a head-final language, on the other hand, it cannot appeal to the subject's subjacency to a finite feature (Fin) as a higher head ((8b)). This correctly captures the prohibition against case drop from subjects in Korean as in (1a) in contrast to case drop from objects as in (1b). In a head-initial language like English, on the other hand, (8b) is an option to make subjects P-legible. Thus, the subject *John* in (9) below becomes P-legible, being **subjacent** to Fin.

- (9) **Fin** [_{IP} **John** *probably* [_I has] read the letter].

This accounts for the otherwise puzzling subject-object asymmetry concerning Case adjacency in (6) under the traditional approach. An adverb may intervene between the subject and INFL in (6b) (= (9)) since the subject's adjacency to the INFL/TNS head is irrelevant and not required. The approach appealing to subjacency to Fin in (8b) will be further motivated below when we examine the adjacency effects observed in various inversion constructions in English.

English in fact does also have an option of morphological marking to achieve the P-legibility of arguments when they appear as pronouns or as genitive-marked phrases. Such morphological case, however, cannot be fully distinctive in English (e.g., *you* [NOM] vs. *you* [ACC] and *her* [GEN] vs. *her* [ACC]), and hence plays only a supplementary role (except for GEN). The P-legibility of arguments in English therefore is established in accordance with (10).

⁴ "Subjacency" here should not be confused with Chomsky's (1973) Subjacency Condition on Movement.

- (10) In English: (i) **P-legibility of objects** is established by cojacency to V ((4b)), and it **must be supplemented by ACC** ((4a)) **whenever possible**, e.g., *her*.
 (ii) **P-legibility of subjects** is established by subjacency to Fin ((8b)), and it **must be supplemented by NOM** ((8a)) **whenever possible**.
 (iii) **P-legibility of possessors** is established by GEN.

2.2 Case Adjacency without Case

The proposed P-legibility approach can be further motivated when morphological case adjacency effects are observed, first, with unaccusative verbs, as in (11) (cf. Hong 1994: 25).

- (11) a. **mwue-∅** **tteleci-ess-ni?** 'What fell?'
 what **fall-PAST-Q**
 b. **mwue- $\{ka / \text{??}^{\sim*} \emptyset\}$** *cekiey* **tteleci-ess-ni?** 'What fell over there?'
 what- $\{NOM / \text{??}^{\sim*} \emptyset\}$ **over.there** **fall-PAST-Q**
 c. **mw $\boxed{UE-\emptyset}$** (//) *cekiey* **tteleci-ess-ni?**

Here we see basically the same paradigm as that involved in the transitive sentences in (1b), (2a-b) and (5a-b) above. Case drop is permitted only when the internal argument is cojacent to the verb ((11a) vs. (11b)), but CompStrgth_{INT} permits it even without cojacency ((11c)). What is important to us here is that the cojacency requirement imposed on case drop in (11b) cannot be considered the result of the need for **abstract Case** since the involved verb is unaccusative. In other words, in order to account for the paradigm in (11) properly, we need to appeal to a more general notion than Case. The notion of P-legibility can not only capture the morphological case adjacency effect in (11-a-b) but can also explain why prosody in (11c) can ameliorate it.

Second, as illustrated by (12) below, Genitive drop with a transitive nominal predicate seems to be permitted only when the argument is cojacent to the nominal predicate (Hong 1994: 27).

- (12) [_{NP} **cekkwun- $\{uy^* \emptyset\}$** tosi- $\{uy / \emptyset\}$ [_N **phakoy**]] 'the enemy's destruction of the city'
 enemy- $\{GEN / * \emptyset\}$ city- $\{GEN / \emptyset\}$ **destruction**

In other words, we observe another instance of morphological case adjacency effects. It is unlikely, however, that the nominal predicate assigns abstract Case to its Genitive-marked arguments multiple times. Furthermore, Genitive drop with an **unaccusative** nominal predicate as in (13) below also exhibits the set of restrictions as those observed above in (11):

- (13) a. [_{NP} **pihayngki- $\{uy / \emptyset\}$** [_N **chwulak**]] 'the falling down (= crashing) of an airplane.'
 airplane- $\{GEN / \emptyset\}$ **falling.down** (Hong 1994: 29)
 b. [_{NP} **pihayngki- $\{uy^* \emptyset\}$** *pinpenhan* [_N **chwulak**]]
 airplane- $\{GEN / * \emptyset\}$ *frequent* **falling.down**
 'the frequent crashing of an airplane.'
 c. [_{NP} **pihayng $\boxed{KI-\emptyset}$** (//) *pinpenhan* [_N **chwulak**]]
 airplane-∅ *frequent* **falling.down**

Note that Genitive drop is permitted from the internal argument only when it is cojacent to

the unaccusative nominal predicate ((13a) vs. (13b)) except when it is accompanied by $\text{CompStrgth}_{\text{INT}}$ ((13c)). Once again, we are led to the conclusion that morphological case adjacency effects are independent of the notion of abstract Case.

When we integrate this conclusion with the hypothesis that adjacency can be subsumed under a more general notion of P-legibility, we obtain the view that the notions of abstract Case/case assigner/assignee can be eliminated from grammar (cf. Marantz 1991 and McFadden 2004).

2.3 Further Motivations

The hypothesis that subjacency to a finite feature as a higher head allows subjects in English to become P-legible as in (9) can be further motivated. First, we observe that the positions of "higher" (or "sentence") adverbs (Cinque 1999) are flexible above VP, as shown in (14).

- (14) a. $[_{\text{CP}} [_{\text{Top}} \textit{Possibly}] \textit{Fin} [_{\text{IP}} \textit{John has lost his mind}]]$
 b. $[_{\text{CP}} \textit{Fin} [_{\text{IP}} \textit{John possibly has lost his mind}]]$
 c. $[_{\text{CP}} \textit{Fin} [_{\text{IP}} \textit{John has possibly lost his mind}]]$

When Subject-Aux Inversion takes place, on the other hand, such an adverb may not precede the subject, as illustrated in (15b), which contrasts with (15a) as well as (14a).

- (15) a. **Has John possibly** lost his mind? (derived from (14b-c))
 b. ***Has₁ possibly John t₁** lost his mind? (derived from (14a))

We observe here, in other words, that the adjacency between the preposed finite verb and the subject cannot be broken. This seemingly puzzling adjacency effect is expected in our approach when we assume that the inverted Aux in (15b) picks up the finiteness feature (PRES) first and then the speech act feature (YES/NO QUESTION), as illustrated in (16). (The same analysis is also possible for (15a).)

- (16) * $[_{\text{SpeechAct}} [_2 \textit{Has}_1\text{-PRES}]\text{-Y/N-Q}] [_{\text{Top}} \textit{possibly}] \textit{John} \textit{lost his mind}]$?

This contrasts with the grammatical cases in (14a-c) (and (15a)). Note crucially that the subject *John* is subjacent to the finite feature in (14a-c) (and (15a)) but not in (16). Its P-legibility therefore can be established in the former but not in the latter when we assume the extra-sentential features are introduced in the hierarchical order "[SpeechAct [Topic [Fin [IP ...]]]]", along the line of Rizzi (1997).

A similar but distinct puzzle has been observed by Collins (1997: 36) with respect to Quotative Inversions, as illustrated in (17).

- (17) a. $[_{\text{Top}} \textit{Cleverly}] \textit{Fin} [_{\text{IP}} \textit{John said, "I don't have enough money"}]$
 b. $[_{\text{SpeechActP}} [_1 \textit{"I don't have enough money"}]] [_{\text{SpeechAct}} [_3 \textit{said}_2\text{-Fin}]\text{-Quote}]$
 $\textit{John} \textit{t}_1 \textit{cleverly}]$
 c. * $[_{\text{SpeechActP}} [_1 \textit{"I don't have enough money"}]] [_{\text{SpeechAct}} [_3 \textit{said}_2\text{-Fin}]\text{-Quote}]$
 $[_{\text{Top}} \textit{cleverly}] \textit{John} \textit{t}_1]$

Here again, the adverb immediately preceding the subject as in (17a) suddenly comes to be

prohibited when inversion of a finite verb takes place as in (17c) while the inversion itself causes no problem, as seen in (17b). In other words, an adjacency effect arises between the subject and a preposed finite verb. We can capture this contrast appealing to the proposed P-legibility approach. Note that we can ascribe the contrast to the success of achieving P-legibility of the subject in terms of its subjacency to **Fin** in (17a-b) as opposed to its failure in (17c) due to the intervening topicalized sentence adverb. In (17b-c), V-Fin eventually picks up the speech act feature "Quote." This approach has the advantage of making it unnecessary to stipulate that an adverb cannot be adjoined to some specific functional projection as done in Collins (1997).

We can also motivate the P-legibility approach to morphological case adjacency effects when we examine the distribution of COMPs in English. To begin with, it has long been noted that NPs and CPs exhibit asymmetry with respect to Case adjacency effects, as shown in (18).

- (18) a. *We **believe** *sincerely* [_{NP} **his story**].
 b. We **believe** *sincerely* [_{CP} **that he is innocent**].

The traditional GB account of the contrast is to assume that NP arguments do but CP arguments do not have to be assigned abstract Case. An adverb cannot intervene, therefore, between the verb and its NP complement in (18a), though no such problem arises with the CP complement in (18b). This account, however, posed a threat to the Visibility Condition since the CP complement in (18b) now must be θ -marked without being Case-marked.

Independently of the asymmetry between nominal and clausal complements as in (18), asymmetry between overt and covert COMP as in (19) has also been observed (Pesetsky 1991, Kitagawa 1997).

- (19) a. We **believe** [_{CP} { **that** / ^{ok} \emptyset_{that} } he is innocent].
 b. We **believe** *sincerely* [_{CP} { **that** / * \emptyset_{that} } he is innocent].

In (19b), it is observed that null COMP (or *COMP drop*) is prohibited when an adverb intervenes between the CP argument and the verb which selects it. In other words, an adjacency requirement on null COMPs is observed. Bošković and Lasnik (2003: 529) report similar contrasts involving various distinct constructions as in (20).

- (20) a. "Extraposited" CP: It **seemed** *at that time* [_{CP} { **that** / * \emptyset } [_{TP} David had left]].
 b. Pseudo-cleft: What the students **believe** *is* [_{CP} { **that** / * \emptyset } [_{TP} they'll pass the exam]].
 c. Right Node Raising: They **suspected** __ *and we believed* [_{CP} { **that** / * \emptyset } [_{TP} Peter would visit the hospital]].
 d. Gapping: Mary **believed** *Peter finished school*
and Bill __ [_{CP} { **that** / * \emptyset } [_{TP} Peter got a job]].
 e. Topicalized CP: [_{CP} { **That** / * \emptyset } [_{TP} John likes Mary]], *Jane didn't believe* __.

In the proposed approach, we can regard this contrast as the reflection of the success versus failure to achieve P-legibility of CP complements, hypothesizing that overt COMPs for CP arguments function on a par with morphological case for NP arguments. It is, in other words, a rare case of P-legibility in English which primarily depends on morphology. In particular, we further extend the means to achieve the P-legibility of arguments in English as in (21).

- (21) **P-legibility** of a **CP complement** in English is established by one or both of:
 (i) **Cojacency to a verb** and (ii) **Overt COMP**

In all of (19b) and (20a-e), COMP drop is prohibited and an overt COMP is required since P-legibility of the involved CP complement would otherwise remain unachieved due to the lack of cojacency to the selecting verb. In other words, we are reducing the adjacency requirement on COMP Drop in English to the morphological case adjacency effects we have observed above. Note that the visibility puzzle involving CP arguments mentioned above (i.e., arguments that are not Case marked but θ -marked) is resolved in this approach — the CP complement in (18b), for example, is well-formed being P-legible and θ -marked.

3 Toward a Stricter Minimalist Grammar

One recalcitrant problem in the Minimalist syntax which has long been recognized at least unofficially is that overt movement, characterized as a pre-Spell-Out operation, necessarily involves the so-called "look-ahead" problem since the only true motivation behind such timing of application is the observation that such movement induces simultaneous effects at both PF and LF. In order to achieve such synchronized effects, EPP features on the target head were postulated, which are characterized as the selectional property "I need a Spec (of category X)." Since they are also characterized as viruses, they are said to have to be immediately eliminated from derivation, and hence trigger movement before Spell-Out. As pointed out by Bošković (2007), however, even EPP features cannot escape "look-ahead" under Chomsky's (2000) Phase Theory. (22) below lists other types of syntactic devices widely appealed to in the literature each with their unresolved look-ahead problem.

- (22) a. Chomsky's (2001) *Agree* must apply **before Spell-Out** because valued agreement features on the target heads may provide **phonetic effects at PF** while those features on the target heads **cannot be sent to LF**, not having any **interpretive role** to play and being indistinguishable from the interpretable agreement features on nominals.
 b. Chomsky's (2013) *Labeling Algorithm* triggers **overt movement** in order to permit **semantic interpretation** of the host phrase.
 c. Rizzi's (1997) *Informational Criteria* trigger **overt movement** of topic, focus, *wh*-interrogatives for their **interpretation at LF**.
 d. Baker's (1988) *Incorporation* as **overt syntactic movement** is triggered by **surface boundness of morphemes at PF**.

3.1 Synchronizing P-legibility and L-legibility

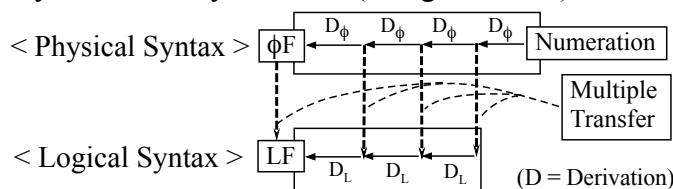
Another potential problem to the Minimalist model of grammar arises when we attempt to capture the synchronization of prosody and scope interpretation of *wh*-questions in Tokyo Japanese as illustrated in (23) below, which has been observed by Tomioka (1997), Deguchi and Kitagawa (2002), Ishihara (2003) and Kitagawa (2005), among others.

- (23) [**DO**'no ri'kisi-ga _____ ka'tta-ka] _____ kiNINARIMA'su-ka?
which sumo.wrestler-NOM won-COMP_{Wh/Whether} anxious.to.know-COMP_{Wh/Y-N}
 (i) **Subordinate scope:** Are you anxious to know [**which sumo wrestler** won]?
 (ii) **Matrix scope:** **Which sumo wrestler**₁ is it that you are anxious to know
 [*whether he*₁ won]?'

Wh-focus (enclosed by a box) receives pitch prominence and is followed by Post-focal reduction (underlined), which compresses the pitch range significantly and suppresses all high tones in the domain. When the **Focus Prosody (FPd)** characterized this way terminates at the end of the subordinate COMP, the subordinate *wh*-focus scope interpretation as in (23-i) arises but if FPd continues to the end of the matrix COMP (as indicated by a dotted underline), the matrix scope as in (23-ii) arises. While discovering this direct correlation between sounds and meanings is an important empirical achievement, mere observation of this phenomenon poses a new problem to be solved in generative grammar. Note that PF and LF should not be capable of directly relating to each other **across syntax** in the current model of the Minimalist (and in fact any generative) grammar. Such direct PF-LF association would require a global rather than local scan of syntactic derivation. We describe the circumstances involved here as "**look-across**" and attempt to propose a way to avoid it in capturing sound-meaning synchronization.

In order to tackle both look-ahead and look-across problems, we first propose to revise the current model of the Minimalist syntax as illustrated in (24).

- (24) P-syntax and L-syntax: (Kitagawa 2011)



In this model, syntax inducing physical effects (**P(hysical)-syntax**) and syntax inducing logical effects (**L(ogical)-syntax**), both characterized as interface components, operate separately without any overlap and derive ϕP (Physical Form) and LF, respectively. Under this model, the notion of overt syntax is redefined as synchronized achievement of legibility in P-syntax and L-syntax. Moreover, legibility at ϕP (**P(hysical)-legibility**) and that at LF (**L(ogical)-legibility**) are established cyclically with multiple transfer, which we will elaborate on below. The proposed reorganization of syntax may appear drastic at first sight but is, in fact, relatively small-scale. First, the proposed reorganization has simply decomposed traditional overt syntax by untangling and separating its PF-effects and LF-effects. (We will show directly below how they can be synchronized without causing either look-ahead or look-across.) Second, multiple transfer merely applies in the opposite way to the familiar multiple Spell-Out, stripping away L-features rather than P-features from the feature complexes of lexical items.

Under this model, we reinterpret and reduce the Visibility Condition to (25).

- (25) (i) Every argument must be P-legible at ϕF in its designated way, e.g., ACC, Cojacency to V, NOM, Subjacency to Fin.
 (ii) Each signifier of P-legibility is associated with L-legibility, which induces some specific semantic interpretation, e.g., θ -roles ($\theta_{INT}/\theta_{EXT}$), Locus of predication.

3.2 Derivational Synchronization of P-legibility and L-legibility

Finally, following Platzack (2001) and Grohmann (2003) in spirit, we assume that, in some languages, the synchronization of P- and L-legibility (P/L-synchronization) is established **derivationally**, first in the V-domain and then in the C-domain, when transfer to L-syntax in (24) applies in a bottom-up fashion. Recall that P- and L-legibility are independently achieved at ϕP and LF, respectively, while their association is already encoded in PF-Complexes at the time Numeration is formed, as described in (25-iii). We also assume that P/L-synchronization is established only in the C-domain in other languages, exhibiting a (possibly parametric) cross-linguistic variation.

First, in languages like English, which primarily encode P-legibility for the interpretations of arguments **structurally**, interpretive relations and their physical properties are synchronized derivationally. When merge and multiple transfer proceed upward from VP to CP (cf. Epstein, et al. 1998), P/L-synchronization is achieved **at the end of** the derivation of the V-domain as well as **at the end of** the C-domain, establishing thematic interpretation, predication, tense interpretation, information packaging and speech act, in whichever domain an appropriate P-legibility is established. Such a derivational P/L-synchronization in the English sentence (28a) is described in (29). The PL-complexes ($[F_P, F_L]$) of the arguments in (28a) are indicated in (28b).

- (28) a. *We love Tokyo.*
 b. *Tokyo*: [Cojacency to V_P , Internal θ_L]
we: [Subjacency to Fin_P , External θ_L & Predication locus_L]
- (29) (i) *Tokyo* (in V-domain): Cojacent to V \Leftrightarrow +[Internal θ]
 (ii) *we* (in C-domain): Subjacent to Fin \Leftrightarrow +[External θ] & Predication Locus

(29-i) describes the way the P-legibility property of the object *Tokyo* (Cojacency to V) is synchronized with its thematic property as an internal argument. Since "Cojacency to V" is the only way for an object to become P-legible in English, its L-legibility is necessarily established within the V-domain. (29-ii) describes, first, the way an external θ -role is assigned to *we* as the subject of a transitive verb. The assumption adopted here is that an internal θ -role is assigned first in the V-domain, and then an external θ -role (and an internal θ -role that failed to be assigned in VP, as in the passive) is assigned to an argument that is yet to be θ -marked when it is subjacent to Fin in the C-domain. (29-ii) also describes how the external argument *we* comes to be interpreted as the locus of predication (or a categorical judgment), with its P-legibility established by its subjacency to Fin .

A cyclic derivation of the *wh*-focus in (30a) below based upon the PL-Complex in (30b) is described in (31).

- (30) a. *What* did you buy?
 b. *what*: [Cojacency to V_P , Internal θ_L] & [Superjacency to $COMP_{wh}_P$, *wh*-focus_L]
- (31) (i) *what* (in V-domain): Cojacent to V \Leftrightarrow +[Internal θ]
 (ii) *what* (in C-domain): Superjacent to $COMP_{wh}$ \Leftrightarrow *wh*-focus

(31-i) describes the P/L-synchronization of *what* as the object, which is similar the case in (29-i). (31-ii) describes the way the object *wh*-phrase comes to be eventually interpreted as *wh*-

focus, with its P-legibility established by its superjacency to COMP_{wh} in the C-domain. Note crucially that the synchronization of P- and L-legibility of the object in the V-domain happens to be recognizable at the surface in (28a) but not in (30a). Similarly, in a verb raising language like French, the object can become P-legible being coadjacent to a verb in the V-domain even if it may show up in a remote position from the raised verb at the surface.

When we hypothesize a (possibly parametric) cross-linguistic variation, we can gain some insight into the nature of the free word order phenomena in languages like Korean and Japanese. In these languages, P-legibility for the interpretations of arguments is dominantly encoded by morphology and/or prosody, which might make it possible for P/L-synchronization to avoid a need to be enacted recurrently in both V- and C-domains but to be enacted **only once at the end of the entire derivation of ϕF in the C-domain**. Sentence (32a) below, for example, involves the unmarked word order (SOV) while sentence (32b) involves a marked order (OSV) in Korean. The PL-complexes ($[F_P, F_L]$) of the arguments in these sentences are indicated in (32c).

- (32) a. *etten sonye-ka mwue(s)-{ul / \emptyset }* [_V *mek*]-ess-ni? 'Which girl ate what?'
 which girl-NOM what-ACC / \emptyset eat-PAST-Q
- b. { *mwue(s)₁-ul / mwUE₁- \emptyset* (//) } *etten sonye-ka mek-ess-ni?*
 { what-ACC / what- \emptyset } which girl-NOM eat-PAST-Q
- c. *mwues* 'what': [Cojacency to V_P , Internal θ_L] ((32a)) / [ACC_P, Internal θ_L] ((32a-b)) / [CompStrength_{INT}, Internal θ_L] ((32b))
 & [*wh*-focus prosody_P, *wh*-focus_L] ((32a-b))
- sonye* 'girl': [NOM_P, External θ_L & Predication locus_L]
- etten* 'which': [*wh*-focus prosody_P, *wh*-focus_L]

As indicated in (32c), the object *mwues* 'what' in (32a-b) can achieve its P-legibility with at least one of Cojacency to V, ACC and CompStrength_{INT}, all of which can be synchronized with L-legibility leading to its thematic property as an internal argument. (33) below describes how all of the arguments in (32a-b) undergo P/L-synchronization, **all in the C-domain**.

- (33) (i) *mwues* 'what': Cojacent to V, ACC or CompStrength_{INT} \Leftrightarrow +[Internal θ]
 (ii) *mwues* 'what': *wh*-focus prosody \Leftrightarrow *wh*-focus
 (iii) *sonye* 'girl': NOM \Leftrightarrow +[External θ] & Predication Locus
 (iv) *etten* 'which': *wh*-focus prosody \Leftrightarrow *wh*-focus

(33-i) describes the way the P-legibility of the object *mwues* 'what' (established by at least one of F_P s in (32c)) is eventually synchronized with its thematic property as an internal argument in (32a-b). (33-ii) describes the way this object *wh*-phrase comes to be interpreted also as *wh*-focus with its P-legibility established by its *wh*-focus prosody (cf. Hwang 2015). (33-iii) describes the way the subject nominal *sonye* 'girl' comes to be interpreted as an external argument and also as the locus of predication. (33-iv) describes the way the subject *wh*-phrase *etten* 'which' comes to be interpreted as *wh*-focus, with its P-legibility established by its *wh*-focus prosody. What is worthy of note is that, as in (32b), the scrambled object has an option of being associated with an internal θ -role even outside the V-domain because of the P-legibility established by ACC or CompStrength_{INT}, both of which permit this P/L-synchronization even

when it is not coadjacent to the verb. We are claiming, in other words, that the availability of these extra means to achieve P-legibility outside VP is the source of the freedom of surface word order in languages like Korean and Japanese, which in effect would permit all cases of P/L-synchronization to be established at once in the final representation ϕF when the derivation of the entire clause reaches the end.

4 Summary

In this article, we argued that the notions P(hysical)-legibility and L(ogical)-legibility should be appealed to in order to properly capture the interface requirements imposed on arguments. Identifying physically visible cues such as morphology, adjacency and prosody as means to achieve P-legibility of arguments, we showed that the otherwise puzzling subject-object asymmetry involving case marker drop in Korean and case (and null COMP) adjacency requirement in English can be accounted for in a uniform way.

It was also argued that the notion of overt syntax can be redefined as synchronized achievement of legibility in P-syntax and L-syntax (in the Minimalist model of syntax revised as in (24)), which captures not only the original Visibility Condition, i.e., synchronization of Case and θ , but also prosody-scope synchronization of *wh*-interrogatives in Japanese and the overt *wh*-displacement-scope synchronization in English without inducing look-across or look-ahead.

Finally, it was also pointed out that the proposed approach incorporating derivational synchronization of P-legibility and L-legibility permits us to capture the variety of surface realization of P-legibility in the "verb raising" languages like French and the "free word order" languages like Korean and Japanese.

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