Decomposing Overt Syntax

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1. Introduction and Background

The goals of this work are: (i) to direct our attention to the existence of prosody-information synchronization in linguistic expressions, and propose an approach to capture it in the grammar, and (ii) to explore the implications of the proposed approach for the reorganization of grammar, redefining the notion 'overt syntax'. In particular, it will be pointed out that overt syntax, including overt movement, should be regarded as nothing but the two related but independent computational processes that induce the synchronized effects at PF and LF.

2. Prosody-Information Synchronization

2.1 Wh-focus

In semantico-pragmatic terms, wh-interrogatives and their answers have long been analyzed as foci (Hamblin 1973). Independently, it has also been pointed out that wh-interrogatives are often accompanied by a distinct focus prosodic pattern, for instance as in Tokyo Japanese illustrated in (1) (Kori 1989, Maekawa 1991).

(1) Kanozyo-wa ano-ban   **DA**re-to atteita-***no***?
     she-TOP   that-night who-with seeing-COMP$_{Wh}$

   '**Who$_1$** was she seeing **t$_1$** that night?'

'Focus Prosody' (henceforth **FPD**) involved here can be characterized by 'Wh-focus prominence' (indicated by a boxed portion of a wh-word) followed by 'post-focal reduction', which significantly compresses the pitch range of all subsequent items in the FPD domain (indicated by an underline). All matrix questions also involve the utterance-final 'Interrogative Rise' (indicated by a question mark).[1]

   More recently, Deguchi and Kitagawa (2002) and Ishihara (2003) pointed out that the grammar of Japanese induces even finer correspondence between the prosody and the interpretation of Wh-focus — the domain of FPD coincides with the scope domain of Wh-focus in such a way that the final word of FPD (i.e., COMP) corresponds to the syntactic head of the Wh-scope domain (CP). Thus, a wh-interrogative sentence that is potentially ambiguous in its scope can be disambiguated by two distinct patterns of FPD as illustrated below. First, if the FPD terminates at the subordinate COMP as in (2), the wh-phrase in the subordinate CP takes subordinate scope.

(2) [$_{CP}$Keesatu-wa [$_{CP}$ kanozyo-ga ano-ban   **DA**re-to   atteita-***ka***]
      police-TOP   she-NOM   that-night **who**-with seeing-**COMP$_{Wh}$**
      ka**KUNIN**-**SIYO**oto-siteiru-*no*]?
      confirm-try.to-doing-COMP$_{Y/N}$
   'Are the police trying to confirm [***who$_1$*** she was seeing **t$_1$** that night]?'

In (2), the post-focal reduction and hence FPD terminates at the subordinate COMP (henceforth **Local FPD**), and the entire utterance is interpreted as a yes-no question. The end of the post-focal reduction in Local FPD is signaled by the Initial Rise applying in the first post-COMP element in the

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[1] FPDs of distinct kinds have been also reported on other dialects of Japanese. See Kubo (2001), Smith (2005) and Igarashi (To appear) among others. In this work, I concentrate on Tokyo Japanese, which I simply refer to as "Japanese" throughout. I also examine only the examples including lexically accented Wh-phrases and post-COMP items for clarity.

matrix clause (e.g. *kaKUNIN-SIYO'oto* 'confirm-try.to' in (2)). If, on the other hand, FPD is extended in the same sentence up to the matrix COMP as in (3) below (henceforth **Global FPD**), the Wh-focus takes the matrix scope. The entire utterance therefore is interpreted as a wh-interrogative (with the subordinate COMP -*ka* interpreted as 'whether'.)

(3) [$_{CP}$ Keesatu-wa [$_{CP}$ kanozyo-ga ano-ban DAre-to atteita-*ka*] kakunin-
　　　　　　　　　　　　　　　　who-with -COMP$_{Wthr}$ confirm-

　　siyooto-siteiru-***no***]?
　　trying.to-**COMP$_{Wh}$**
　'Who$_1$ is such that the police are trying to confirm [*whether* she was
　seeing **him$_1$** that night]?'

One crucial property of Global FPD worth paying attention to is that its domain does not necessarily correspond to any syntactic constituent, as can be seen in (3), while it is prosodically indicating that the matrix CP is the Wh-scope domain. Such a twisted correlation between the two domains indicates that the sound-meaning synchronization in question cannot be captured solely in terms of hierarchical syntactic analyses. The pitch-track diagrams in Figure 1 and Figure 2 below (reproduced from Ishihara (2003: 61) with permission) illustrate the tonal properties of Local and Global FPD, respectively. (The Wh-focus prominence is indicated by an upward arrow, the post-focal reduction by an oval, and the pos-COMP rise by a box.)

'Does Naoya still remember [**what$_1$** Mari drank *t$_1$* at the bar]?'
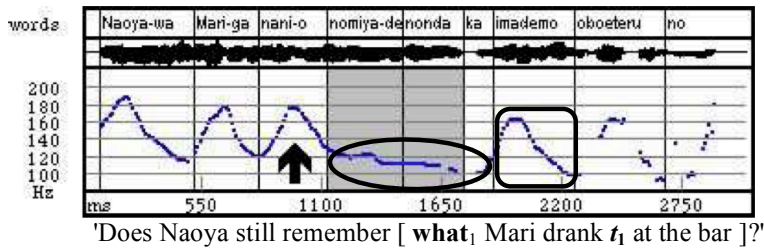
Figure 1: Pitch-track diagram of *Local* FPD for *Subordinate* Wh-scope

'**What$_1$** is such that Naoya still remembers [whether or not Mari
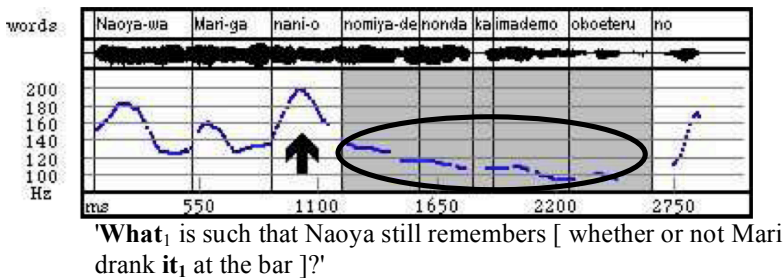drank **it$_1$** at the bar]?'

Figure 2: Pitch-track diagram of *Global* FPD for *Matrix* Wh-scope

In short, the grammar of Japanese permits the interpretive scope of information packaging involving a Wh-focus in Tokyo Japanese to be synchronized with the focus prosody domain starting from a wh-phrase and ending with COMP.

   The successful synchronization of matrix wh-scope and Global FPD as in (3) (as well as in the sentence in Figure 2) has very important implications for the syntax of Japanese. Since a wh-phrase located in a wh-island can provide an acceptable matrix scope interpretation, we should *not* consider that Subjacency as a grammatical constraint is at work in Japanese, contra Nishigauchi (1990) and Watanabe (1992). It has also been pointed out, on the other hand, that the matrix wh-scope interpretation in a potentially ambiguous sentence like (3) is heavily handicapped because of multiple extra-grammatical biases toward the subordinate wh-scope interpretation as summarized in (4).

(4) a. The matrix scope interpretation for the wh-in-situ located within a wh-island is pragmatically uncommon, and it generally needs to satisfy a more elaborated presupposition than the subordinate scope interpretation.

   b. Global FPD to accompany the matrix wh-scope is prosodically more marked than Local FPD. As a result, Local FPD as a default prosodic pattern is generally assigned in production as well as in perception through silent reading (in accordance with the Implicit Prosody Hypothesis argued for by Fodor (1998), Bader (1998), and Fodor (2002), among others).

   c. For the matrix wh-scope interpretation, the wh-item in the subordinate clause would have to be associated with the non-local COMP in defiance of the locality requirement imposed by the on-line processing strategy (Miyamoto and Takahashi 2002).

   d. The critical prosodic cue *listeners* need in the on-line processing of the matrix wh-scope interpretation often fails to be encoded by *speakers*.

Such multiple extra-grammatical biases against the matrix wh-scope interpretation in a potentially ambiguous sentence often induces awkwardness when the sentences is presented for judgment, typically in a null discourse context without appropriate prosody assigned. The awkwardness induced this way has been repeatedly misinterpreted as ungrammaticality and misattributed to Subjacency in the literature. For relevant discussion, see Kitagawa and Fodor (2003), Kitagawa (2005), and Kitagawa and Fodor (2006) for (4a-c) and Hirose and Kitagawa (2008) for (4d).

2.2 The Syntax of Prosody-Scope Synchronization

How can we capture these (and possibly other) cases of prosody-information (i.e., sound-meaning) synchronization? Since the model of generative grammar has been designed to let syntax mediate sounds and meanings, the most obvious answer is that such synchronization is established in syntax, that is, in the course of computation in I-languages. Some core working hypotheses of the minimalist program prescribe that computation in I-languages have the following properties. First, computational operations are characterized as nothing but an algorithm to simply *map lexical information onto PF and LF*, which is not allowed to append any other information (='Inclusiveness Requirement'). Second, computation must *completely split* lexical information into PF and LF representations (='Legibility Requirement'). Third, computational operations are induced *only to achieve legitimacy at the interface* (= 'Least Effort Requirement').

Adopting this view, I would like to hypothesize that whatever information which ensures sound-meaning synchronization is encoded in lexical items and comes to be split into part of PF and LF in the course of syntactic derivation. In particular, I postulate what I call 'Physical/Logical Feature Complex (henceforth **PL-Complex**), which takes the form $[f_P, f_L]$. A PL-Complex consists of two parts — a feature legitimate for sounds $[f_P]$ and one legitimate for meanings $[f_L]$. I tentatively assume that a PL-Complex is an interpretable feature complex motivated by information packaging, and that it is assigned to lexical items when Numeration (or Lexical Array) is formed, just as formal features are assigned there. A PL-Complex then comes to be split into $[f_P]$ and $[f_L]$ in the course of computation, and $[f_P]$ at PF provides some instruction to the performance system for sounds and $[f_L]$ at LF provides some instruction to the performance system for meanings. In this way, the sound-meaning synchronization can be established in the grammar effectively and naturally.

In order to achieve the prosody-scope synchronization involved in wh-interrogatives, I propose the following analyses. First, the grammatical concept of 'Wh-focalization' is introduced into Numeration as what I call the 'WC-pair', consisting of a wh item and a COMP, each of which is specified with a PL-Complex as indicated in (5).[2]

(5) a. *dare* 'who': $[\mathbf{W_P}, \mathbf{W_L}]$
    b. *-ka* 'COMP$_{Wh}$': $[\mathbf{C_P}, \mathbf{C_L}]$

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[2] To be precise, the PF-Complexes for the WC-pair should probably be analyzed as consisting of the Wh-question feature inherent to a Wh-word and what should be called 'Focus' PL-Complexes. For simplicity, however, I treat them as if they were inseparable, which is probably true only in the unmarked case.

Introduction of a grammatical unit/concept into syntax in the form of a pair of lexical items is nothing unusual. The aspectuals and passive in English, for instance, require the appropriate pairing of an auxiliary verb and a participle (e.g. perfect expressed with *have* and *-EN*).

The synchronization of Global FPD and matrix wh-scope we observed in (3) above, for example, will be represented as in (3') below with these PL-Complexes.

(3) **PF**: [$_{CP}$ Keesatu-wa [$_{CP}$ kanozyo-ga ano-ban $\boxed{\text{DA}}$ re$_{WP}$-to   atteita-ka]

                kakunin-siyooto-siteiru-***no***$_{CP}$]?   **Beginning of FPD**

                    End of FPD

    LF: **[**$_{CPL}$ Keesatu-wa [$_{CP}$ kanozyo-ga ano-ban $\boxed{\text{DA}}$ re$_{WL}$-to atteita-ka]

   Scope domain   **Wh as focus**

       kakunin-siyooto-siteiru-***no***$_{CL}$]?

            Head of scope domain

       '**Who₁** is such that the police are trying to confirm [*whether* she was seeing **him₁** that night]?'
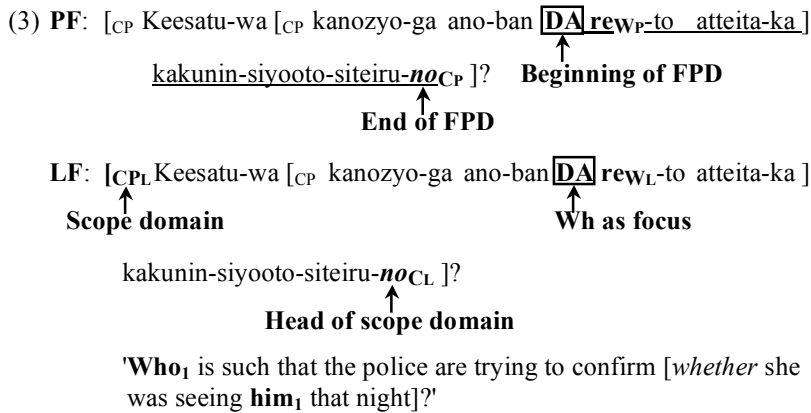
At PF, the domain of FPD is defined *linearly*, W$_P$ indicating the initial point of FPD and C$_P$ its terminal point. As pointed out earlier, this prosodic domain does not have to correspond to any syntactic constituent. At LF, W$_L$ indicates the focused wh-item and C$_L$ indicates the head of the scope domain of this focus. Grammar then must fulfill a rather difficult task of synchronizing the domain of FPD (linear information) with the Wh-scope domain (hierarchical information). The introduction of PL-Complexes, however, can fulfill this task properly and achieves the prosody-information synchronization.

3. Implications for the Model of Grammar

The proposed approach to prosody-information synchronization has great potential for the improvement of the minimalist program, permitting us to eliminate some undesirable theoretical constructs from the grammar.

3.1 Current Deviation from the Minimalist Standards

While the notion 'movement', especially 'overt movement', perhaps had long been the strongest drive for the advancement of generative syntax, its justification became rather difficult — at least unofficially so — when the framework made the 'minimalist' turn. In the minimalist program, overt syntax has been characterized as the computation that takes place *before Spell-Out*, and thereby affects both PF and LF rather than LF alone. First, in

order to justify its inclusion into the grammar, the EPP-feature was postulated (Chomsky 2000, 2001), which bluntly requires various functional heads to attract some item to their Spec positions. This theoretical device, however, simply is a restatement of the problem rather than its solution. Furthermore, in order to justify why movement occurs overtly, i.e., why it applies before Spell-Out, it had to be assumed that the EPP property is a 'virus,' which needs to be eliminated before any larger constituent is created by Merge. Movement is made overt, in other words, at the expense of the postulation of an imperfect entity that needs to be eliminated even before it reaches the interface, disregarding the major tenet of the framework, i.e., the legibility requirement imposed only on the interface. Note also that movement was made to induce displacement effects at both PF and LF *accidentally* because of this tailor-made imperfection to be eliminated before Spell-Out. It does not seem to be overly brash, therefore, to state that the EPP approach to overt movement was a rather desperate attempt, with the absence of any other good alternative, to achieve the displacement effects anticipated at PF as well as LF.

Miyagawa (2010) attempted to substantiate this approach by identifying EPP as agreement features on the target heads. He claimed that EPP triggers overt movement because it needs to agree and this agreement must take place locally with its Spec.[3] Chomsky (2001: 5) assumes that 'Agree' must apply before Spell-Out since valued agreement features on the target heads may provide phonetic effects at PF while they cannot play any role at LF. The combination of these assumptions would in effect provide some substance to both EPP and virus. Note, however, that overt movement applies in this approach basically for providing phonetic effects at PF, and if it induces any effect on LF, it takes place only *incidentally* or merely as a *by-product*.

Bošković (2007) also pointed out that EPP characterized as 'I need a Spec' would inevitably induce a "look-ahead" problem in Chomsky's phase approach when movement applies in a successively cyclic fashion. In (6) below, for instance, the Phrase Impenetrability Condition would require *what* to have moved to the intermediate Spec-CP for further movement to the matrix Spec-CP.

(6) [$_{CP}$ **What**$_1$ do-**C** you think [$_{CP}$ **t**$_1$ that$_C$ Mary bought **t**$_1$]?
            EPP   **EPP**

This also means that EPP must have been introduced under the subordinate C in (6). There are cases such as (7) below, on the other hand, in which wh-movement cannot take place within the subordinate CP.

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[3] See Borer (1986), Kitagawa (1986: 236), and Kuroda (1988) for the earlier proposals that EPP is reducible to obligatory agreement.

(7) *[CP **Who**₂ **C**   **t**₂ thinks [CP **what**₁ that_C Mary bought **t**₁]?
           EPP   ~~EPP~~

The introduction of EPP under the subordinate C in (7) therefore would incorrectly permit this sentence. Since EPP for the subordinate C is introduced only when the item in its Spec must move further to the matrix Spec-CP, a decision with 'look-ahead' would inevitably be needed.

To avoid this problem, Bošković proposed an alternative approach, in which he argues that the EPP property should be regarded as the 'I need to be a Spec (of the target head)' property of the *moving* element rather than the 'I need to have a Spec' property of the target head. In particular, it was argued that an uninterpretable feature assigned to the moving element as a checkee is required to move to the Spec-position of the target head as a checker so that it can c-command and induce a proper feature checking relation. Bošković further claims that the uninterpretable feature of the moving item in question is a Case feature on NP ([uK]) in NP-movement, and identifies the checking relation imposed on it as (a reincarnated version of) the Case Filter. It is also claimed that overt wh-movement is induced by another type of uninterpretable feature [F] ([uF]) on the wh-item, which must be checked by [uF] of COMP at its Spec position as in (8a).

(8) a.   I wonder [CP **who**₁ COMP [IP **t**₁ bought **what**]]
                     ~~[uF]~~   ~~[uF]~~   [iF]
    b.   *I wonder [CP   COMP [IP John bought **what**]]
                      [**uF**]   [iF]

A sentence like (8b) is ruled out in English since the interrogative COMP is assumed to have [uF] universally, and it would remain unchecked with the absence of the movement of a wh-phrase with [uF]. Bošković argues that this analysis eliminates the 'lookahead' problem of successively cyclic movement. A wh-phrase with [uF] has its own motivation to start and keep moving until it becomes the Spec of an appropriate head. This means that movement can launch and continue without having to anticipate the introduction of any target head into the syntactic object.

Note that in order for the proposed 'I need to be a Spec' features to induce movement in overt syntax, they must have some relevance to both PF and LF. It is difficult to see, however, what roles the proposed uninterpretable features play at LF. For instance, the idenitity of [F] assigned to wh-phrases is left unspecified except that it is assumed to be "related to focus" (p. 631). While moved wh-phrases have been assigned [uF], the 'in-situ' wh-phrases have been assigned [iF], as in (8a) above. If the uninterpretable [F]s ([uF]s) undergo deletion after they induce wh-movement and checking in overt syntax, they would not remain on either of the moved wh-phrase and the target COMP at LF. The same feature [F], on the other hand, would be interpreted at LF on the in-situ wh-phrases. It then

would have to be the case that the wh-phrases as foci are interpreted in distinct ways between what seem to be synonymous wh-questions in (9a-b).

(9) a. **What**₁ did-COMP John eat **t**₁?
~~[uF]~~   ~~[uF]~~

  b. John-wa   **nani**-o   tabeta-no?
   John-TOP   what-ACC   ate-COMP_Wh
      [**iF**]

The role of [F] at LF, in other words, is unclear and appears inconsistent.[4] Case ([K]) for A-movement, especially structural Case, hardly seems to play any role in semantic interpretation, either. The true motivation for the proposed features therefore seems to reside in the displacement effects they induce at PF. Other than that, it is not very clear if these features have any consistent role to play at PF.[5] The sole contents of [F] and [K], in other words, seem to be the property 'I need to be located at the Spec-position of the target head at PF (i.e., must be pronounced there),' and overt movement is assumed to apply before Spell-Out solely to achieve this anticipated displacement effects at PF.[6] Once again, if any simultaneous LF effects arise, they are incidental. In short, none of the EPP approaches examined above seem to be capable of providing satisfactory answers to the fundamental questions involved in the postulation of overt movement in the minimalist program 'Why overtly move?' (i.e., 'Why move before Spell-Out?**')** without failing to attain the minimalist standards.

  The only consistent picture that emerges when we examine the analyses of overt movement offered in the literature seems to be that the true motivation for such movement lies in the effects it causes at PF and whatever simultaneous LF-effects that may arise are all by-products. An approach that is consistent with this generalization has been proposed by Richards (2010), who attempted to advocate the view that some syntactic operations are motivated (or licensed) by phonology. For instance, overt wh-movement applies to satisfy the universal condition on wh-prosody, which requires that "the wh-phrase and the corresponding complementizer are separated by as few prosodic boundaries as possible" (p. 145). This approach distinguishes itself from the previous ones, identifying direct interface (PF) incentives for overt movement. As Richards himself is aware, however, his approach would inevitably induce a 'look-ahead' problem in

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[4] If [F] is identified as some question/Wh property relevant only to LF, on the other hand, why Wh-movement must apply overtly cannot be accounted for.
[5] The only exception that comes to mind is the sporadically observed phonetic effects of Case on the target heads in languages like Latin and Turkish (Blake 2001).
[6] Cyclicity of overt displacement is forced in Bošković's approach with an appeal to the prohibition against the linear order contradicting among distinct Spell-Out domains (Fox and Pesetsky 2005), which also is a PF constraint.

the minimalist model of grammar, this time not only in regards to successively cyclic movement but also to the reference to phonology by overt wh-movement, which he regards as a syntactic rather than PF operation. Richards implies the need to modify the model of grammar to let syntactic operations directly refer to phonology (p. 205, p. 215 (footnote 1)) but virtually no concrete proposals have been made to materialize that idea.[7] Richards, in other words, still seems to have to maintain the position that wh-movement itself is directly triggered syntactically, perhaps by postulating EPP, even if the true incentive behind this operation is prosodic in nature. His approach therefore is also subject to the same problems/restrictions pointed out above with respect to the different versions of the EPP approach.

3.2 Proposals

3.2.1 Overt Syntax Redefined

I consider that the problem we have observed in the approaches appealing to EPP or phonology-induced syntax resides in the design of the grammatical model itself, in which simultaneous effects at both interface levels can be achieved only when computation takes place before Spell-Out even when there is no genuine motivation behind it. With the postulation of PL-Complexes, however, we can synchronize the PF- and LF-effects by inducing a PF-derivation and LF-derivation separately and independently, each of which is enacted strictly by its own motivation. Pursuing this new perspective, I would like to propose the reanalysis of overt syntax as follows. First, the 'overt' syntactic effects of wh-interrogatives (and possibly other constructions) are to be analyzed as the synchronized PF- and LF-effects induced by PL-Complexes. Second, as a specific case of overt syntax, overt movement is also analyzed as involving a type of sound-meaning synchronization achieved by PL-Complexes. That is, the PF-effect of displacing the phonetic contents of some linguistic expression is synchronized with some semantic interpretive effects at LF. Third, the model of grammar is revised in such a way that syntax inducing PF-effects and syntax inducing LF-effects do not overlap. They are completely separate and operate in this order, reflecting one of the core minimalist theses, i.e., computational operations are induced solely to achieve legitimacy at the interface.

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[7] He briefly mentioned the possibility that multiple Spell-Out might be capable of offering a solution if it can permit phonology to return to the syntax an object annotated for prosodic structure at each phase edge (pp. 201-2, 206), but this idea was not developed in any substantial way, either.

3.2.2 Remodeling with P-Syntax and L-Syntax

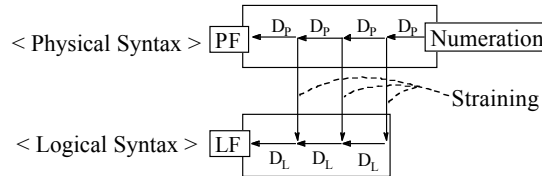I propose the model of grammar and derivation as illustrated in Figure 3.

Figure 3: Proposed Model of Grammar

The reorganized model of grammar consists of two subcomponents of syntax, Physical-syntax (henceforth **P-syntax**) and Logical-syntax (henceforth **L-syntax**), each operating independently and fulfilling distinct tasks. The goal of P-syntax is to derive a well-formed PF, which starts with the generation of linguistic expressions by merging and projecting features encoded in the lexical items and their derivatives. At any stage of its derivation, a computational operation may be triggered by those features relevant to PF (**'P-features'**), which include $[f_P]$ of a PL-Complex, and affect the syntactic projection containing it. While the operations in P-syntax may eventually induce the effects at LF, they apply strictly in the course of derivation of PF, solely motivated and triggered by P-features.[8] In a nutshell, P-syntax determines the physical properties of syntactic expressions relevant to PF. It determines, for example, the domain of prosodic activities. (e.g. FPD domain) and also the linear relation of syntactic elements (e.g. displacement).

At any derivational stage of P-syntax, any portion of logical and semantico-pragmatic properties of lexical items (**'L-features'**) may be extracted away from P-features and fed into L-syntax 'as needed' for interpretation. I will refer to this mapping process as **'Straining'**. L-syntax then derives well-formed LF, operating on L-features, which include **$[f_L]$** of a PL-Complex. The derivation in L-syntax determines, for example, the hierarchical relations and dependency among syntactic constituents (e.g. predicate-argument relation, operator-variable relation and scope). In each of P- and L-syntax, legitimacy of a linguistic element is achieved 'opportunistically' as needed at any stage of derivation, and in the end, the most economically derived well-formed representation is selected. The information on each and every lexical item must also be completely split into those relevant to PF and those relevant to LF so that the legibility condition comes to be satisfied at each interface level.

While the proposed reorganization of grammar may appear to be drastic at first sight, the revisions in fact are relatively on a small scale. First, it

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[8] Phonology is regarded in this model as a component totally independent of P-syntax.

simply decomposed overt syntax by untangling and separating its PF-effects and LF-effects, while permitting them to be synchronized with an appeal to PL-Complexes. Second, 'Straining' applies merely in the opposite way to Spell-Out, stripping away L-features rather than P-features from the feature complexes of lexical items. In the proposed approach, P-syntax is induced strictly for the PF-effects and L-syntax solely for LF-effects. It thus meets the minimalist standards that were not appropriately attained in the EPP approaches discussed above.[9]

3.2.3 PL-syntax for Wh-interrogatives

I will label the synchronization of P-syntax and L-syntax achieved by PL-Complex as **PL-syntax**, and sketch out the way PL-syntax applies in a wh-interrogative construction in Japanese and other languages. First, I hypothesize that the PL-Complexes for the WC-pair in (5) (repeated below as (10)) become legitimate objects at PF and LF, respectively, only when each of its features is 'signified' in the way relevant to the respective interface.

(10) a. *dare* 'who': $[\mathbf{W_P}, \mathbf{W_L}]$
     b. *-ka* 'COMP$_{Wh}$': $[\mathbf{C_P}, \mathbf{C_L}]$

I also assume that the way the signification of P-features (henceforth P-signification) is carried out is subject to certain variations cross-linguistically, which possibly is parametric in nature. The P-signification in the grammar of Japanese, for example, is stated as in (11).

(11) P-signification of the WC-Pair (Japanese):

   At PF, the WC-Pair is P-signified when it is *identified as the domain of FPD*.

Whenever both lexical items making up the WC-pair are introduced into a sentence in Japanese, the P-syntax operation in (12) may apply.

(12) The FPD Identification:

   In the linear string of words, identify W_P as the initiator of FPD and C_P as its terminator.

This operation will properly identity the domain of FPD starting with W_P and ending with C_P, for instance in (13) below, while failing to establish such a domain when W_P and C_P are introduced in the opposite linear order.

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[9] In the earlier stage of this work, I assumed that syntax involving 'merger and projection' constitutes a separate subcomponent of syntax. I have incorporated it into P-syntax, following the suggestion made by Miguel Rodríguez-Mondoñedo (p.c.), to whom I am grateful. I would also like to make clear here that what is illustrated in Figure 3 is *not* an acquisition model.

(13) [$_{CP}$ Kanozyo-wa ano-ban   **DA**re$_{WP}$-to atteita-***no***$_{CP}$]?
        she-TOP   that-night who-with   seeing-COMP$_{Wh}$

   'Who was she seeing that night?'

In the PF of (13), the WC-pair is properly P-signified in accordance with (11), and the phonetic rules apply to the specified domain of FPD in this PF, phonetically realizing it as focus prominence followed by post-focal reduction.

   The P-signification in English, on the contrary, is carried out as in (14).

(14) P-signification of the WC-pair (English):

   At PF, the WC-pair is P-signified when it *initiates CP*.

When both lexical items making up the WC-pair are introduced into a sentence in English, for example as in (15) below, the WC-pair is yet to be P-signified.

(15) [$_{CP}$ **C**$_P$ [$_{IP}$ she was seeing **who**$_P$ that night]?

I claim that it is this potential PF-problem which induces wh-displacement in P-syntax of English as in (16).

(16) [$_{CP}$ **who**$_P$ **C**$_P$ [$_{IP}$ she was seeing _____ that night]?
      ↑_____|

In (16), the WC-pair comes to initiate CP and is properly P-signified in accordance with (14). Note also that this approach permits us to avoid the 'look-ahead' problem of successively cyclic movement since (14) requires W$_P$ to start and keep moving in P-syntax until it comes to initiate CP together with C$_P$. We have no need to appeal to any version of EPP, either. We have identified the triggering property of phonetically visible displacement which has a genuine PF motivation and induces computation strictly in the course of the syntactic derivation of PF.

   In short, with the availability of a prosodic means, the grammar of Japanese establishes the 'physical marking' of the domain of a wh-focus interpretation non-locally between W$_P$ and C$_P$. In the grammar of English, on the other hand, an appeal must be made to wh-displacement in order to let W$_P$ and C$_P$ unite and establish such physical marking in a local fashion. **10** In both cases, what grammar attempts to do is to provide visible clues for language users which, for instance, they can appeal to when they process and interpret sentences. The proposed approach also allows us to unify the analyses of overt wh-movement and the prosody-information

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10 See Sections 4 below for a brief discussion on wh-in-situ in English and the mixture of wh-displacement and wh-in-situ in some languages.

synchronization observed in a wh-in-situ construction under the single concept of P-signification.

The L-feature of the PL-Complex for the WC-pair must also be signified at LF, this time in accordance with (17) below, which possibly is universal in nature.

(17) L-signification of the Wh-C Pair:

At LF, the WC-pair is L-signified when it is identified as "Focus and Domain."

Whenever the L-features of both lexical items making up the WC-pair have been 'strained', the L-syntax operation in (18) may apply.

(18) The "Focus and Domain" Identification:

When W_L is dominated by the *label* of C_L (= CP), identify the former as a focus and the latter as its scope domain.

This operation will properly identity W_L as the focused item and the CP, the label of C_L, as its scope domain, for instance both in (19) and (20).

(19) $[_{CP}$ Kanozyo-wa   ano-ban   **dare$_{WL}$**-to   a'tteita-*no*$_{CL}$]?
        she-TOP   that-night   who-with   seeing-COMP$_{Wh}$

'Who was she seeing that night?'

(20) $[_{CP}$ **who**$_L$ C_L $[_{IP}$ she was seeing ____ that night]?
          ↑_____|

In the LF of (19) and (20), the WC-pair is properly L-signified in accordance with (17), and the identified "Focus and Domain" in this LF comes to be semantico-pragmatically interpreted.

In short, the required P-signification of the WC-pair guarantees that the domain of 'wh-focalization' is visually identified while the required L-signification of the WC-pair ensures that this domain be submitted to the C-I system for proper interpretation. Such successful pairing of sounds and meanings is established thanks to the twin properties of a PL-Complex, a physical and semantico-pragmatic feature complex motivated by information packaging.

Various interactive effects of the P- and L-signification of the WC-pair can be illustrated with the examples below. The Japanese sentence in (21) cannot be interpreted as a subordinate wh-question since the WC-pair does not involve the appropriate dominance relation and fails to be L-signified.

(21) [$_{CPM}$ **DA** **re**-ga [$_{CPS}$ Bill-ga   siken-ni ukatta-**ka**]   taZUneta(-no?)]
      who-NOM   Bill-NOM test-DAT passed-**COMP$_{Wh}$** asked(-COMP$_{Y/N}$)

   *Subordinate wh-question: P-signified but *not* L-signified

(21) contrasts with (22), in which the WC-pair is properly L-signified.

(22) [$_{CPM}$ **DA** **re**-ga [$_{CPS}$ Bill-ga   siken-ni ukatta-**ka**]   tazuneta-**no**]?
      who-NOM   Bill-NOM test-DAT passed-COMP$_{Wthr}$ asked-**COMP$_{Wh}$**

   'Who asked whether Bill passed the test?'

   ^{ok}Matrix wh-question: P-signified *and* L-signified

The WC-pair in sentence (23) below, on the contrary, cannot yield a matrix wh-question since it does not involve the appropriate linear relation and fails to be P-signified even if it may be L-signified.

(23) [$_{CPM}$ John-ga **t$_1$** tazuneta-**no**, [$_{CPS1}$ **dare**-ga   siken-ni   ukatta-ka]]?
      John-NOM asked-**COMP$_{Wh}$**   **who**-NOM test-DAT   passed-COMP$_{Wthr}$

   *Matrix wh-question: L-signified but *not* P-signified

(23) contrasts with (24), in which the WC-pair is properly P-signified.

(24) [$_{CPM}$ John-wa [$_{CPS1}$ **DA** **re**-ga siken-ni ukatta-ka]   tazuneta-**no**]?
      John-TOP   **who**-NOM test-DAT passed-COMP$_{Wthr}$ asked-**COMP$_{Wh}$**

   'Who$_1$ was such that John asked whether s/he$_1$ passed the test?'

   ^{ok}Matrix wh-question: L-signified *and* P-signified

The English sentence in (25) below is ungrammatical since the WC-pair fails to be signified simultaneously at PF and LF whether the pair involves the COMP in the matrix clause or that in the subordinate clause — no CP-initiation is involved anywhere (and no appropriate dominance relation, either, in the subordinate CP).

(25) *[$_{CPM}$ **C$_M$** [John asked **whom** [$_{CPS}$ **C$_S$** [Bill passed the test]]]]

   *Matrix/subordinate wh-question: *Not* P-signified
                              (also *not* L-signified in CP$_S$)

Finally, the sentence in (26) below can be interpreted as a subordinate but not matrix wh-question.

(26) [$_{CPM}$ **C$_M$** [John asked [$_{CPS}$ **what$_1$** **C$_S$** [Bill had bought **t$_1$**]]]]

   ^{ok}Subordinate wh-question: P-signified *and* L-signified
    *Matrix wh-question: L-signified but *not* P-signified

Crucially, the WC-pair initiates CP only in the subordinate clause here, even though it can be L-signified in both CPs.

4. Variations in the P-Syntax of Wh-Interrogatives

P-signification of the WC-pair in English as in (14) would not necessarily be satisfied in multiple wh-interrogatives like (27):

(27) $[_{CP}$ Who$_1$ do-COMP $[_{IP}$ you think t_1 bought **what**]]?

Here, while the fronted wh-phrase satisfies (14), the in-situ wh-phrase does not. The condition for P-signification in (14), therefore, must be revised to accommodate this fact. One possible revision suggests itself when we recall that multiple wh-questions and their answers are required to make up a pair (or set). The question in (27), for instance, can be answered with A_1 but not with A_2 or A_3 in (28).

(28) A_1: (I think) **John** bought **wine**, **Bill** bought **flowers**, and …
A_2: (I think) **John** did.
A_3: **Flowers**(, I think).

This suggests that the question involved in a multiple wh-construction can be completed only when all of the fronted and in-situ wh-phrases are interpreted as the segments making up a single semantic unit. Reflecting this property of multiple wh-questions, (14) can be revised as in (29).

(29) At PF, the WC-pair is P-signified when the sequence of *at least one segment of W_P* and C_P initiates CP.

Further specifications will be necessary, however, to capture the distinction between single wh-fronting languages like English and multiple wh-fronting languages like Bulgarian. The example in (30) is from Rudin (1988: 449).

(30) $[_{CP}$ **Koj kogo**   COMP vižda]?
     who whom   sees

'Who sees **whom**?'

This can be achieved, for instance, by further specifying (29) into (31) for the former and (32) for the latter.

(31) English:

   At PF, the WC-pair is P-signified when the sequence of *exactly one segment of W_P* and C_P initiates CP.

(32) Bulgarian:

   At PF, the WC-pair is P-signified when the sequence of *all segments of W_P* and C_P initiates CP.

At this point, it may be a little impetuous to discuss the universality of the proposed approach, especially that of P-signification. Nonetheless, the general picture emerging from the comparison of Japanese and English in regard to the P-signification of the WC-pair seems promising. The 'physical marking' of the domain of a wh-focus interpretation can be fulfilled non-locally by W_P and C_P when some prosodic means for such marking is available. When no such prosodic means is available, on the other hand, it must be established locally by the sequence of W_P and C_P with an appeal to wh-displacement. There seems to exist the general division of labor, in other words, between prosody and displacement in achieving the P-signification of the WC-pair, though the split is not always complete and the two may occasionally be mixed in intricate ways. This general picture is supported by the well-known observation that displaced wh-items themselves generally do not carry focus prominence in wh-movement languages (Ladd 1996: 170-172).[11]

Richards (2010:189) offers typology of wh-interrogative constructions, cross-classifying languages in terms of the linear directions of prosodic boundaries and those of COMPs as in (33).

(33)	C to right of TP	C to left of TP
Prosodic boundaries on right of XPs	Basque	Chicheŵa
Prosodic boundaries on left of XPs	Japanese	Tagalog

We may reinterpret (33) as the typology of P-signification of the WC-pair, appealing to the two options of physical marking in P-syntax (prosody and displacement) and the directions of COMP (left and right), as in (34).

(34) a. Japanese: $[_{CP} \ldots \boxed{\text{Wh} \ldots \text{C}}]$ (prosody, right)

     b. English: $[_{CP} \text{C} \ldots \text{Wh} \ldots]$ (displacement, left)

(35) a. $[_{CP} \ldots \text{Wh} \ldots \text{C}]$ (displacement, right)

     b. $[_{CP} \boxed{\text{C} \ldots \text{Wh}} \ldots]$ (prosody, left)

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[11] Though sporadically, it has been observed in the literature (e.g. Pesetsky 1987) that the in-situ wh-phrases in multiple wh-questions may receive noticeable focus prominence as in (ib) below in contradistinction to the general absence of focus prominence in the displaced wh-word as in (ia).

(i) a. *What*₁ did you buy t₁?
     b. *Who*₁ t₁ gave **WHAT** to **WHOM**?

While this observation is still compatible with (31), it may suggest that the P-signification of the WC-pair with the application of wh-displacement may have to be supplemented by a secondary means appealing to prosody for those segments of W_P that remain in-situ just as in wh-in-situ languages like Japanese.

We obviously must also permit both of the two options of physical marking to be available in some languages (e.g. French and Brazilian Portuguese). There clearly are many questions that remain unanswered in this approach. I must, however, leave further pursuit of this topic to the future research. See Richards (2010) for highly relevant observations and discussion.

5. Summary and Conclusions

In this work, I first examined the prosody-information synchronization phenomenon involving wh-interrogatives in Japanese, and proposed that it can be properly and straightforwardly captured when 'PL-Complex', a physical and semantico-pragmatic feature complex motivated by information packaging, is postulated. I then pointed out that PL-Complexes would also permit us to redefine overt syntax, including overt movement, as two related but independent computational processes that induce the synchronized effects at PF and LF. This approach led us to reorganize grammar in such a way that overt syntax is decomposed into P-syntax and L-syntax, which would permit us to eliminate the EPP property from the grammar.

The proposed approach can also be extended to the overt syntax of Spec-TP when we postulate a PL-Complex for what we may call the Top(ic)-T(ense) pair. It would then allow us to explore the possibility that at least all instances of phrasal overt movement (and possibly all overt syntactic operations) are induced by PL-Complexes motivated by information packaging. The pursuit of this topic must also be left for the future research.

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