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AN EXTENSION OF FEATURE-INHERITANCE

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In this paper, I argue that, although Chomsky's (2008) framework of Feature-Inheritance (F-I) has gained empirical and theoretical support, it raises problems concerning w(eak)-phases, and suggest that these problems are solved by an assumption of Feature-Transcription (F-T), namely, extended F-I from a s(trong)-phase head onto w-phase heads. Additionally, the F-T framework enables us to account for the appearance of inflection on passive participles cross-linguistically, to deduce selectability of P-stranding/P-pied-piping in leftward movement, and to rule out P-stranding in rightward movement, making a contribution to the further development of Phase Theory.*

Keywords: *Feature-Inheritance, passive participle, P-stranding, weak-phases*

1. Introduction

1.1. Chomsky (2008) and Feature-Inheritance

In the minimalist program of the recent version of Generative Grammar, the concept of phases has been introduced. A phase is argued to represent a proposition and serve as a unit of syntactic operations. Phases have contributed to theoretical and empirical development: With the assumption of phases, empirical problems raised in traditional frameworks, where a whole sentence is generated in one fell swoop, can be solved readily. In addition, the burden on syntactic operations is reduced because the operations in past phases can be forgotten. Moreover multiple stages suggested in the GB era (namely, DS, SS, and LF/PF operations) are integrated into a single cycle

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- (3) $[_{Ph2} \text{ [Ph2-Head]} \dots [_{Ph1} \text{ Ph1-Spec } [_{Ph1-Head} \text{ } [_{Ph1-Comp} \text{ Ph1-Com-}$
 $\text{plement}]]]] \dots]$


1.2. Necessity of Weak-Phases

Although the framework of F-I shown above has been supported both theoretically and empirically (see Richards (2007) and Obata and Epstein (2008) among others), the discussion of F-I is applied only to s(trong)-phases. Note that Chomsky (2001) argues that there exist two kinds of phases, namely s-phases and w(eak)-phases, and few studies have been done concerning w-phases recently, with some researchers even claiming that they do not exist. As witnessed below, however, there are crucial phenomena which cannot be explained without the assumption of w-phases.

- (4) John was hit.

- (5) a. *[John [was [_{vP} hit *t*]]] PIC violation



- b. *[John [was [_{vP} hit *t*]]] Improper Movement



In the passive sentence in (4), *John* is moved from within the complement of vP to Spec-TP. Suppose that vP is an s-phase, then this movement is banned as a PIC violation as is shown in (5a). It appears possible to assume that this A-movement occurs successive-cyclically as is shown in (5b) so as to circumvent the PIC violation. However, this is not a viable option. In Phase Theory, the movement to the phase edge is assumed to be A-bar movement (Chomsky (2008: 150) actually claims that movement triggered by the Edge Feature (EF) on a phase head is A-bar movement. See also Obata and Epstein (2008) and Miyagawa (2010) for relevant discussion). Under the assumption that vP is an s-phase, in (5b), *John* must move to the Spec of vP to move out of vP . Then, since the movement of *John* is triggered by the EF on *v*, this is A-bar movement and thus the Spec of vP is an A-bar position. If *John* moves further to the Spec of TP, it results in A-A'-A (Improper Movement), which is independently ruled out: Once the A-bar movement creates a variable and this is considered to be an R-expression, the variable is c-commanded by its co-referential DP *John* and thus Condition C is violated.

Therefore, no derivation converges to generate (4), if vP is an s-phase. Hence, the grammaticality of (4) implies that the derivation of (5a) is acceptable and thus, that vP is not an s-phase.

Nevertheless, another problem occurs if we presume that νP does not serve as a phase at all, so as to circumvent the PIC violation in (5a). See the examples below.

- (6) a. [At which of the parties that he_i invited $Mary_j$ to]_k was every man_i t_k' introduced to her_j t_k ? (Legate (2003: 2))
 b. *[At which of the parties that he_i invited $Mary_j$ to]_k was she_j t_k introduced to every man_i t_k ? (Legate (2003: 2))

The grammaticality of (6a) is attributed to the existence of a possible reconstruction site t_k' where *he* is properly interpreted by being bound by *every man* without any problem. On the other hand, in (6b) there is not such a position; *he* is bound by *every man* at t_k but it is not available because *Mary* will be c-commanded by *she* in violation of Condition C. In other words, the availability of t_k' in (6a) suggests that the *wh*-element has moved via t_k' , i.e. Spec- νP . The movement to Spec- νP should be triggered by an EF and thus (6a, b) indicate that ν has to possess an EF. Legate (2003) shows additional support from examples of Quantifier Raising in Antecedent Contained Deletion and Parasitic Gap, claiming that νP serves as a normal phase at least when it comes to A-bar movement, (although this is omitted here for concerns of space, see Legate (2003) for details). Here, we face a contradiction; if we assume νP is not a phase, we are doomed to solve the problem of (6) and the others in Legate (2003) without relying on the concept of phases at all, but on the other hand, if we take up the position that νP is an s-phase, we cannot account for the possibility of the A-movement shown in (5a). In sum, from the facts in (4) and (6), the necessity of supposing w-phases is deduced, if we attempt to explain A-bar movement related phenomena based on Phase Theory.

To wrap up, there certainly exist boundaries which A-bar movement does not ignore, but which A-movement can pass. In this paper, I assume that the following are characteristics of w-phase boundaries.

- (7) W-Phases
 a. A-bar movement can occur via Spec-w-phase.
 b. A-movement can pass w-phase boundaries.

1.3. A Problem of Weak-Phases and an Extension of Feature-Inheritance

In the preceding section, we witnessed empirical evidence that w-phases, namely certain defective phases, exist, whose characteristics can be summed up in (7). As shown below, however, a problem of w-phases arises when we consider the characteristics in (7) in detail, based on Chomsky's (2008) framework.

Note that as we observed in (6), w-phase heads possess an EF. In addition, see example (8) below.

- (8) Les chaises ont été repaintées.
 the chairs-F-Pl have-Pl been repainted-F-Pl

‘The chairs were repainted.’ (Boeckx (2008: 33))

In (8), the passive participle V inflects with the subject. Inflection is generally regarded as a phonetic realization of a checked u-feature. Thus, (8) indicates that the V head possesses an Agree Feature (AF). Therefore, the examples in (6) and (8) imply that both an EF and an AF exist on a w-phase head if the origin of u-features should be a phase head as assumed before.

It is assumed that in normal s-phases, F-I and syntactic operations following it occur (see 1.1). Now, however, a problem arises if we apply this assumption to w-phases: The PIC should not hold in w-phases since A-movement over w-phase boundaries is allowed to generate sentence (4). As we have already witnessed, the PIC is induced from the assumption that the complement of a phase is transferred. Therefore, the PIC not being applied to w-phases means that w-phase heads should not trigger Transfer.

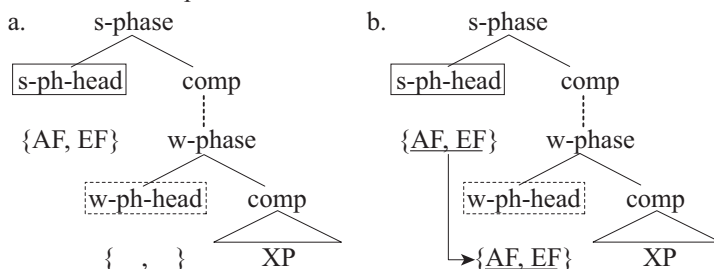
On the other hand, the assumption that both an EF and an AF exist on a w-phase head and syntactic operations are triggered indicates that a w-phase head does trigger Transfer. This is because, otherwise, checked u-features would remain on an untransferred domain and since they are indistinguishable from interpretable ones as Richards (2007) argues (see 1.1), they could not be removed at the Transfer, causing the derivation to crash. Thus, example (4) indicates that w-phase heads must not trigger Transfer, whereas example (8) implies that w-phase heads must trigger Transfer, which constitutes a contradiction.

The problem of w-phases shown above can be solved once we assume that a w-phase *puts off* its syntactic operations until an s-phase above it is completed. Since the w-phase does not trigger Transfer before the s-phase is formed, the complement of the w-phase is accessible at the s-phase level because the PIC is not applied, which explains the grammaticality of example (4). On the other hand, because the w-phase head triggers its operations after the s-phase is completed, A-bar movement can be triggered by the EF on the w-phase. Therefore, the existence of A-bar traces in the examples in (6) is accounted for and the characteristics of w-phases summed in (7) are fully induced (see 2.2.2 for a more detailed discussion). However, the assumption that w-phases can *put off* their operations needs theoretical motivation; in other words, how can they *put off* the operations? If a derivation senses its crash in the future and postpones its operations to

prevent it, this is considered a “look ahead” and thus should be avoided in the minimalist framework.

Now, I propose that the assumption of an extension of F-I, namely F-I from an s-phase head onto w-phase heads, explains the postponement. In this paper, F-I between phase heads is referred to as Feature-Transcription (F-T)¹ for explanatory purposes. In this framework, thus, w-phase heads do not *put off* their derivation, but they originally do not possess u-features and thus cannot trigger the operations, although they have a potential capacity to act as normal phase heads. In other words, a w-phase head is a vacant s-phase head and F-T from an s-phase head enables it to serve as a “normal” phase head. In detail, as is shown in (9a, b), w-phase heads enter the derivation without u-features and an s-phase head always transcribes its u-features onto the w-phase heads within its domain before it starts F-I, and then the w-phase heads begin to serve as normal phase heads after the transcription.

(9) Feature-Transcription



In what follows, based on the F-T framework, we consider two possibilities of derivations and exemplify them in detail in section 2. Then, in section 3, I will present empirical support for the F-T framework. Firstly, I will show that Richards' (2012) cross-linguistic account of the appearance of inflection on passive verbs yields both over-generations and under-generations and then, I propose an alternative approach based on the F-T framework. Secondly, I will show an account under the F-T framework for possibilities of P(reposition)-stranding and P-pied-piping in leftward movement,

¹ The word *transcription* is used because this process is somewhat different from F-I. As Chomsky (2013) argues, F-I from C to T is an adjacent process, that is, C holds a relation with T directly. But F-T is based on a *subjacent* situation. Thus, I assume that F-T is more an Agree-like process than a direct transmission of u-features. Whatever its characteristics are, certain activation to w-phase heads is needed and this paper names such activation *Feature-Transcription*.

and the impossibility of P-stranding in rightward movement, which have not been fully accounted for in previous analyses. Finally, I will summarize the discussion in section 4.

2. Derivations of Weak-Phases under Feature-Transcription

2.1. An Assumption concerning Transfer Domains and Case

In this subsection, I assume (10) about case manifestations, which are schematized in (11).

(10) A phase head determines a DP's case within its domain, when it triggers Transfer.

(11) Transfer by C : C <[XP...DP...]NOM> Transfer → [XP...DP_{NOM}...]
 Transfer by v* : v* <[XP...DP...]ACC> Transfer → [XP...DP_{ACC}...]

Traditionally, case has been assumed to be determined at the same time as AF checking. However, interestingly, some previous researchers cast a doubt on the idea that AF checking and case assignment are a result of a single operation, Agree (see Sigurðsson (2006) and Baker (2012)). Following them, in the analysis here, I assume that AF checking is separated from case assignment and that case remains unspecified until the relevant DP is transferred, and propose that it is determined at the moment of Transfer. Specifically, as shown in (11), the transferring head determines the case manifestation of the transferred whole projection, and then the DP's case inside the projection is realized at the PF.

2.2. Derivations of Weak-Phases

2.2.1. Two Possibilities of Derivations

In this subsection, derivations of w-phases are outlined based on F-T and the assumptions in 2.1. As we have already witnessed, w-phase heads receive u-features from an s-phase head in the F-T framework, which was schematized in (9). Importantly, because a w-phase head starts to serve as an s-phase head after F-T occurs, the following two logical possibilities are deduced concerning the moment they start their operations.²

² As an anonymous reviewer points out, it should be noted that a third logical possibility exists where the higher s-phase starts its operation first (namely a variation of i-derivation in II). In this case, nevertheless, an AF transcribed on the w-phase head always remains unchecked, causing the derivation to crash. Thus, this possibility is always excluded. Therefore, only the two logical possibilities in (12) and (13) can remain.

- I. An s-phase head starts its operations at the same moment as w-phase heads, with the s-phase head triggering Transfer (s(ynchronous)-derivation).

(12) s-derivation

- a. $[\text{S-Ph} \boxed{\text{S-Ph-Head}} [\text{Comp} [[\text{W-Ph} \boxed{\text{W-Ph-Head}} [\text{Comp}]]]]]$
 $\{\text{AF}, \text{EF}\} \quad \{\quad, \quad\}$
- b. $[\text{S-Ph} \boxed{\text{S-Ph-Head}} [\text{Comp} [[\text{W-Ph} \boxed{\text{W-Ph-Head}} [\text{Comp}]]]]]$ F-T
 $\{\text{AF}, \text{EF}\} \longrightarrow \{\underline{\text{AF}}, \underline{\text{EF}}\}$
- c. $[\text{S-Ph} \boxed{\text{S-Ph-Head}} [\text{Comp} [[\text{W-Ph} \boxed{\text{W-Ph-Head}} [\text{Comp}]]]]]$ F-I
 $\{\quad, \text{EF}\} \longrightarrow \{\underline{\text{AF}}\} \quad \{\quad, \text{EF}\} \longrightarrow \{\underline{\text{AF}}\}$
 $\boxed{\text{Transfer domain}}$

In s-derivation, an s-phase head transcribes its u-features onto a w-phase head and they start their operations simultaneously. As a result, the complement of the s-phase head involving the w-phase is transferred at one stroke. Note that the characteristics of w-phases in (7) follow from this pattern of derivation since the PIC does not hold in the complement of the w-phase head whereas the AF and the EF exist on the w-phase head due to F-T.

- II. A w-phase head receiving u-features starts its operations independently of an s-phase head and transfers its complement (i(ndividual)-derivation).

(13) i-derivation

- a. $[\text{S-Ph} \boxed{\text{S-Ph-Head}} [\text{Comp} [[\text{W-Ph} \boxed{\text{W-Ph-Head}} [\text{Comp}]]]]]$
 $\{\text{AF}, \text{EF}\} \quad \{\quad, \quad\}$
- b. $[\text{S-Ph} \boxed{\text{S-Ph-Head}} [\text{Comp} [[\text{W-Ph} \boxed{\text{W-Ph-Head}} [\text{Comp}]]]]]$ F-T
 $\{\text{AF}, \text{EF}\} \longrightarrow \{\underline{\text{AF}}, \underline{\text{EF}}\}$
- c. $[\text{S-Ph} \boxed{\text{S-Ph-Head}} [\text{Comp} [[\text{W-Ph} \boxed{\text{W-Ph-Head}} [\text{Comp}]]]]]$ F-I
 $\{\text{AF}, \text{EF}\} \quad \{\quad, \text{EF}\} \longrightarrow \{\underline{\text{AF}}\}$
 $\boxed{\text{Transfer domain}}$
- d. $[\text{S-Ph} \boxed{\text{S-Ph-Head}} [\text{Comp} [[\text{W-Ph} \boxed{\text{W-Ph-Head}} [\text{Comp}]]]]]$ F-I
 $\{\quad, \text{EF}\} \longrightarrow \{\underline{\text{AF}}\}$ $\boxed{\text{Transfer domain}}$

In this derivation, after an s-phase head transcribes its u-features onto a w-phase head, firstly the w-phase head triggers its operations, and then the operations in the s-phase follow them cyclically. In this case, since the w-phase head starts the operations independently of the s-phase head, the upper s-phase head cannot access to the domain of the lower phase and the property in (7b) is not observed. Thus, a situation where two successive

layers of s-phases are generated exists.³

Note that in the minimalist program, when two different derivations are available, one of them is chosen over the other due to economy. Thus, it seems unreasonable, at first glance, that there are two possible derivations. In this paper, however, I assume that neither possibility is less economical than the other because in the case of s-derivation in (12), the number of Transfer decreases whereas the domain of Transfer increases, causing a burden for memory; on the other hand, if i-derivation in (13) occurs, the domain of Transfer decreases but the number of Transfer increases. Therefore, I suggest that the two possibilities of derivations are equally economical and always selectable, though one of them is usually ruled out by other factors.⁴ These are exemplified in the following two subsections.

2.2.2. A Derivation of Passive Sentences in Simultaneous-Derivation

The derivation of the passive sentence in (14) under the F-T framework is shown in (15).

(14) John was hit.

- (15) a. $[_{CP} \boxed{C} [_{TP} T [_{vP} \boxed{V} [_{VP} V DP]]]]$
 $\{AF, EF\} \quad \{ \quad , \quad \}$
- b. $[_{CP} \boxed{C} [_{TP} T [_{vP} \boxed{V} [_{VP} V DP]]]]$ F-T
 $\{AF, EF\} \longrightarrow \{\underline{AF}, \underline{EF}\}$
- c. $[_{CP} \boxed{C} [_{TP} T [_{vP} \boxed{V} [_{VP} V DP]]]]$ F-I
 $\{ \quad , EF \} \rightarrow \{\underline{AF}\} \quad \{ \quad , EF \} \rightarrow \{\underline{AF}\}$

³ Since i-derivation apparently results in the same situation where two successive s-phase layers are formed, the necessity of s-phases might be questioned. However, if all phases are w-phases, no operations are triggered because w-phases cannot start their operations without F-T from an s-phase. On the other hand, if all phases are s-phases, examples (4), (6), and (8) are not explained. Therefore, both s-phases and w-phases must exist.

As an anonymous reviewer suggests, we can also cast a doubt on the existence of a strong and weak distinction in vP. Interestingly, Legate (2012) considers vP-related phenomena and results in taking this position by abandoning the concept of vP phases. The analysis here might present a different approach without getting rid of vP phases, though it is beyond the focus of this paper and is left for future research.

⁴ As an anonymous reviewer points out, the logic here seems to require “global computation.” However, since two phases (namely an s-phase and a w-phase) are embedded in the s-phase level, the two possibilities of (i-/s-) derivations can be computed at this level and it is not global. In other words, the economy of the derivations can be evaluated at the s-phase level without looking back after the whole derivations finish.

- (17) a. $[\text{CP } \boxed{\text{C}} [\text{TP } \text{T} [\text{vP } \boxed{\text{v}} [\text{VP } \text{V } \text{DP}]]]]$
 $\{\text{AF}, \text{EF}\} \quad \{ \quad , \quad \}$
- b. $[\text{CP } \boxed{\text{C}} [\text{TP } \text{T} [\text{vP } \boxed{\text{v}} [\text{VP } \text{V } \text{DP}]]]]$ F-T
 $\{\text{AF}, \text{EF}\} \longrightarrow \{\underline{\text{AF}}, \underline{\text{EF}}\}$
- c. $[\text{CP } \boxed{\text{C}} [\text{TP } \text{T} [\text{vP } \boxed{\text{v}} [\text{VP } \text{V } \text{DP}]]]]$ F-I
 $\{\text{AF}, \text{EF}\} \quad \{ \quad , \text{EF} \} \rightarrow \{\underline{\text{AF}}\}$
- d. $[\text{CP } \boxed{\text{C}} [\text{TP } \text{T} [\text{vP } \boxed{\text{v}} [\text{VP } \text{DP} [\text{v}' \text{V } \text{DP}]]]]]$ F-I
 $\{ \quad , \text{EF} \} \rightarrow \{\underline{\text{AF}}\} \quad \{\text{EF}\} \quad \uparrow \quad \{\underline{\text{AF}}\}$
- e. $[\text{CP } \boxed{\text{C}} [\text{TP } \text{T} [\text{vP } \boxed{\text{v}} [\text{VP } \text{DP}_{\text{ACC}} [\text{v}' \text{V } \text{DP}]]]]]$
 $\{ \quad , \text{EF} \} \quad \{\underline{\text{AF}}\} \quad \boxed{\text{Transfer domain}}$
- PIC violation

Although the derivation in (17) is almost the same as that in (15), the w-phase head *v* triggers the operations independently. Witness that, because the AF on T remains unchecked since the domain of *v*P, namely VP, is transferred independently in this case, the derivation of (17) does not converge due to the PIC, and the possibility of i-derivation is ruled out.

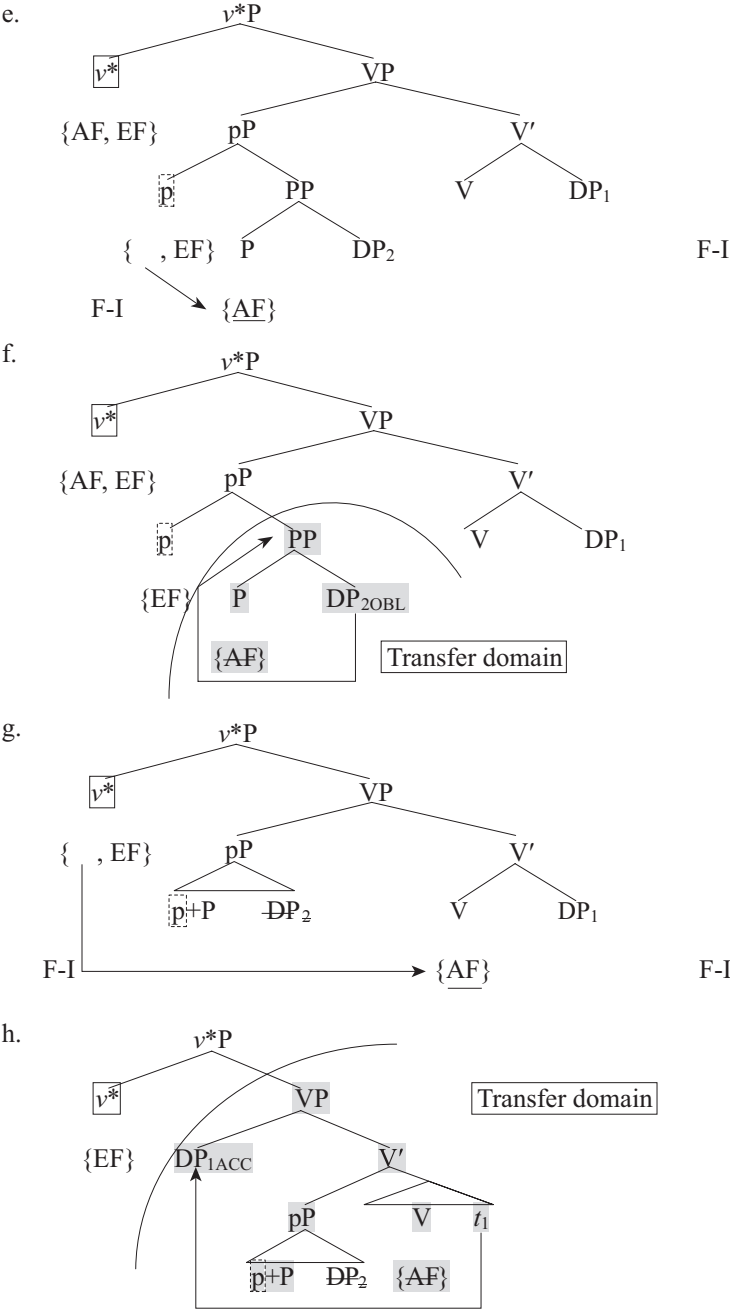
2.2.3. A Derivation of Sentences Including Prepositions

Let us move on to an example of i-derivation. What concerns us includes the derivation of prepositional phrases. In this paper, following Matsubara's (2000) assumption, I assume that a normal prepositional phrase projects pP, which serves as a phase (see section 3 for details). Additionally, I assume that pP is subdivided into s-phase p*P and w-phase pP (see Honda (2009) concerning the two kinds of pP). Now, let us observe a derivation of what is called Prepositional Dative Constructions, with (18) as a typical example.

- (18) Mary gave a book_{DP1} to John_{DP2}.

Following Takano's (1998) structure, I assume the derivation exhibited in (19).

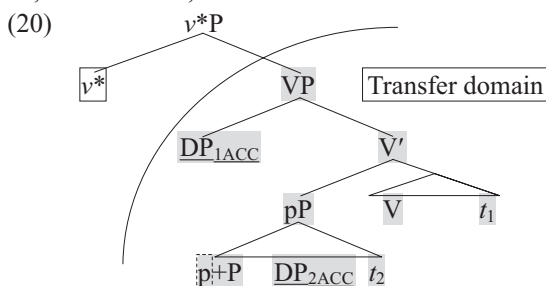
- (19) a. $[\text{pP } \boxed{\text{p}} [\text{pP } \text{P } \text{DP}_2]] + [\text{vP } \text{V } \text{DP}_1]$
- b. $[\text{vP } [\text{pP } \boxed{\text{p}} [\text{pP } \text{P } \text{DP}_2]] [\text{v}' \text{V } \text{DP}_1]]$
- c. $[\text{v}^*\text{P } \boxed{\text{v}^*} [\text{vP } [\text{pP } \boxed{\text{p}} [\text{pP } \text{P } \text{DP}_2]] [\text{v}' \text{V } \text{DP}_1]]]$
 $\{\text{AF}, \text{EF}\} \quad \{ \quad , \quad \}$
- d. $[\text{v}^*\text{P } \boxed{\text{v}^*} [\text{vP } [\text{pP } \boxed{\text{p}} [\text{pP } \text{P } \text{DP}_2]] [\text{v}' \text{V } \text{DP}_1]]]$ F-T
 $\{\text{AF}, \text{EF}\} \longrightarrow \{\underline{\text{AF}}, \underline{\text{EF}}\}$



Based on the assumptions above, PP here is analyzed as pP, which is a w-phase. V and DP1 merge. Then, pP including DP2 merges with the outcome and constitutes the Spec of VP, as (19a, b) represent. Since p does not possess u-features, operations are not triggered at this moment. Then, v^* merges with VP as shown in (19c). Once the s-phase v^*P is formed, syntactic operations are triggered.

This derivation is distinct from (15) in 2.2.2 in that the operations in the two phases occur independently, cyclically, in an i-derivation manner. F-T occurs as in (19d) and then the lower w-phase pP starts its operations as (19e, f) indicate. F-I occurs from p onto P as is shown in (19e). P checks the AF by Agree with DP2. Finally, p transfers its complement PP. In this case, since p triggers Transfer, DP2 within PP receives the Oblique case, based on (10). Notice that the proper word order is gained by head movement of P to p. Sequentially, the s-phase head v^* triggers its operations. As is witnessed in (19g), V inherits the AF from v^* , with the AF checked by Agree with DP1. VP is transferred after the set of operations.⁶

Note that the two possibilities of derivations always exist when F-T occurs. Therefore, the other possibility, namely, the possibility of s-derivation should be considered as well. If the derivation proceeds in an s-derivation manner, the two DPs, DP1 and DP2 exist in the same Transfer domain.



⁶ As an anonymous reviewer argues, DP1 here does not c-command DP2 in the base-generated position. However, after the movement of DP1, DP1 does c-command pP including DP2. Although DP2 is already transferred when DP1 moves to the relevant position, I argue that licensing under c-command relations (e.g. anaphors, NPIs, bound pronouns, and so forth) is possible between DP1 and pP. Some mechanism is necessary to see the c-command relation between phases to explain such examples as (i). See Nishimura (2007) for a proposal based on a derivational approach.

- (i) a. I didn't think [_{CP-Phase} that John [_{v*P-Phase} ate anything]].
 b. *She_i thinks [_{CP-Phase} that John [_{v*P-Phase} met Mary_i]].

Importantly, note that this violates Richards' (2010) Distinctness Condition quoted below.

- (21) If a linearization statement $\langle \alpha, \alpha \rangle$ is generated, the derivation crashes. (Richards (2010: 5))

Richards (2010) claims that if items of the same category (or of the same label) exist in one Transfer domain, they cause the derivation to crash in terms of determining linear order. Suppose that two DPs exist in a phase. In the minimalist framework, the DPs cannot be distinguished because no indexes can be used due to Inclusiveness Condition. Then, in $DP > V > DP$ where ">" indicates that the left proceeds the right in linear order, the derivation crashes because the order produces contradictory requirements of " $DP > V$ " and " $V > DP$ " without the computation knowing that the DPs are different independent items. Therefore, (20) is ruled out since two DPs are included in the single Transfer domain.⁷

In this section, we have observed the two possibilities of derivations. In the next section, I will demonstrate that several problems which until now lacked an adequate explanation can be solved within the F-T framework.

3. Analyses

3.1. Inflection on Passive Sentences

3.1.1. Richards (2012)

In what follows, I will account for several phenomena under the F-T framework. In this subsection, Richards' (2012) analysis, which deals with cross-linguistic phenomena of inflection on passive participles, is outlined. Following that, problems under this approach are pointed out and an alternative account based on the F-T framework is proposed.

As Richards (2012) notes, in the early minimalist program, all Feature-Checking was based on the Spec-Head relation. What lies under this assumption is a parallelism between an appearance of inflection and movement to Specs, as are exemplified below.

⁷ Based on the Distinctness Condition, Richards (2010) explains cross-linguistic phenomena related to case manifestation and *wh*-questions. For details of the discussion, see Richards (2010).

- (22) Swedish
- a. Det har blivit skrivet/*skrivna tre böcher.
there have been written-Nom-Sg/written-Pl three books
 - b. Det har blivit tre böcher *skrivet/skrivna.
there have been three books written-Nom-Sg/written-Pl
 - c. Tre böcher har blev *skrivet/skrivna.
three books have been written-Nom-Sg/written-Pl
- (23) French⁸
- a. Il a été mangé/*mangées trois pommes.
It has been eaten-M-Sg/eaten-F-Pl three apples
 - b. Trois pommes ont été *mangé/mangées
three apples have been eaten-M-Sg/eaten-F-Pl

(Richards (2012: 205))

What (22) and (23) imply is that when inflection is observed on participles, DPs which Agree with them move to the left of the participles. As Richards (2012) points out and we discussed in 1.3, Chomsky's (2008) framework cannot explain the appearance of inflection on verbs (or participles) in passive sentences. In addition to this, considering the examples of A-bar movement discussed in (6), Richards (2012) assumes that while an s-phase head is a head containing completed ϕ -features, a subcategory of what is called w-phase heads does not actually exist, and that they are divided into "partially" defective heads and "completely" defective heads. "Partially" defective heads possess partial AFs, which means that although they cannot assign case to DPs since they are "defective," they can trigger Transfer because they own u-features to check. In this sense, "partially" defective heads can count as a kind of s-phase head in light of Transfer. On the other hand, "completely" defective heads are perfectly vacant heads that do not serve as a phase head at all, not preventing extractions from within their complements. Based on this idea, the examples in (22b, c) and (23b), where the inflection is observed with the movement of the DPs are analyzed below.

⁸ As Richards (2012) argues, there is no example corresponding to (22b) in French. This is due to a language-specific reason concerning the French lexicon and is not discussed in this paper.

- (24) a. [_{VP} *v*-partially-def [_{VP} V DP]]
 {AF_{-def}}
 b. [_{VP} *v*-partially-def [_{VP} V DP]] F-I
 { } → {AF_{-def}}
 c. [_{VP} DP [_{V'} *v*-partially-def [_{VP} V *t*]]]
 ↑
 IFM
 ↑
 {AF_{-def}}
 Transfer domain

As is witnessed in (24), the “partially” defective head possesses a defective AF (AF_{-def}) and transfers its complement. Therefore, inflection is observed in this *v*P. The head, however, cannot determine the case of the DP since it is defective. Thus, the DP has to move to Spec-*v*P, in order to escape from the Transfer domain. He calls this movement Indirectly Feature-Driven Movement (IFM).⁹ After IFM, if the case of the DP is assigned there without moving further, (22b) is generated, whereas, if it moves to higher positions, (22c) or (23b) is generated.

On the other hand, the examples in (22a) and (23a), where neither inflection nor movement is observed, are analyzed as shown below.

- (25) a. [_{VP} *v*-completely-def [_{VP} V DP]]
 b. [_{CP} C [_{TP} T ... [_{VP} *v*-completely-def [_{VP} V DP]] ...]]
 {AF}
 c. [_{CP} C [_{TP} T ... [_{VP} *v*-completely-def [_{VP} V DP]] ...]] F-I
 { } → {AF} Agree

In (25), since the “completely” defective head does not contain *u*-features, it cannot serve as a phase head, nor does it trigger Transfer. Thus, no inflection appears in this *v*P. In addition, because the domain of *v*P is still accessible even after *v*P is completed, the DP can receive case in situ. As we have seen, Richards (2012) captures this phenomenon of inflection by assuming that they include inherently different *v* heads (namely “partially/

⁹ It should be noted that Richards (2012) derives a connection between inflection and movement from this IFM, without relying on the Spec-Head relation. In this paper, unfortunately, the connection cannot be retained because I assume that IFM is not allowed. However, the motivation of movement to Spec-TP is still unclear in Richards’ (2012) analysis and thus, it seems to me that the Spec-Head relation somehow remains in Agree. Chomsky’s (2013) Labeling Algorithm might offer a motivation for movement to Specs, with AF checking causing a DP to move to the Spec of TP or VP (also note that in this paper, I assume that AF checking requires something to move to Spec). Since it is beyond the scope of the discussion, however, I leave this question for future research.

completely” defective v heads).

Nevertheless as Richards (2012) himself notes, this analysis leads to an over-generation related to the derivation in (25): Since the PIC does not hold on the complement of a “completely” defective head, nothing prevents the DP inside the complement from moving to Spec-TP to receive the Nominative case. Then, a problem is that the analysis here wrongly expects the examples in (22c) and (23b) to be grammatical, even if inflection is not observed. He rules out this possibility by assuming that an expletive always exists in the Spec of a “completely” defective head, although the reasoning is quite unclear.

3.1.2. An Alternative under the F-T Framework

In this subsection, it is shown that the two subclasses of w -phases that Richards (2012) proposes (although he does not call them w -phases) are derived from a more fundamental mechanism and that even the over-generation problem of his analysis is circumvented. In this framework, his “partially” defective heads are translated as w -phases to which F-T is applied. In the same vein, his “completely” defective heads are analyzed as w -phases which, because of certain reasons, cannot be involved in F-T. By this assumption, the three different kinds of heads Richards (2012) suggests, namely, (s-)phase heads, “partially” defective heads, and “completely” defective heads, need not be presumed. Rather, a combination of phases and F-T can derive these results.

In what follows, by assuming (26), I reanalyze Richards’ (2012) data.

(26) W -phase heads possessing external elements cannot be involved in F-T.¹⁰

(26) is motivated by the necessity to distinguish s -phases from w -phases because when a w -phase projects an external element, formal differences from an s -phase disappear: In this framework, F-T occurs only between an s -phase head and w -phase heads, not between s -phase heads. Therefore, I

¹⁰ As an anonymous reviewer points out, a consideration is needed concerning implicit subjects in passives, that is, a difference between *The ship sank* and *The ship was sunk*. If an implicit subject syntactically exists in Spec- vP , constraint (26) should be modified. However, Oba (2013) shows distinctions between middle voice constructions and passives, and claims that subjects in passives are not only phonetically null, but also do not exist syntactically unlike in middle voice constructions. Hence, in his approach, the interpretation of implicit subjects in passives is ensured by a suffix “-en.” Since this is beyond the focus of this paper, I will leave the possibility of implicit subjects for future research.

¹² Here, I assume that these languages do not have overt inflection forms of V1. Therefore, inflection does not appear on V1 in these cases.

occupies Spec-*v*1P, T attracts this expletive, not the DP, to its Spec, and V2 attracts the DP. Therefore, example (22b), where inflection is observed and the DP is moved, is finally generated.

On the other hand, the examples in (22a) and (23a), in which neither inflection nor movement of the DPs can be observed, are captured as follows.

- (29) a. Det har blivitt skrivett/*skrivna tre
there have been written-Nom-Sg/written-Pl three
böcher. (= (22a))
books
- b. Il a été mangé/*mangées trois
It has been eaten-M-Sg/eaten-F-Pl three
pommes. (= (23a))
apples
- (30) a. [CP [C] [TP T [_v1P [v1] [_V1P V1 [_v2P Expl [_v2' [v2] [_V2P V2 DP]]]]]]]]]
{AF, EF} { , } { , }
- b. [CP [C] [TP T [_v1P [v1] [_V1P V1 [_v2P Expl [_v2' [v2] [_V2P V2 DP]]]]]]]]]
{AF, EF} → {AF, EF} { , }
- F-T
- c. [CP [C] [TP T [_v1P [v1] [_V1P V1 [_v2P Expl [_v2' [v2] [_V2P V2 DP]]]]]]]]]
{ } → {AF} { } → {AF} { }
- F-I
- d. [CP [C] [TP Expl_i [_T' T [_v1P [v1] + V1 [_V1P *t*_i [_V1' *t*_{V1} [_v2P *t*_i [_v2' [v2] + V2
↑ {AF} ↑ {AF} { }
[_V2P *t*_{V2} DP]]]]]]]]]]]
Agree

In (30), notice that *v*2P includes an expletive in its lexical subarray and it is posited in Spec-*v*2P. Thus, *v*2, in turn, cannot be involved in F-T based on (26) and C transcribes its u-features only onto *v*1, which it c-commands. After that, F-I is triggered from C and *v*1 onto T and V1, respectively, and then, T and V1 hold a relation with the DP in terms of the AFs (in French, T with the expletive).¹³ What is distinct from above is

¹³ Note that in French, AFs on T show agreement with expletives, not with their associate DPs. Although I cannot show a completed explanation here, there may be a parametric variation concerning inflection manifestations when expletives are concerned. This parameter seems to have something to do with the fact that French expletives seem to require case whereas English and Swedish expletives do not. However, this is beyond the scope here and will be left for future research.

In (i), two w-phase subarrays own an expletive and thus the sentence includes double expletives. However, under the F-T framework, an s-phase head can see the inside of the lower w-phases to find whether multiple expletives are included or not, since operations in the lower w-phases cannot be triggered until the s-phase is formed and thus the complements are not transferred. Thus, such double expletives can be searched out. Note that Richards' (2012) approach cannot do this because there is no interaction between phases. Of course, some mechanism to rule out double expletives is needed. This seems to concern establishing a one-to-one relation between an expletive and its associate, but I leave this for future research.

3.1.3. Thematization/Extraction

In addition to the analysis cited above, Richards (2012) attempts to account for Thematization/Extraction (Th/Ex) suggested by Chomsky (2001), based on the concepts of “partially/completely” defective heads.

- (34) a. There have been <three books> written <*three books>
about that.
b. There were <three men> arrested <*three men> last night.

(Richards (2012: 221))

The examples in (34) exemplify a phenomenon originally pointed out by Burzio (1986), and then Chomsky (2001) proposes that it is explained by an assumption of Th/Ex. Th/Ex is a certain obligatory phonetic operation which moves DPs rightward or leftward so as to avoid “participle > DP” order, which is unacceptable in English because of an unknown, idiosyncratic reason. However, quite a few researchers have claimed that this operation is not fully motivated theoretically and some even have shown that Th/Ex actually makes some contributions to semantic interpretations, although Chomsky (2001) assumes it to be a purely phonetic operation without semantic effects (see Svenonius (2001) and Holmberg (2002)). In what follows, for explanatory purposes, I will call the examples in (34) Th/Ex constructions.

Richards (2012) attempts to derive this Th/Ex using a different perspective than Chomsky (2001). In his account, Th/Ex constructions are analyzed as constructions containing two layers of vP, the lower of which counts as a “partially” defective head.

- (35) a. $[_{v1P} \text{ } v1\text{-completely-def } [_{v1P} \text{ } V1] [_{v2P} \text{ } v2\text{-partially-def } [_{v2P} \text{ } V2 \text{ } DP]]]]$
 b. $[_{v1P} \text{ } v1\text{-completely-def } [_{v1P} \text{ } V1] [_{v2P} \text{ } DP \text{ } [_{v'2} \text{ } v'2\text{-partially-def } [_{v2P} \text{ } V2 \text{ } t]]]]]$
 ↑
 Transfer domain IFM

In (35), the lower v_2 is a “partially” defective head and the upper v_1 is a “completely” defective one. Thus, importantly, the lower v_2 contains a defective AF and triggers Transfer, but cannot assign case since it is defective. As a result, the DP moves to the Spec- v_2 P position by IFM. By this IFM, the absence of “participle > DP” order in English is derived.

Nevertheless, Richards (2012) assumes in other parts of the paper that ν in all of the participles in English is “completely” defective because the long distance agreement seen below is possible, which means their domains should be accessible, that is to say, should not be transferred.

- (36) a. [There seem to me [to appear to John [to be believed by Bill [...]
[to be several dogs in the garden]]]] (Richards (2012: 216))
b. [There seems to me [to appear to John [to be believed by Bill
[...]] [to be a dog in the garden]]]] (Richards (2012: 216))

As the examples in (36) show, the verb *seem(s)* and *several dogs/a dog* hold Agree relations, which are realized as the inflection on the verb. Given that the Agree relation holds beyond numerous vP layers, if they include “partially” defective heads, this relation is impossible.

Here, Richards’ (2012) proposal faces a problem. Although he assumes that all participles in English include “completely” defective heads in order to explain the examples in (36), he claims that a “partially” defective head exists in Th/Ex constructions. He adds that *v* for *be* and unaccusative verbs, and *v* for passive ECM verbs are always “completely” defective, whereas lexical passive participles, which have transitive counterparts (e.g. the participles in (34)), involve “partially” defective *v*. In this definition, however, it is unclear why *v* for passive ECM belongs to a subclass including *v* for *be* and unaccusative verbs, given the fact that passive ECM verbs have transitive counterparts which can assign case to DPs, which means they have a lot in common with other lexical passive verbs. Of course, if passive ECM verbs in (36) involve a “partially” defective head, *v* for *believed* transfers its complement, rendering the complement inaccessible and making agreement impossible. Thus, concerning an account for the long distance agreement in (36), his argument is never tenable without classifying passive ECM *v* as “completely” defective, although there is no denying that this classification is ad hoc and should be avoided in the minimalist program, if other choices remain. In conclusion, it is fair to say that his account for Th/Ex has theoretical inadequacies.

In the F-T framework, an independent “partially/completely” distinction does not exist, since it is derived by application of F-T. Thus, in this framework, no special assumption needs to be added concerning the status of *v* in English.

Let us modify constraint (26) in 3.1.2 (repeated in (37a)) by adding (37b).¹⁵ This indicates that *v* which has an expletive in its Spec can also

¹⁵ As anonymous reviewers claim, this result can also be gained if we assume that an expletive appears in the upper vP in English. However, in this case we have to exclude the possibility that an expletive is generated in the lower vP, which seems to lack theoretical motivation. As long as the Icelandic examples (40) require (37b), the analysis here

receive transcription of u-features in English.

- (37) a. W-phase heads possessing external elements cannot be involved in F-T.
 b. In some languages, “external elements” do not include expletives.

A derivation of Th/Ex constructions in the F-T framework is presented below.

- (38) There have been <three books> written <*three books> about that. (= (34a))

- (39) a. $[_{CP} \boxed{C} [_{TP} T [_{vIP} \boxed{v1} [_{V1P} V1 [_{v2P} \boxed{Expl} [_{v2'} \boxed{v2} [_{V2P} V2 DP]]]]]]]$
 $\{AF, EF\} \quad \{ , \} \quad \{ , \}$
- b. $[_{CP} \boxed{C} [_{TP} T [_{vIP} \boxed{v1} [_{V1P} V1 [_{v2P} \boxed{Expl} [_{v2'} \boxed{v2} [_{V2P} V2 DP]]]]]]]$
 $\{AF, EF\} \rightarrow \{AF, EF\} \quad \{AF, EF\}$
- c. $[_{CP} \boxed{C} [_{TP} T [_{vIP} \boxed{v1} [_{V1P} V1 [_{v2P} \boxed{Expl} [_{v2'} \boxed{v2} [_{V2P} V2 DP]]]]]]]$
 $\{ \} \rightarrow \{AF\} \quad \{ \} \rightarrow \{AF\} \quad \{ \} \rightarrow \{AF\}$
- d. $[_{CP} \boxed{C} [_{TP} \boxed{Expl_i} [_{T'} T [_{vIP} \boxed{v1} [_{V1P} t_i [_{V1'} V1 [_{v2P} t_i [_{v2'} \boxed{v2} [_{V2P} DP [_{v2'} V2 t]]]]]]]]]$
 $\{AF\} \quad \{AF\} \quad \text{Agree}$
- DP $[_{v2'} V2 t]]]]]]]$
 $\{AF\}$

In (39), F-T from C is triggered onto the w-phase heads in its c-command domain followed by F-I of each phase head. Then, multiple agree relations hold between the complement heads and the DP. As is indicated in (39d), T holds a relation with the DP but attracts the expletive instead, because the expletive occupies the higher position. On the other hand, V2 attracts the DP to its Spec, for V2 does not c-command the expletive, which captures the unacceptability of the word order in (34). It should be noted that in this paper, following Pollock (1989) and Caponigro and Schütze (2003), V in passive sentences in English are assumed not to raise to *v* by head movement.

I will show empirical support for assumption (37b) by adding another piece of data which can be explained by this assumption. See the exam-

only needs to assume that English expletive-associate relations have to be local somehow, and thus have to be within the same lexical subarray.

ples in Icelandic below.

- (40) a. Það hafa verið *skrifað/skrifaðar Þrjár bækur um
 Expl have been written-Sg/written-Pl three books about
 þetta
 this
- b. *Það hafa verið Þrjár bækur skrifað/skrifaðar um
 Expl have been three books written-Sg/written-Pl about
 þetta
 this

(Richards (2012: 218))

The examples in (40), interestingly, indicate that the DPs cannot move even if inflection is observed in Icelandic. In this paper, I assume that V in passive sentences in Icelandic raise to v (or higher), unlike in English (see Zwart (1994) for a related argument). Then, the fact that the DP should be after V in Icelandic can be derived.

- (41) $[_{CP} \boxed{C} [_{TP} \text{Expl}_i [_{T'} T [_{v1P} \boxed{v1} + V1 [_{v1P} t_i [_{v1'} t_{v1} [_{v2P} t_i [_{v2'} \boxed{v2} + V2$

 $[_{v2P} \text{DP}_k [_{v2'} t_k]]]]]]]]]]]$ Agree

Details of the derivation are omitted because the derivation here is homogeneous with that in (39) above. Now note that the word order in (40) is retained by the movement of V2 to $v2$. Also notice that F-T occurs onto $v2$ and inflection is observed. It should be emphasized that this phenomenon in Icelandic cannot be captured in Richards' (2012) framework without some stipulations, since the appearance of the inflection on $v2$ indicates that this $v2$ is "partially" defective, which in turn implies that V2P is transferred and that the case of the DP is not determined.

Thus far, I have shown that Richards' (2012) proposal can be derived in a more principled way and that some of his problems can be solved in the F-T framework. In what follows, I claim that F-T enables us to account for certain behaviors of prepositions in English, in addition to the data involving passive participles above, and present more empirical support for the F-T framework.

3.2. Preposition-Stranding/Pied-Piping and Selection by Verbs

3.2.1. p^*P and pP

In this subsection, derivations of prepositional phrases in 2.2.3 are revis-

ited. It has been pointed out that in English, an interesting phenomenon is observed concerning prepositional phrases.

- (42) a. Who did you give the book to *t*?
 b. To whom did you give the book *t*?

The examples in (42) show that two options exist in English *wh*-questions when *wh*-elements are generated within prepositional phrases: Only a *wh*-element moves leaving a preposition as in (42a) or a prepositional phrase including a *wh*-element moves as a whole as (42b) shows. In this paper, these are called P-stranding and P-pied-piping, respectively.

Interestingly, P-stranding takes place only with a preposition selected by a verb. Thus, example (43) is ungrammatical.

- (43) *What inning did the Yankees lose the ball game in *t*?

(Matsubara (2000: 154))

In what follows, I demonstrate that the two options of derivations deduced from F-T shown in 2.2.1 (namely s-derivation and i-derivation) can capture the selectability of (42a, b) and the ungrammaticality of (43).

Recall that prepositional phrases are divided into s-phase *p***P* and w-phase *pP* in the present analysis, adapting Matsubara's (2000) proposal. S-phase *p***P* is a prepositional phrase that can exist independently, namely, a non-argument, adjunctive prepositional phrase, whereas w-phase *pP* is a prepositional phrase that is selected by a verb and thus, in this sense, an argument-like prepositional phrase.

Before moving on, one important assumption should be introduced. I propose that *p*(*) in itself cannot possess an EF.¹⁶ My reasoning includes the following two points. Firstly, since EFs are argued to serve to attract discourse related elements to the left periphery, the null hypothesis is that phases whose left periphery does not have discourse related effects do not possess EFs on their own. As the following examples show, the left periphery of prepositional phrases does not seem to be connected to discourse related effects.

¹⁶ It should be noted that the assumption that *p*(*) does not have an EF does not mean that they cannot merge. In Chomsky (2008), EFs are assumed to ensure a status that a certain element has an ability to merge. However, it seems to me that there exist at least two kinds of EFs. One is what triggers external merge and the other is an EF which attracts elements to the left periphery, that is to say, the EF a phase head owns. Putting aside theoretical arguments of these EFs' nature, in this paper, I assume that *p*(*) cannot possess the latter EF and thus, that it can merge externally but cannot cause internal merge.

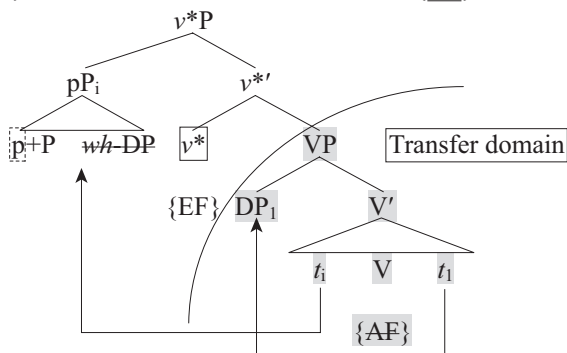
3.2.2. On P-Stranding and P-Pied-Piping

In this subsection, the specific derivation of pP in *wh*-questions is outlined so as to explain the selectability of P-stranding and P-pied-piping. Below, I argue that s-derivation shown in (12) in 2.2.1 generates P-stranding, whereas i-derivation in (13) produces P-pied-piping.

Let us consider i-derivation first.

(48) To whom did you give the book *t*? (= (42b))

- (49) a. $[_{v^*P} \boxed{v^*} [_{VP} [_{pP} \boxed{p} [_{PP} P \textit{ wh-DP}_2]] [_{V'} V \textit{ DP}_1]]]$
 $\{AF, EF\} \quad \{ \quad , \quad - \}$
- b. $[_{v^*P} \boxed{v^*} [_{VP} [_{pP} \boxed{p} [_{PP} P \textit{ wh-DP}_2]] [_{V'} V \textit{ DP}_1]]]$ F-T
 $\{AF, EF\} \rightarrow \{\underline{AF}, -\}$
- c. $[_{v^*P} \boxed{v^*} [_{VP} [_{pP} \boxed{p} [_{PP} P \textit{ wh-DP}_2]] [_{V'} V \textit{ DP}_1]]]$ F-I
 $\{AF, EF\} \quad \{ \quad , \quad - \} \rightarrow \{\underline{AF}\}$
- d. $[_{v^*P} \boxed{v^*} [_{VP} [_{pP} \boxed{p} [_{PP} \textit{ wh-DP}_2 [_{P'} P \textit{ t}_2]]] [_{V'} V \textit{ DP}_1]]]$
 $\{AF, EF\} \quad \{ \quad , \quad - \} \quad \uparrow \quad \{\underline{AF}\} \quad \boxed{\text{Transfer domain}}$
- e. $[_{v^*P} \boxed{v^*} [_{VP} [_{pP} \boxed{p} +P [_{PP} \textit{ wh-DP}_2 [_{P'} \textit{ t}_P \textit{ t}_2]]] [_{V'} V \textit{ DP}_1]]]$ F-I
 $\{ \quad , \quad EF \} \rightarrow \{\underline{AF}\}$
- f.



One difference from what we have seen in 2.2.3 is that this derivation includes a *wh*-phrase. After an s-phase v^*P is formed, v^* transcribes its features onto p , and then pP starts its derivation independently as we can see in (49a–f). Now, it should be noted that p cannot receive transcription of the EF on v^* . Thus, the *wh*-phrase must be transferred within the domain

based on Chomsky's (2007) assumption, from an s-phase head n^* to p). Since we assume that p^* and p do not possess a slot to hold an EF, DPs within PP cannot move out of PP without F-T as is discussed in 3.2.1. This approach may be extended to explain adjunct islands if we assume that adjuncts are included in null p^*P , although this possibility is not pursued here.

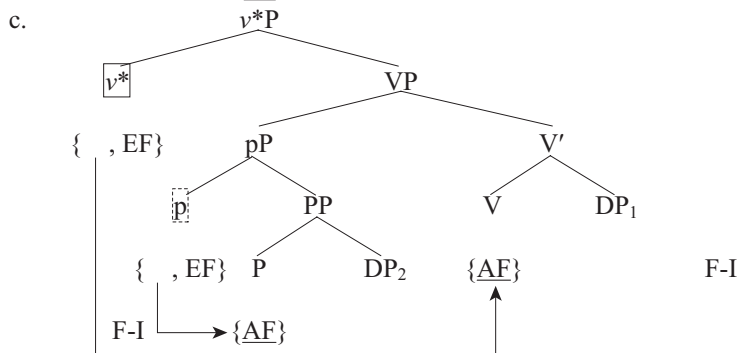
of pP. The derivation proceeds with F-I occurring from v^* onto V. V holds a relation with DP₁ in terms of the AF, and v^* , with pP as a whole in terms of the EF. As a result, the whole pP has to move and P-pied-piping is observed. Also notice that movement of *wh*-DP₂ out of pP is prohibited by the PIC.

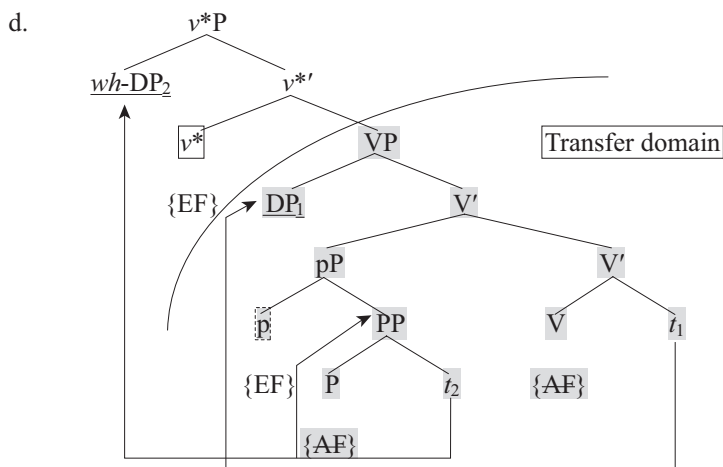
On the other hand, let us consider what happens if the derivation proceeds in an s-derivation manner. As I have already noted, s-derivation of Prepositional Dative Constructions is excluded by Richards' (2010) Distinctness Condition because two DPs are included within one Transfer domain. However, in this case, one of the two DPs moves out of the Transfer domain because of the *wh*-movement. This means that the problem of two DPs existing in the same Transfer domain does not occur. Thus, when the DP in PP is a *wh*-phrase, s-derivation can take place. See the details below.

(50) Who did you give the book to *t*? (= (42a))

(51) a. [_{v^{*}P} $\boxed{v^*}$] [_{VP} [_{pP} $\boxed{p}$] [_{PP} P *wh*-DP₂]] [_{V'} V DP₁]]
 {AF, EF} { , — }

b. [_{v^{*}P} $\boxed{v^*}$] [_{VP} [_{pP} $\boxed{p}$] [_{PP} P *wh*-DP₂]] [_{V'} V DP₁]] F-T
 {AF, EF} → {AF, — }





After F-T is triggered, the operations in v^*P and pP happen simultaneously in an s-derivation manner. The derivation converges since there is only one DP (DP1) in the Transfer domain; the other DP (*wh*-DP2) has escaped from it to the edge of v^*P , as shown in (51d).¹⁸

Let us move to the details of the derivation. After F-T, the AFs on V and P start to probe down, finding DP1 and DP2, respectively, holding a relation with them and the AFs are checked. Simultaneously, the EF on v^* attracts the *wh*-phrase in pP. Note that this movement of the *wh*-phrase does not violate the PIC, since this occurs in s-derivation. Because p does not own an EF, the *wh*-phrase is not attracted to Spec-pP. In sum, though p itself cannot move a *wh*-element out of its domain, P-stranding results if the derivation proceeds in s-derivation. It should also be emphasized that s-derivation and i-derivation are always selectable as options.

In this section, I have shown that explanations for the selectability of P-stranding and P-pied-piping and for a necessary condition for this, namely, selection by verbs, which had not been explained clearly enough in previous accounts, follow from the assumption of F-T and its derivational possibilities.

¹⁸ Here, although *wh*-DP2 finally escapes from the Transfer domain to avoid violating the Distinctness Condition, case is assigned to it in the Transfer domain of *v** and thus it receives Accusative. Therefore, as an anonymous reviewer suggests, the same case manifestation between Accusative and Oblique may have something to do with the possibility of P-stranding. Although this is an interesting topic, I will leave this for future research for concerns of space.

According to Tanaka (2011), example (53) is generated by the derivation presented in (54). The phase head v^* transmits its EF onto the head of its complement, namely V, when the rightward movement occurs. When this occurs, Tanaka (2011) argues that it is to the right adjunct position that the EF on V attracts the relevant element. Therefore, *of DP* moves to the right adjunct position of VP. It is crucial for his argument that the attachment position of rightward movement is the right adjunct position of *the complement of the phase head*, namely, of VP. Tanaka (2011) argues that modification relations can hold only within the same Transfer domain. Therefore, *of DP* must be transferred with the modified DP within VP. Based on this assumption, Tanaka (2011) captures longstanding interesting problems including complement/adjunct asymmetry and NPI (Negative Polarity Item) licensing, although the details of the discussion are omitted here for concerns of space. However, particularly noticeable is that his approach suc-

cessfully captures clause boundedness in rightward movement. It is agreed that rightward movement cannot occur successive-cyclically, unlike leftward A-bar movement. In previous analyses, additional assumptions are needed so as to capture this prohibition. However, in Tanaka's (2011) approach, this is readily explained since the attachment site of rightward movement is within the Transfer domain of the phase and thus, successive-cyclic rightward movement is banned by the PIC.

Notice that the Distinctness Condition repeated in (55) does not rule out the derivation in (54) because this paper assumes that the element undergoing the rightward movement is pP and thus, its domain, namely PP including another DP, is already transferred. Therefore, only one DP is included in the Transfer domain of v^* (VP) as is shown in (56).¹⁹

(55) If a linearization statement $\langle \alpha, \alpha \rangle$ is generated, the derivation crashes. (= (21))

(56) $[_{v^*P} v^* [_{VP} [_{VP} [_{VP} V [_{DP} t_i]] \text{Adjunct}] [_{pP} p [_{PP-OF} [_{DP}]]]_i]]]$
Transfer domain

In what follows, I demonstrate that the impossibility of rightward movement with P-stranding is captured by invoking Tanaka's (2011) EF-I, under the F-T framework. As we have seen in the last section, concerning leftward movement, both P-stranding and P-pied-piping can be derived by s-derivation and i-derivation, respectively, as far as a w-phase pP is concerned. Now, let us consider EF-I in both cases, namely s-derivation and i-derivation in rightward movement, and deduce that a DP cannot escape from pP under any circumstances.

Let us start with i-derivation.

(57) *John gave the book to t yesterday a woman with long hair. (= (52b))

(58) a. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} [_{PP} P DP_2]] [_{V'} V DP_1]] \text{Adjunct}]]]$
{AF, EF} { , —}
 b. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} [_{PP} P DP_2]] [_{V'} V DP_1]] \text{Adjunct}]]]$ F-T
{AF, EF} $\longrightarrow$ {AF, —}
 c. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} [_{PP} P DP_2]] [_{V'} V DP_1]] \text{Adjunct}]]]$ F-I
{AF, EF} { , —} $\longrightarrow$ {AF}

¹⁹ An anonymous reviewer points out a sentence like (i) might be generated.

(i) *John read [a paper of *t*] over the summer Chomsky's.

However, this is considered to be a case of rightward P-stranding. Thus, this can readily be ruled out based on the discussion in 3.2.3.

- d. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} [_{PP} DP_2 [_{P'} P t_2]]] [_{V'} V DP_1]] Adjunct]]$
 $\{AF, EF\} \quad \{ , - \} \quad \uparrow \{AF\} \quad \boxed{\text{Transfer domain}}$
- e. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} + P [_{PP} DP_2 [_{P'} t_P t_2]]] [_{V'} V DP_1]] Adjunct]]$
 $\{EF\} \quad \quad \quad \{EF\}$
- f. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} + P [_{PP} DP_2 [_{P'} t_P t_2]]] [_{V'} V DP_1]] Adjunct]]$
 $\{EF\} \quad \quad \quad \{EF\}$
- EF-I

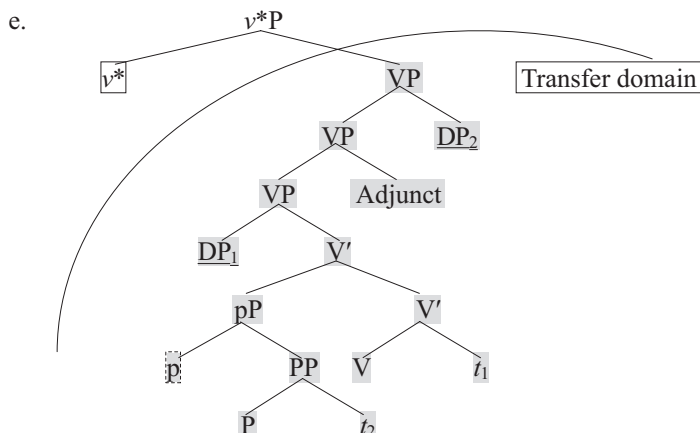
I will outline the derivation in (58). Firstly, v^* transcribes its features onto p . Then p starts its operations independently of v^* . Here note that p does not have a slot where an EF is posited (see 3.2.1 for details). Thus, EF-I cannot be triggered within pP in i-derivation. The derivation at the pP level starts and PP is transferred, as in (58c, d). As a result, even if EF-I occurs from v^* to V , the PIC bans extraction of DP_2 out of PP , as shown in (58f). Thus, only pP as a whole can move and an example of P-pied-piping is generated in i-derivation, concerning rightward movement.²⁰ Since a slot for EFs does not exist in pP , the possibility that DP_2 moves to the edge of pP and then is attracted to the right adjunct position of VP is also excluded.

Let us move to a case of s-derivation. S-derivation, as well, does not produce convergent derivations due to the Distinctness Condition in (55) (= (21)).

(59) *John gave the book to t yesterday a woman with long hair.

- (60) a. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} [_{PP} P DP_2]]] [_{V'} V DP_1]] Adjunct]]$
 $\{AF, EF\} \quad \{ , - \}$
- b. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} [_{PP} P DP_2]]] [_{V'} V DP_1]] Adjunct]]$ F-T
 $\{AF, EF\} \longrightarrow \{AF, -\}$
- c. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{pP} \boxed{p} [_{PP} P DP_2]]] [_{V'} V DP_1]] Adjunct]]$
 $\{ , EF\} \longrightarrow \{EF\}$
- EF-I
- d. $[_{v^*P} \boxed{v^*} [_{VP} [_{VP} [_{VP} [_{pP} \boxed{p} [_{PP} P DP_2]]] [_{V'} V DP_1]] Adjunct]]$
 $\quad \quad \quad \{EF\}$

²⁰ One may wonder why the transmitted EFs in (58) and (60), which do not c-command the relevant elements, can attract them. Although it is not shown explicitly in other places in this paper for sake of simplicity, Chomsky (2007: 22) argues that a phase head assigns its u-features “to the label” of its complement. Therefore in (58) and (60), the EFs are actually posited on the position of the label VP . If we assume EFs can be percolated within the relevant projection, the EFs can c-command and attract the relevant elements.



Irrelevant operations concerning AF checking are omitted here. When the derivation occurs in an s-derivation manner, the rightward movement of DP2 itself is acceptable as is shown in (60d). However, notice that the movement triggered by EF-I occurs within the Transfer domain of the relevant phase; namely, DP1 and DP2 exist in the same Transfer domain, which is ruled out by the Distinctness Condition in (55). Therefore, the derivation does not converge.

It should be emphasized that the assumption here expects that derivations will converge if a Transfer domain includes no more than one DP. Interestingly, this expectation is supported by the examples below.

- (61) a. ?We slept in when we were in Connecticut a marvelous bed
that had belonged to George Washington.

(Rochemont and Culicover (1990: 191))

- b. ?We looked at last night a wonderful film about New York
that had been made during the Depression.

(Rochemont and Culicover (1990: 191))

The examples in (61) are presented as counterexamples of the ban on rightward P-stranding. Although the judgment is quite marginal, there is an obvious difference between example (59), where two DPs are included, and the examples in (61), where only one DP exists, and thus syntax should be able to generate (61) (therefore, the marginality has something to do with a factor not related to syntax, which this paper cannot treat due to space limitations). What should be emphasized here is that under the usual assumptions of adjuncts, (61a, b) cannot be generated without rightward movement with P-stranding. Under the analysis here, however, the examples in (61) are not counterexamples because the constraint in (55) does not rule them

out, since only one DP is included in each Transfer domain.²¹

In sum, under the F-T framework, invoking Tanaka's (2011) EF-I, P-stranding in rightward movement is ruled out, by the PIC in i-derivation, and by the Distinctness Condition in (55) in s-derivation. Thus, the long-standing problem of the impossibility of rightward P-stranding is solved under the F-T framework, without additional ad hoc assumptions, from a purely syntactic perspective.

4. Conclusion

In this paper, I have pointed out a problem concerning w-phases under Chomsky's (2008) and Richards' (2007) Feature-Inheritance framework and then solved it by the assumption of Feature-Transcription. Then, I have shown that the F-T framework is not a mere theoretical induction but gains empirical support through the cross-linguistic connection of the appearance of inflection and movement in passive sentences, the selectability of P-stranding and P-pied-piping in English, and the impossibility of P-stranding in rightward movement in English. This paper has thus shown that Chomsky's (2008) F-I framework is still theoretically and empirically well-motivated if coupled with the assumption of F-T, and has made a contribution to the further development of Phase Theory.

REFERENCES

- Baker, Mark C. (2012) "On the Relationship of Object Agreement and Accusative Case: Evidence from Amharic," *Linguistic Inquiry* 43, 255–274.
- Burzio, Luigi (1986) *Italian Syntax*, Reidel, Dordrecht.
- Boeckx, Cedric (2008) *Understanding Minimalist Syntax: Lessons from Locality in Long-Distance Dependencies*, Blackwell, Malden, MA.
- Caponigro, Ivano and Carson T. Schütze (2003) "Parameterizing Passive Participle Movement," *Linguistic Inquiry* 34, 293–307.
- Chomsky, Noam (2001) "Derivation by Phase," *Ken Hale: A Life in Language*, ed. by Michael Kenstowicz, 1–52, MIT Press, Cambridge, MA.
- Chomsky, Noam (2007) "Approaching UG from Below," *Interfaces + Recursion = Language?*, ed. by Uli Sauerland and Hans-Martin Gärtner, 1–29, Mouton de

²¹ In this case, I assume that *v* in these intransitive verbs does actually trigger Transfer, because they form w-phases, although consideration of the nature of intransitive verbs is left for future research because of space limitations.

Gruyter, Berlin.

- Chomsky, Noam (2008) "On Phases," *Foundational Issues in Linguistic Theory*, ed. by Robert Freidin, Carlos P. Otero and Maria L. Zubizarreta, 133–166, MIT Press, Cambridge, MA.
- Chomsky, Noam (2013) "Problems of Projection," *Lingua* 130, 33–49.
- Drummond, Alex, Norbert Hornstein and Howard Lasnik (2010) "A Puzzle about P-Stranding and a Possible Solution," *Linguistic Inquiry* 41, 689–692.
- Hiraiwa, Ken (2005) *Dimensions of Symmetry in Syntax: Agreement and Clausal Architecture*, Doctoral dissertation, MIT.
- Holmberg, Anders (2002) "Expletives and Agreement in Scandinavian Passive," *Journal of Comparative Germanic Linguistics* 4, 85–128.
- Honda, Takahiro (2009) "Zenchishiku no Kozo to Gijijudobun ni Tsuite (On the Structure of Prepositional Phrases and Pseudo-Passive Sentences)," *Proceedings of the 81th General Meeting of the English Literary Society of Japan*, 140–142.
- Huang, C.-T. James (1982) *Logical Relations in Chinese and the Theory of Grammar*, Doctoral dissertation, MIT.
- Legate, Julie A. (2003) "Some Interface Properties of the Phase," *Linguistic Inquiry* 34, 506–516.
- Legate, Julie A. (2012) "The Size of Phases," *Phases: Developing the Framework*, ed. by Ángel J. Gallego, 233–250, De Gruyter Mouton, Boston, MA.
- Matsubara, Fuminori (2000) "p*P Phases," *Linguistic Analysis* 30, 127–161.
- McCloskey, James (2000) "Quantifier Float and *Wh*-Movement in an Irish English," *Linguistic Inquiry* 31, 57–84.
- Miyagawa, Shigeru (2010) *Why Agree? Why Move?: Unifying Agreement-Based and Discourse-Configurational Languages*, MIT Press, Cambridge, MA.
- Nishimura, Megumi (2007) "A Derivational Approach to Superiority Effects in English," *English Linguistics* 24, 421–444.
- Oba, Yukio (2013) "Eigo no Chukankobun no Togokozo ni Tsuite (On Syntactic Structures of Middle Voice Constructions in English)," a paper presented in 3rd Fukuoka Linguistic Circle in 2013.
- Obata, Miki and Samuel David Epstein (2008) "Deducing Improper Movement from Phase-Based C-to-T Phi Transfer: Feature-Splitting Internal Merge," *WCCFL* 27, 353–360.
- Pollock, Jean-Yves (1989) "Verb Movement, Universal Grammar, and the Structure of IP," *Linguistic Inquiry* 20, 365–424.
- Richards, Marc D. (2007) "On Feature Inheritance: An Argument from the Phase Impenetrability Condition," *Linguistic Inquiry* 38, 563–572.
- Richards, Marc D. (2012) "On Feature Inheritance, Defective Phases, and the Movement-Morphology Connection," *Phases: Developing the Framework*, ed. by Ángel J. Gallego, 195–232, De Gruyter Mouton, Boston, MA.
- Richards, Norvin (2010) *Uttering Trees*, MIT Press, Cambridge, MA.
- Rochement, Michael S. and Peter W. Culicover (1990) *English Focus Constructions and the Theory of Grammar*, Cambridge University Press, Cambridge.
- Sigurðsson, Halldór A. (2006) "The Nominative Puzzle and the Low Nominative

- Hypothesis,” *Linguistic Inquiry* 37, 289–308.
- Svenonius, Peter (2001) “Impersonal Passives: A Phase-Based Analysis,” *Proceedings of the 18th Scandinavian Conference of Linguistics*, 109–125.
- Takano, Yuji (1998) “Object Shift and Scrambling,” *Natural Language and Linguistic Theory* 16, 817–889.
- Tanaka, Hiroyoshi (2011) “On Extraposition from NP Constructions: A Phase-Based Account,” *English Linguistics* 28, 173–205.
- Tenny, Carol L. (1992) “The Aspectual Interface Hypothesis,” *Lexical Matters*, ed. by Ivan A. Sag and Anna Szabolcsi, 1–27, CSLI Publications, Stanford.
- Zwart, Jan-Wouter (1994) “On Holmberg’s Generalization,” *Language and Cognition* 4, 229–242.

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