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“At Least” Problem of Spell-out Domains under Linearization Preservation

Yasuhiro Iida

1. Introduction

How to determine the specific Spell-out domains has been a long-standing issue. As Ko (2007: 56) summarizes, Chomsky (2000, 2001) proposes that Spell-out applies only to “propositional” phases (i.e., ν P and CP), but Matushansky (2005) argues against such an approach. Also, other maximal projections such as VP, PP, and ApplP are argued to be potential Spell-Out domains in the literature (e.g., McGinnis 2001, Abels 2003, Fox and Pesetsky 2003, 2005, Sabbagh 2003, Ko 2005, and Lee-Schoenfeld 2005). Focusing on the mapping between syntax and phonology, Fox and Pesetsky (hereafter, F&P, 2003, 2005) use Spell-out domains to propose Linearization Preservation.

(1) *Linearization Preservation*

The linear ordering of syntactic units is affected by Merge and Move *within* a Spell-out Domain, but is fixed once and for all at the end of each Spell-out Domain. (F&P 2003: 2)

F&P (2005) build up their arguments assuming that “The list of Spell-out domains includes at least CP, VP and DP” (F&P 2005: 6), but they ignore the ν P/VP distinction as the Spell-out domain. Pursuing the similar approach, Takita (2010) proposes a parametric difference as to the ν P/VP distinction and argues that “Spell-out Domains in Japanese and Korean include at least CP and ν P” (Takita 2010: 29), while other languages such as Swedish and English choose VP, instead of ν P. In these quotations from F&P (2005) and Takita (2010), the expression “at least” plays an important role. It indicates that we still have two possibilities of the lower Spell-out domains: (i) both ν P and VP, or (ii) either ν P or VP. Ko (2005), for example, clearly chooses the possibility (i), arguing that both ν P and VP should be regarded as the Spell-out domains in (at least) Japanese and Korean. With these backgrounds, this paper reexamines VP as a Spell-out domain in Japanese, and provides several examples that crucially need the Spell-out domain VP under Linearization Preservation.

The organization of this paper is as follows: in Section 2, we first overview how F&P’s Linearization Preservation works in English and Swedish examples, the languages argued to take VP as a Spell-out domain in Takita (2010). Then, we also consider Japanese, the language argued to take the Spell-out domain ν P. In Section 3, we reconsider the possibility of VP as a Spell-out domain in Japanese, focusing on Ko’s (2005) examples that prefer a Spell-out domain VP. Additionally, examples containing a reason wh-phrase *nani-o* in Japanese are provided to see that

the Spell-out domain VP, not vP, plays an important role to explain its word ordering restriction. After Section 4 reexamines Takita's examples under Ko's (2005) assumption that both vP and VP are Spell-out domains, Section 5 concludes the paper.

2. Previous Analyses



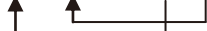
2.1 Fox and Pesetsky (2003, 2005): Linearization Preservation

Let us first take a closer look at F&P's (2003, 2005) Linearization Preservation in (1). Again, its central idea is that "Information about linearization, once established at the end of a given Spell-out domain, is never deleted in the course of a derivation" (F&P 2005: 6).

Suppose that we have three elements X, Y and Z to be pronounced in a Spell-out domain D in (2a). After Spell-out applies to the D, α merges to D as the next step of the derivation as in (2b).

- (2) a. **Spell-out of D** : $[_D \ X \ Y \ Z]$  b. **α merges with D** : $\alpha [_D \ X \ Y \ Z]$

Under Linearization Preservation, the order in the D is fixed as $[X < Y < Z]$; and after that, the fixed order should always be maintained.¹ Thus, (3) below illustrates that, among three potential scenarios of the movements from the D to the higher domain D', only (3b) represents the illicit movement. This is because the movement of Y eventually yields the undesirable order $[Y < X < Z]$, which is inconsistent with the fixed order in the D. Notice with (3c) that any elements in the D are free to move out of the D unless the movements end up breaking the previously fixed order.

- (3) a. $[_{D'} \dots X \ \alpha [_D \ t_X \ Y \ Z]]$  b. * $[_{D'} \dots Y \ \alpha [_D \ X \ t_Y \ Z]]$  c. $[_{D'} \dots X \dots Y \ \alpha [_D \ t_X \ t_Y \ Z]]$ 

Under Linearization Preservation, English wh-prhase in (4a) is required to undergo the successive-cyclic movement. Assume here that CP, VP, and DP are the Spell-out domains.

- (4) a. I know $[_{CP1} \text{ who } [_{TP} \text{ Bill } [_{VP} \text{ } t_i \text{ thinks } [_{CP2} \text{ John } [_{TP} \text{ John } [_{VP} \text{ } t_i \text{ kissed } t_i]]]]]]$
 b. $[_{VP} \text{ who}_i \text{ kissed } t_i]$ Fixed Order: *who < kissed*
 c. $[_{CP2} \text{ who}_i \text{ } [_{TP} \text{ John } [_{VP} \text{ } t_i \text{ kissed } t_i]]]]$ Fixed Order: *who < John < kissed*
 d. $[_{CP1} \text{ who}_i \text{ } [_{TP} \text{ Bill } [_{VP} \text{ } t_i \text{ thinks } [_{CP2} \text{ } t_i \text{ } [_{TP} \text{ John } [_{VP} \text{ } t_i \text{ kissed } t_i]]]]]]]]$ Fixed Order: *who < John < kissed*
Surface Order: *who < Bill < thinks < John < kissed*

In (4b), after *who* moves to the VP edge position, the order $[who < kissed]$ is fixed. Then, in (4c)

¹ The expression like " $\alpha < \beta$ " indicates that "phonologically α proceeds β ".

(5) a. I know [_{CP1} who Bill thinks [_{CP2} John kissed *t_i*]]
 b. [_{CP2} C⁰ [_{TP} John [_{VP} kissed who]]
 c. [_{CP1} who_{*i*} [_{TP} Bill [_{VP} thinks [_{CP2}[_{TP} John kissed *t_i*]]]]

Fixed Order: *John<kissed<who*
 Fixed Order: *John<kissed<who*
 * Surface Order: *who<Bill<thinks<John<kissed*

(6) a. Jag kysste henne inte [VP t_V t_O]
 I kissed her not
 ↑ ↑ |
 b. *Jag har henne inte [VP kysst t_O]
 I have her not kissed
 ↑ |

2.2 Takita (2010): Parametric Difference of Spell-out Domains

(7) When Spell-out applies to vP ,

- Linearize the whole vP , including the elements on its edge, or
- Linearize the complement of v^0 . (Takita 2010: 39)

² F&P argue that, unlike the A-bar-movements, the object shift do not use the VP edge position on the way to the higher domain. Otherwise, the undesirable order [Obj<V] is fixed in VP.

(i)*Jag har henne inte [_{VP} _____ kysst *t_o*]

The difference of domains between (7a) and (7b) can be depicted with the circles in (8a) and (8b), respectively. We can find that the Spell-out domain is νP in (8a), while it is the VP in (8b).



Takita (2010) argues that the languages like Japanese and Korean take (7a)/(8a), while other languages like Swedish take (7b)/(8b).

Turning back to Japanese, let us consider two types of examples that require νP as a Spell-out domain. First, Japanese subjects and objects behave differently in that the object and object-oriented numeral quantifiers (NQ_{Obj}) can be intervened by other elements, whereas such an intervention is not allowed between the subject and the subject-oriented quantifiers (NQ_{Subj}). The relevant examples are in (9) and (10), respectively (taken from Takita 2010: 30).

- (9) a. John-ga biiru-o san-bon nonda
 John-Nom beer-Acc 3-Cl drank
 ‘John drank three bottles of beer’
- b. Biiru-o **John-ga** san-bon nonda
 beer-Acc John-Nom 3-Cl drank
 ‘John drank three bottles of beer’
- (10) a. Gakusei-tati-ga san-nin biiru-o nonda
 student-Pl-Nom 3-Cl beer-Acc drank
 ‘Three students drank beer’
- b. *Gakusei-tati-ga **biiru-o** san-nin nonda
 student-Pl-Nom beer-Acc 3-Cl drank
 ‘Three students drank beer’

This subject-object asymmetry can be explained under Linearization Preservation by assuming νP as a Spell-out domain. The derivations of (9b)/(10b) are illustrated in (11)/(12), respectively.

- (11) a. [νP Obj_i Subj [$\nu P \dots [NP \ t_i \ NQ_{Obj}] \dots$] ...] Fixed Order: $Obj < Subj < NQ_{Obj}$
- b. [$CP \dots Obj_i \dots Subj_j \dots [\nu P \ t'_i \ t_j \ [VP \dots [NP \ t_i \ NQ_{Obj}] \dots] \dots]$] Fixed Order: $Obj < Subj < NQ_{Obj}$
- Surface Order: $Obj < Subj < NQ_{Obj}$**
- (12) a. [νP Obj_i [NP Subj NQ_{Subj}] [$\nu P \dots t_i \dots$] ...] Fixed Order: $Obj < Subj < NQ_{Subj}$
- b. * [$CP \dots Subj_j \dots [\nu P \ Obj_i \ [NP \ t_j \ NQ_{Subj}] \ [VP \dots t_i \dots] \dots]$] Fixed Order: $Obj < Subj < NQ_{Subj}$
- Surface Order: $Subj < Obj < NQ_{Subj}$**

In (11a), after the object moves to the νP edge position, the order [$Obj < Subj < NQ_{Obj}$] is fixed. At

this point, the object gets a permission to be separated from the NQ_{Obj} in the latter course of derivation, and (9b)’s grammaticality naturally follows. In contrast, in (12a), the subject stays adjacent to the NQ_{Subj} even after the movement of the object. Thus, the order $[Obj < Subj < NQ_{Subj}]$ is fixed in vP , and this prevents the object from emerging between the subject and the NQ_{Subj} in any higher levels, as exemplified in (12b). Therefore, these examples show that it is necessary to take vP as a Spell-out domain to put the subject and the NQ_{Subj} in the members of the fixed order.

In a similar vein, the paradigm in (13) (originally discussed in Saito 1989) can be explained. (13a) is the base sentence, and (13b) contains PP scrambled out of the embedded CP. However, (13c) shows that, after the extraction of PP, the remnant CP cannot be scrambled.

- (13) a. Taroo-ga [CP Hanako-ga [PP Sooru-ni] i-ru to] omottei-ru (koto)
 Taroo-Nom Hanako-Nom Seoul-in be-Pres that think-Pres fact
 ‘Taroo thinks [that Hanako lives [in Seoul]]’
- b. [PP Sooru-ni]_i Taroo-ga [CP Hanako-ga *t_i* i-ru to] omottei-ru (koto)
 Seoul-in Taroo-Nom Hanako-Nom be-Pres that think-Pres fact
 ‘(lit.) [In Seoul]_i, Taroo thinks [that Hanako lives *t_i*]’
- c. * [CP Hanako-ga *t_i* i-ru to]_j [PP Sooru-ni]_i Taroo-ga *t_j* omottei-ru (koto)
 Hanako-Nom be-Pres that Seoul-in Taroo-Nom think-Pres fact
 ‘(lit.) [That Hanako lives *t_i*]_j, [in Seoul]_i, Taroo thinks *t_j* ’ (Takita 2010: 11-12)

Takita’s explanation is as follows. In the vP level, PP *Sooru-ni* ‘in Soul’ can stay in the original position as in (14a), or it can be scrambled to the vP edge position as in (14b). In either case, before Spell-out applies to vP , the fixed order guarantees that the PP precedes the embedded verb *i* ‘be’: that is, $[Sooru-ni < i]$ is established. Then, as (14c) illustrates, the resultant surface order yields the ordering contradiction due to the reversed order between *Sooru-ni* and *i*. Hence, (13c) is properly ruled out.

- (14) a. [_{vP} Hanako-ga [_{vP} Sooru-ni i]] Fixed Order: Hanako-ga < Sooru-ni < i
- b. [_{vP} Sooru-ni_i Hanako-ga [_{vP} *t_i* i]] Fixed Order: Sooru-ni < Hanako-ga < i
- ↓ **Derivation goes to the matrix CP**
- c. * [CP Hanako-ga *t_i* i-ru to]_j [PP Sooru-ni]_i Taroo-ga *t_j* omottei-ru (koto)
 Hanako-Nom be-Pres that Seoul-in Taroo-Nom think-Pres fact
Fixed Order: ... < Sooru-ni < ... < *i* < ... (irrelevant elements are omitted)
Surface Order: Hanako-ga < *i* < ru < to < Sooru-ni < Taroo-ga < omottei < ru

To summarize this section, with examples in English, Swedish and Japanese, we saw that languages like Swedish take VP as a Spell-out domain, while Japanese takes *vP*. Although this is consistent with Takita’s parametric argument in (7), recall that even Takita’s (2010) argument for the potential lists of Spell-out domains involves a tricky expression, “at least”.

(15) Spell-out Domains in Japanese and Korean include at least CP and *vP*. (Takita 2010: 29)

Therefore, in principle, the availability of VP as a Spell-out domain in Japanese is not negated. In the next section, observing Ko’s (2005) analysis of Japanese, we will see the cases in which VP should be counted as a Spell-out domain in Japanese.

3. The VP as a Spell-out Domain in Japanese

3.1 Ko’s (2005) Analysis

Ko (2005) argues that Japanese, as well as Korean, should take VP as a Spell-out domain, in addition to *vP*. Her crucial evidence comes from the sentences containing high adverbs and low adverbs. More specifically, she demonstrates that the VP-internal elements cannot intervene between the object and the *NQ_{Obj}*. Among others, let us take two types of ‘again’: repetitive one and restitutive one.³ Consider her Korean example below (Ko 2005: 87).

(16) Sally-ka ku mwun-ul *tasi* yel-ess-ta

Sally-Nom that door-Acc again open-Past-Dec

(i) ‘Sally opened that door, and she had done that before’ [*repetitive*]

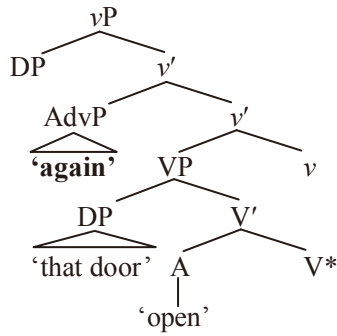
(ii) ‘Sally opened that door, and the door had been in the state of being open before’ [*restitutive*]

According to Ko, *tasi* ‘again’ in (16) has ambiguity: the repetitive reading presupposes that Sally has opened the door before, while the restitutive reading presupposes that the door had been in the state of the being open before. Adopting partly von Stechow (1996) and Beck and Johnson (2004), Ko argues that the repetitive ‘again’ is adjoined to the *vP* area as depicted in (17a), while the restitutive ‘again’ is adjoined the adjective *open* as in (17b). The significant point here is that the former merges *above* the *V**; the latter emerges *below* *V**.⁴

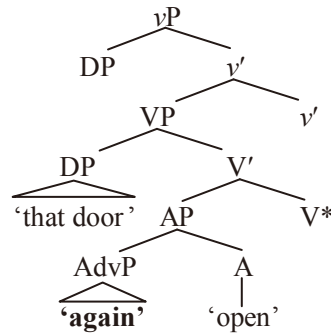
³ See Ko (2005) for more interactions between other VP-internal adverbs and the object with the *NQ_{Obj}*.

⁴ To be more in detail, the structures in (17) is constructed as follows. First, Ko (2005) argues that *open* is divided into the adjective *open* and verbal head *V**. The *V** is considered to contribute a BECOME component to the meaning. Then, she further argues (i) that AP is a component of *V**, and (ii) that the object is merged as a specifier of *V** when ‘again’ modifies the result state of the event.

(17) a. Repetitive ‘again’



b. Restitutive ‘again’



Then, extending the structures in (17) to Japanese *mata* ‘again’, Ko (2005) reports that Japanese *mata* fails to get the restitutive reading when it appears between the object and the NQ_{Obj}. Confirm this with Ko’s (2005: 100-101) context which forces the restitutive reading of *mata* in (18): *mata* cannot intervene between the object *esupurezzo masin-o* and the NQ_{Obj} *hito-tu*.

(18) *Mary bought an espresso machine for the department two days ago. But, the machine is broken. The department needs to buy a new espresso machine. John, a potential volunteer for buying a new espresso machine, has never bought an espresso machine before. John says:*

Mae-ni (pro) kat-ta koto na-i keredo,
 Before I buy-Past fact not-Pres but
 ‘I have never bought an espresso machine before but’,

- a. Boku-ga **esupurezzo masin-o** **hito-tu** *mata* kai-masu
 I-Nom espresso machine-Acc one-Cl again buy-Fut
 # ‘I will buy an espresso machine, (and I have done that before)’ [repetitive reading]
 √ ‘I will buy an espresso machine, (and an espresso machine was in the possession of the department before)’ [restitutive reading]
- b. ?*/# Boku-ga **esupurezzo masin-o** *mata* **hito-tu** kai-masu
 I-Nom espresso machine-Acc again one-Cl buy-Fut
 # ‘I will buy an espresso machine, (and I have done that before)’ [repetitive reading]
 ?* ‘I will buy an espresso machine, (and an espresso machine was in the possession of the department before)’ [restitutive reading]

(18a) shows that when *mata* follows both the object and NQ_{Obj}, the restitutive reading is obtained as expected. However, (18b) shows that such a reading disappears when *mata* intervenes between the object and the NQ_{Obj}. As a result, the grammaticality of the whole sentence of (18b) gets degraded since the context in (18) forces the restitutive reading of ‘again’.

Ko (2005) accounts for the unavailability of the restitutive reading in (18b) under

Linearization Preservation. By assuming VP as a Spell-out domain, the order [Obj<NQ_{Obj}<*mata*] can be fixed in the VP, and then the object and the NQ_{Obj} cannot be separated by *mata*.

- (19) ..._{[VP Subj} _{[VP} _{[DP Obj} NQ_{Obj}] *mata* kaimasu]] Fixed Order: Obj<NQ_{Obj}<*mata*<V

Notice that if the order was not fixed in VP, the undesirable order [Obj<*mata*<NQ_{Obj}] would wrongly be ruled in by the movement of the object to the vP edge position. Thus, as Takita uses “at least” in (15), there still remains a possibility of VP being a potential Spell-out domain in Japanese.

3.2 The Accusative Wh-adjunct in Japanese

Another example that requires the fixed order in VP has to do with the reason wh-phrase *nani-o* ‘what-Acc’ (Kurafuji 1996, 1997, Ochi 1999). Confirm first that, unlike *naze* ‘why’, *nani-o* necessarily precedes the object in a transitive sentence (Konno 2004).

- (20) a. Taro-wa **naze/nani-o** kowai eiga bakari mite-i-ru no
 Taro-Top why/what-Acc scary movies only watch-Prog-Pres Q
 ‘Why is Taro watching only scary movies?’
 b. Taro-wa kowai eiga bakari **naze/*nani-o** mite-i-ru no
 Taro-Top scary movies only why/what-Acc watch-Prog-Pres Q

With the assumption that *nani-o* is first merged to the VP-adjoined position (Ochi 1999), the ordering restriction can be accounted for with a Spell-out domain VP.⁵ By the assumption, the fundamental structure inside VP becomes (21a), in which *nani-o* appears higher than the object. Then, Linearization Preservation fixes the word order as [*nani-o*<Obj<V] in the VP, and the surface order in (20b) is properly ruled out, because the moved object yields the undesirable reversed word order, namely [Obj<*nani-o*], as in (21b).⁶

- (21) a. [_{CP} ... [_{VP} Taro-wa [_{VP} **nani-o** kowai eiga bakari mite-i-ru]]]
 b. * [_{CP} ... [_{VP} Taro-wa kowai eiga bakari [_{VP} **nani-o** *t*_{kowai eiga bakari} mite-i-ru]]]

⁵ Ochi (1999) claims that *nani-o* is base-generated in the VP-adjoined position because *nani-o* cannot be stranded in the VP-fronting structure.

(i) [Kodomo-ni tsuraku-atari]-sae John-wa **naze/*nani-o** shiteiru no
 child-Dat badly-treat-even John-Top why/what-Acc doing Q
 ‘[Even treating his child badly], why is he doing *t*’ (Ochi 1999: 177)

See Nakao (2009) and Nakao and Obata (2009) for another view of *nani-o*’s base-generated position.

⁶ By assuming that the complement-to-Spec movement is not allowed (namely, Anti-locality), we can prevent the object from stopping by the VP edge position prior to the Spell-out of the VP. If such an object shift was allowed, the undesirable order [Obj<*nani-o*] would be fixed inside of the VP.

What should be stressed here is that, again, it is necessary to fix the word order at the VP level.

4. Reexamination of Takita's Examples

Thus far, we have observed several cases in which VP should be considered as a Spell-out domain in Japanese. They, however, do not negate ν P as a potential Spell-out domain in the language. Consequently, one potential way to cover overall examples is to adopt Ko's (2005) argument of the multiple Spell-out domains in the lower level: that is, both ν P and VP. In fact, Takita's examples given above do not pose significant problems even when we consider VP, in addition to ν P, as a Spell-out domain. In (22), look at the repeated grammatical examples from (9b) and (13b). In each surface structure, (22a) still has the fixed order in VP as [Obj<NQ_{Obj}<V]; and (22b) also maintains the fixed order as [*Sooru-ni*<*i*], as discussed in (14).

- (22) a. Biiru-o **John-ga** san-bon nonda
 beer-Acc John-Nom 3-Cl drank
 ‘John drank three bottles of beer’
- b.

[_{PP} Sooru-ni] _i	Taroo-ga	[_{CP} Hanako-ga	<i>t_i</i>	i-ru	to]	omottei-ru	(koto)
Seoul-in	Taroo-Nom	Hanako-Nom		be-Pres	that	think-Pres	fact

 (lit.) [In Seoul]_i, Taroo thinks [that Hanako lives *t_i*]

Therefore, taking both VP and ν P as a Spell-out domain does not yield the wrong predictions for any grammatical (and, also ungrammatical) sentences given above.

5. Concluding Remarks and Remaining Issue

In this paper, under F&P's (2003, 2005) Linearization Preservation, we focused on the expression “at least” frequently used in the arguments provided in the literature: for example, “the list of Spell-out domains includes at least XP, YP and ZP.” Then, we pursued the line of Ko's analysis in which both ν P and VP are regarded as the Spell-out domains in Japanese. We witnessed that, even with such a multiple Spell-out domain analysis, the un/grammatical sentences in Japanese can properly be ruled out/in under Linearization Preservation. Since we only consider the very limited number of examples in this paper, it goes without saying that more reexaminations must be done from the perspective of Ko's (2005) analysis.

Before closing this paper, one remark should be given. In this paper, we did not consider the possibility of replacing VP with ν P. In fact, the reason wh-phrase *nani-o* in 3.2 might prefer this possibility because *nani-o* shows the ordering restriction against the object, but not against the subject. Confirm the rather free ordering between the subject and *nani-o*.

- (23) (Taro-wa) **naze/nani-o** (Taro-wa) kowai eiga bakari mite-i-ru no
 Taro-Top why/what-Acc Tato-Top scary movies only watch-Prog-Pres Q
 ‘Why is Taro watching only scary movies?’

Therefore, if the word order is fixed in *vP*, as well as in *VP*, why the subject is immune to the ordering restriction with *nani-o* cannot be explained. I leave for the future research how to guarantee the free word ordering between the subject and *nani-o*.

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