

# Locality Constraint $\sqrt{\text{GIVE}}$ s an Insight into Suppletion

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This paper deals with the locality constraints on optional morphological alternations in the grammar, whose architecture is local and serial in nature. We investigate the allomorphy of the root  $\sqrt{\text{GIVE}}$  in Korean. These data provide a *prima facie* counter-example, which poses a problem to the locality condition on suppletion. However, we show that suppletive allomorphy does conform to a stringent locality constraint. We also address the challenging issue of optional alternations in morphology. We resolve these two puzzles by reconciling the local domain, rather than the lexical entries, through morphological operations. We claim that these data further suggest that morphosyntax interacts with phonology, both locally and serially.

## 1. Introduction

This paper deals with the locality constraints on optional morphological alternations in the grammar, whose architecture is local and serial in nature. In such alternations, two suppletive exponents of an single element  $X$ ,  $\alpha$  and  $\beta$ , may both occur in the same morphosyntactic context. The empirical data we will provide in this paper poses two challenges: (i) the locality constraint that conditions suppletion seems to be violated by an allomorph, and (ii) the competition between exponents seems not to obey the Subset Principle.

In general, suppletion receives much attention, since it is subject to a locality constraint. The trigger of allomorphy must be either structurally or linearly adjacent to its target. Intervention effects may arise when a constituent interrupts this adjacency relation. So far many previous studies (Bobaljik 2012; Embick 2010; Gribanova & Harizanov 2016; Marantz 2013; Merchant 2015; Moskal & Smith 2016) have addressed the question about the locality condition, attempting to argue that allomorphy is always subject to some constraints of this sort. Although the different studies propose different architectures of the grammar, the ultimate assessment of questions about locality among competing theories is empirical.

We focus on a three-way set of data from Korean allomorphy of the root  $\sqrt{\text{GIVE}}$  that constitutes a *prima facie* counter-example to a strong hypothesis of adjacency restrictions.<sup>1</sup> One exponent is conditioned by a long-distance factor, which casts doubt on limited local domains as suggested in Bobaljik (2012). Our research question is to figure out which relevant grammatical restriction is acting upon the suppletive allomorphy. We will discuss to what extent the locality condition holds, showing that these data in fact do conform to a stringent locality constraint.

The data are also intriguing in that two contextual allomorphs alternate as free variants in certain contexts. This morphological optionality directly gives rise to a question about the Subset Principle, which only allows a single winner in each competition. Therefore, this problem contributes to a better understanding on how grammar operates. We argue for the model of grammatical organization proposed by Distributed Morphology (Halle & Marantz (1993, 1994); Harley & Noyer (1999) among others), where phonological computations apply after syntactic structures are spelled out cyclically and processed morphologically. Here, morphological operations are responsible for allomorphy. It is the local domain, rather than the lexical entries, that must be relativized serially through morphological operations in order to derive the optional morphological alternation.

The remainder of this paper is organized as follows. Section 2 presents the suppletive pattern of the root  $\sqrt{\text{GIVE}}$  in Korean. In Section 3, we address two problematic issues: the question of locality and the puzzle of optionality in Morphology. In section 4, we argue for a model of grammar in which morphology may adjust the syntactic structure in a restricted way that obeys the cyclic and local nature of syntax. This architecture of grammar enables to derive the free variation of allomorphs in phonology. Section 5 shows how the alternation of the allomorphs can be derived without posing any problem for locality. Section 6 summarizes the main claims of this paper.

## 2. Data

In Korean, the root  $\sqrt{\text{GIVE}}$  shows three allomorphs, depending on the following contexts:

1. /tuli/: used in cases of honorific datives;
2. /tal/: used in certain **imperative** contexts;
3. /cwu/: *Elsewhere* form.

In the following sections, we provide some examples for each allomorph.

### 2.1. $\sqrt{\text{GIVE}}$ and Honorific

Let us start with the alternation between /cwu/  $\sim$  /tuli/. In a declarative sentence such as (i-a), we observe that the verbal root  $\sqrt{\text{GIVE}}$  is realized as /cwu/, which is the default form. When the subject DP is honorific (1-a), the honorification is marked with a suffix -*si* onto the verb, which

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<sup>1</sup>As a precedent, Chung (2009) has accounted for the interaction between negation and honorification in Korean, discussing defective intervention. Kim & Chung (2017) argue that long-distance conditioned ‘tal’ suppletion is actually limited within the local domain of words.

is still realized as /cwu/. In contrast, when the indirect object of the sentence bears a honorific feature (1-b), the *Elsewhere* form /cwu/ is blocked and the allomorph /tuli/ shows up.<sup>2</sup>

- (1) a. Sensayngnim-kkeyse na-ekey satang-ul **cwu-si**-ess-ta.  
 teacher.HON.NOM I-DAT candy-ACC give-HON-PST-DECL  
 ‘The teacher gave me a candy.’  
 b. Nay-ka **sensayngnim-kkey** satang-ul **tuli**-ess-ta.  
 I-NOM teacher-DAT.HON candy-ACC give-PST-DECL  
 ‘I gave the teacher a candy’

Given this observation, we can straightforwardly predict that the allomorph /tuli/ is subject to a locality restriction. With respect to Relativized Minimality (Rizzi 1990) the indirect object is much closer to V than the external argument is. Therefore, when this local configuration between V and an indirect object bearing a [HON] feature is met, the *Elsewhere* form /cwu/ is blocked by /tuli/.

## 2.2. $\sqrt{\text{GIVE}}$ and Imperatives

Take the third suppletive exponent /tal/. As shown in (2), this allomorph of the root  $\sqrt{\text{GIVE}}$  can be inserted only when two contexts are met: (i) the clause has imperative mood and (ii) the dative argument is co-referential with the speaker of the utterance (i.e., first person, singular/plural).

- (2) (Ne) na-ekey satang-ul **cwu/tal**-la.  
 you-NOM I-DAT candy-ACC give-IMP  
 ‘Give me a candy.’

However, /tal/ is blocked when the verb is negated (3-a), or if the addressee of the imperative utterance bears a [HON] feature (3-b).<sup>3</sup>

<sup>2</sup>An anonymous reviewer wonders if the [HON] feature could condition the suppletive allomorph of the root in other ways too. However, the honorific suppletive form /tuli/ is triggered only when the dative-marked indirect object bears the [HON] feature. As shown in (i), even if the direct object *caki pwumo-nim-ul* has the [HON] feature (i-a), it does not condition the suppletion on the verb. In contrast, (i-b) shows that we can get the form /tuli/ if the indirect object is honorific, as in (1-b).

- (i) a. Nay chinkwu-ka na-eykey caki pwumo-nim-ul **cwu/\*tuli**-ess-ta.  
 My friend-NOM I-DAT self parent-HON-ACC give-PST-DECL  
 ‘My friend gave her/his parents to me.’  
 b. Nay chinkwu-ka caki pwumo-nim-kkey na-lul **\*cwu/tuli**-ess-ta.  
 My friend-NOM self parent-HON-DAT I-ACC give-PST-DECL  
 ‘My friend gave me to her/his parents.’

If both direct and indirect objects bear the [HON] feature, we always get the suppletive form /tuli/, as expected.

<sup>3</sup>A reviewer asked us about the role of other tense and aspect features in Korean. Unlike declarative or interrogative, we could not test the grammaticality with other tense and/or aspect values, since jussive structures, including the imperative, are deficient with respect to temporality. The speech act types of ordering, commanding, or requesting express unanchored propositions, meaning that they bring the propositions in the future and irrealis orientation (Schwager 2011).

- (3) a. (Ne) na-ekey satang-ul **cwu/\*tal**-ci-ma-la.  
 you-NOM I-DAT candy-ACC give-CI-NEG-IMP  
 ‘Do not give me a candy.’  
 b. Sensayngnim, ce-ekey satang-ul **cwu/\*tal**-si-la.  
 Teacher.HON I.NONHON-DAT candy-ACC give-HON-IMP  
 ‘Teacher, give me a candy (please).’ *To honorific addressee*

Crucially, /tal/ insertion is problematic for the locality constraint, as this allomorph is triggered by the feature [IMPERATIVE] on the JUSS head. Concerning the possible extended verbal projection, as sketched in (4), the JUSS head is not close enough to condition the form of the exponent to be inserted on the V node, as the T head is always part of the syntactic structure and intervenes between the V and the JUSS head.

- (4)  $\sqrt{\text{VERB}}$  - (NEG) - (HON) - T- Mod- JUSS - SA

Note that the feature [IMP] on JUSS head (for a detailed discussion, see Zanuttini et al. (2012)) triggers suppletion on the V node when the tense head is zero-marked. This local configuration is essential for suppletion, since Negation and Honorification intervene between the two nodes and bleed /tal/ insertion. Moreover, the *Elsewhere* form /cwu/ can appear as a free variant in the context where /tal/ should be required, as shown in (2). Given the specific conditions of /tal/ insertion, /cwu/ is not expected to occur in the context for /tal/ insertion.

In Korean, the imperative mood can also be embedded when the matrix clause merges with a speech verb (see (5-a)-(5-b)). Note that Korean has a phenomenon called *indexical shift*.<sup>4</sup> The availability of this process of indexicality led us to inspect if the environment of /tal/ holds consistently in embedded clauses. More precisely, it has been argued that in some languages speech (report) verbs can have shifted readings of indexicals: an argument in a clause that is embedded by a speech verb is interpreted as the actual speaker in that context.

- (5) a. Swumi-ka (na-ekey) [Yusu-ekey kihoy-lul **cwu/\*tal**-la-ko] malhayssta.  
 Swumi-NOM (I-DAT) [Yusu-DAT chance-ACC give-IMP-COMP] told  
 ‘Swumi told (to me) to give Yusu a chance.’  
 b. Cini<sub>i</sub>-ka Yusu-ekey [caki<sub>i</sub>-ekey kihoy-lul **cwu/tal**-la-ko] malhayssta.  
 Cini-NOM Yusu-DAT [self-DAT chance-ACC give-IMP-COMP] told  
 ‘Cini<sub>i</sub> told Yusu to give her<sub>i</sub> a chance.’

In (5-a), the actual speaker of the embedded utterance is *Swumi*, and the recipient of the action of *giving* (i.e., the dative in the embedded clause) is *Yusu*. Here, the speaker is not coreferential with the dative marked DP, so the environment for /tal/ insertion is not met. Instead, the unmarked form /cwu/ is inserted. However, if the reflexive pronoun *caki* is coreferential with the subject of the matrix clause *Cini* as in (5-b), /tal/ may be chosen as the root-allomorph.

To recap, in order for /tal/ to appear, (i) the clause has imperative mood, and (ii) a coreferentiality relation must hold between the recipient of the action *giving* and the actual speaker of the utterance, who is the agent of the event *telling*. In simple clauses, the speaker is always the first person, whereas in embedded clauses the actual speaker is the subject of the

<sup>4</sup>Kaplan (1989) first points out that natural languages have *indexicals*, expressions whose meanings are dependent on the context of utterance. He conjectures that indexicals refer to the actual context of utterance and proposes a context-shifting operator, *monster*. The monster plays a role in determining the actual speaker relative to the context.

matrix clause, which is projected by the speech report verb.

The following example supports this generalization for /tal/ insertion. The pronoun *kunye* ‘she’ can either refer to a third part which is different from the matrix subject, as in (6-a), or be coreferential with the matrix subject, as in (6-b). In the former sentence, /cwu/ is the only choice, as the contexts for other allomorphs are not met, whereas /tal/ may be inserted for the root of verb in the latter case (with the same pattern of optionality as in (2), (5-b)).

- (6) a. *Swumi<sub>i</sub>-ka Yusu-ekey [kunye<sub>j</sub>-ekey kihoy-lul cwu/\*tal-la-ko] malhayssta.*  
*Swumi-NOM Yusu-DAT [she-DAT chance-ACC give-IMP-COMP] told*  
 ‘Swumi<sub>i</sub> told Yusu to give her<sub>j</sub> a chance.’  
 b. *Swumi<sub>i</sub>-ka Yusu-ekey [kunye<sub>i</sub>-ekey kihoy-lul cwu/tal-la-ko] malhayssta.*  
*Swumi-NOM Yusu-DAT [she-DAT chance-ACC give-IMP-COMP] told*  
 ‘Swumi<sub>i</sub> told Yusu to give her<sub>i</sub> a chance.’

Considering that Korean is a *pro*-drop language, we can hypothesize two scenarios when one argument is marked as dative. In example (7), all the sentences have the same surface structure, but they differ for the syntactic position of the *pro*. As shown in (7-a), the dative marked DP *Swumi* is the recipient of the action of *giving* in the embedded clauses, and the *pro* is the addressee of the sentence (you). In contrast, the dative marked DP *Swumi* can be the addressee of the event *telling* in the matrix clause and the recipient of the action of *giving* can be dropped, as illustrated in (7-b) and (7-c). Here, *pro* can bear two different indices and, thereby gives raise to two different allomorph realizations.

- (7) a. *Cini<sub>i</sub>-ka pro<sub>j</sub> [Swumi-ekey kihoy-lul cwu/\*tal-la-ko] malhayssta.*  
*Cini-NOM pro [Swumi-DAT chance-ACC give-IMP-COMP] told*  
 ‘Cini<sub>i</sub> told (you<sub>j</sub>) to give Swumi a chance.’  
 b. *Cini<sub>i</sub>-ka Swumi-ekey [pro<sub>i</sub> kihoy-lul cwu/tal-la-ko] malhayssta.*  
*Cini-NOM Swumi-DAT [pro chance-ACC give-IMP-COMP] told*  
 ‘Cini<sub>i</sub> told Swumi to give her<sub>i</sub> a chance.’  
 c. *Cini<sub>i</sub>-ka Swumi-ekey [pro<sub>j</sub> kihoy-lul cwu/\*tal-la-ko] malhayssta.*  
*Cini-NOM Swumi-DAT [pro chance-ACC give-IMP-COMP] told*  
 ‘Cini<sub>i</sub> told Swumi to give her<sub>j</sub> a chance.’

These examples above show that the coreferential relation is essential for /tal/ to appear. This condition holds consistently regardless of the actual form of the DP (full DPs (5-b), pronouns (6-b), *pro* (7-b)). It is also worthwhile noting that the free variation between /cwu/ and /tal/ is observed in both simple and embedded clauses.

### 3. Challenges

#### 3.1. The problem of locality

The Minimalist Program proposed by Chomsky (1993) and subsequent works has been the framework for theories where syntactic relations are inherently local. In this approach, emphasis is placed on the idea that the derivation is serial. Given each step in a derivation, every computational operation spells out a local domain, and the output structure of each step is ordered serially. This kind of computation enforces the program to access only the restricted

information that is available at any particular stage of the derivation. In the derivational approach, locality and being serial are demanded by nature.<sup>5</sup>

In the previous section we have seen that the appearance of the allomorph /tal/ for the root V is conditioned by a seemingly long-distant factor, the JUSS head bearing the imperative mood. In this configuration, the T node is realized as  $\emptyset$ . Given these data, a question arises about how the derivation can successfully proceed without a violation of the locality conditions. Let us point out a strong hypothesis defended in Embick (2010), claiming that the trigger and the target of allomorphy must be linearly adjacent to each other, as stated in (8).

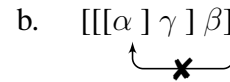
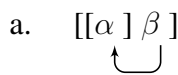
(8) *Node Adjacency Hypothesis*

The appearance of a particular allomorph  $\mu$  in a cyclic domain can be conditioned only by morphosyntactic features of a node that is linearly adjacent to  $\mu$ .

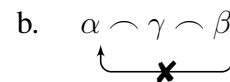
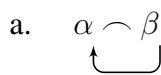
Locality conditions can be computed both structurally and linearly. The former strategy of computation considers the maximal projection as the syntactic domain for allomorphy dependencies; the latter takes into account adjacency relations after linearization and before Spell-out. The *Node Adjacency Hypothesis* specifies two restrictions on conditioning allomorphy: (i) cyclic domain, and (ii) linear adjacency.

- (9) a. (H1) Head X can be allomorphically sensitive to a head Y only if X and Y are in the same cyclic domain, where only category-defining heads  $n, v$  are cyclic heads.  
b. (H2) Contextual allomorphy is possible only with elements that are concatenated by  $\frown$  in linearization. (Embick 2010:35-36)

(10) *Structure*



(11) *Linearization*



The restriction on cyclicity determines that functional heads like tense, number, aspect and other projections fall into non-cyclic heads, so that extended verbal projections are considered as a cyclic domain. In addition, the linearity restriction hypothesizes that a node can be sensitive to another node by virtue of being concatenated with it. According to (8),  $\alpha$  can condition  $\beta$  if they are adjacent to each other, as in (11-a), but  $\alpha$  can not condition  $\beta$  if they stand in the configuration (11-b) with an intervening  $\gamma$ . As the possible configuration in (11-b) shows, the two nodes V and JUSS can never be adjacent to each other, since there is at least T head that intervenes.<sup>6</sup>

Given that the T head is spelled out as a null exponent in the context of the imperative ( $T \Leftrightarrow \emptyset$ ), the reader may wonder whether a weak locality constraint could account for these data. In fact, under a locality principle that computes only heads with overt exponence, a terminal

<sup>5</sup>We are grateful to an anonymous reviewer for the helpful discussion regarding these points.

<sup>6</sup>Note that the issue cannot be resolved through Head movement, since the respective order of the heads after movement will be V-T-JUSS, with the same pattern of intervention.

node that is spelled out by a null exponent does not intervene or block the structural adjacency relation between two other syntactic heads. However, under this weak interpretation of locality, /cwu/ should never appear in imperative clauses, since, if the locality issue is solved, then only /tal/ is expected to occur.<sup>7</sup> This is a mirror image: under a strong interpretation of locality, /tal/ can never occur and the *Elsewhere* form /cwu/ is always expected, whereas by adopting a weak interpretation of the locality constraint /tal/ is always expected and /cwu/ can never appear (see (2), (5-b), (6-b), and (7-b)).

### 3.2. The problem of Competition

Optionality is challenging for the current frameworks that rely on the Subset Principle, which allows a single winner among competitors. The concept of *competition* is initiated in the research on blocking effects by Aronoff (1976).<sup>8</sup> The grammar can provide more than one item for a particular linguistic element, but the competition must be resolved in the way of determining a unique winner. The Subset Principle allows output forms to be well-formed throughout the competition in the way that the more specific exponent for the node X wins. The Subset Principle (Halle 2000; Hale & Reiss 2003) is stated as follows.

*‘The phonological exponent of a Vocabulary Item is inserted into a morpheme [...] if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary Item (i.e. relation between a phonological piece and information about where that piece may be inserted) contains features not present in the morpheme. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen’ (Halle 2000:128).*

In short, only one allomorph is expected to win the competition, in particular the one that matches the highest amount of morphosyntactic features with the morpheme in the terminal node in question.

The optionality shown in (2), where the two allomorphs /tal/ and /cwu/ are in free variation in a specific environment, highlights a new question on competition among allomorphs. Optional morphological alternations have been recently pointed out by Driemel (2018) in German coordinations. This pattern of optionality arises because in the syntactic structure there are two feature values A and B, 2<sup>nd</sup> and 3<sup>rd</sup> person in the example (12).

- (12) Du und dein Freund **seid/sind** eingeladen.  
 you.2 and your friend3 are.2PL/3PL invited  
 ‘You and your friend are invited.’ Driemel (2018)

This type of optionality can be quite straightforwardly derived by making the choice optional of which person feature the verb agrees with (see Driemel (2018) for a detailed analysis on person feature resolution in coordination structures). The verb can choose to agree either with

<sup>7</sup>Even if we assume that the T head is not projected when C head is supposed to bear the [IMPERATIVE] mood, then /cwu/ in (2) can never be derived.

<sup>8</sup>For example, a word such as *gloriosity* does not exist because the existence of the word *glory* blocks it; this gap is not due to the inability of the derivative rules in the grammar.

one member or with the other one of the conjunct phrase. Both options are equally specific and equally expected, given the Subset Principle. This is the only case where the Subset Principle can tolerate two optimal candidates for insertion, namely when the competition is between two equally specific allomorphs that realize different features in the same context.

Let us exemplify this point in (13)-(14). In the derivation of (13), the terminal node  $W$  bears the feature  $[+x]$ . According to the lexical entries in (15), the morpheme  $Z$  can be substituted with the allomorph  $\alpha$ , since  $\alpha$  realizes  $Z$  in the context of  $[+x]$ . However, if in the morphosyntactic structure the feature  $[+y]$  is present, instead of  $[+x]$ , the allomorph  $\beta$  must be inserted. This morphological alternation for the element  $Z$  is determined by Syntax before Spell-out. Morphology does not encounter a problem of competition, as the contexts for the two candidates are different.

- (13)

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      W'
     /  \
  W[+x]   ZP
         /  \
      Z→α   YP
            
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(14)

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      W'
     /  \
  W[+y]   ZP
         /  \
      Z→β   YP
            
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(15) List of Vocabulary Item for the  $Z$  head

a.  $Z \Leftrightarrow \alpha / \_ W_{[+x]}$

b.  $Z \Leftrightarrow \beta / \_ W_{[+y]}$

Let us come back to the Korean data in (2) (repeated here again for convenience).

- (16) (Ne) na-ekey satang-ul **cwu/tal**-la.  
 you-NOM I-DAT candy-ACC give/give-IMP  
 ‘Give me a candy.’

What we see here is a challenging pattern of optionality. The terminal node  $Z$  is specified for the feature  $[+x]$  (in this case, the joint conditions of  $\text{DP}_{\text{DAT}}^{[\pi:\text{Speaker}]}$  and  $[\text{IMP}]$ ), as in (13). When the local domain containing the element  $Z$  is spelled out, there are two exponents in competition.  $\alpha$  realizes  $Z$  under the context with the feature  $[+x]$  on  $W$ , whereas  $\beta$  is underspecified and realizes  $Z$  as an *Elsewhere* form. The abstract lexical entries of (16) are shown in (17). The comparison between (17) and (15) illustrates the particular type of optionality of these data.

- (17) List of Vocabulary Item for allomorphs of  $Z$
- a.  $Z \Leftrightarrow \alpha / \_ W_{[+x]}$
- b.  $\Leftrightarrow \beta \text{ Elsewhere}$

Given the Subset Principle,  $\beta$  is blocked by the existence of the more specific form  $\alpha$  that realizes the element  $Z$  in the context of the feature  $[+x]$ . Hence, only  $\alpha$  is expected to appear. The Subset Principle cannot explain why the *Elsewhere* form  $\beta$  (here, /cwu/) is also compatible in the specific context  $A$  of  $\alpha$  (here, /tal/).

#### 4. Toward the Local and Serial Organization of Grammar

So far, we have seen that the suppletion in imperatives violates the strong hypothesis of adjacency conditions between the trigger and the target of allomorphy. In contrast, the weak version of such a constraint can explain the long-distance factor that triggers root-allomorphy



in Korean, but fails to derive the optionality with the *Elsewhere* form. Let us highlight another deep concern: if adjacency plays less of a role in restricting allomorphy, then it becomes difficult to understand why root-allomorphy only occurs in the absence of overt tense marking, given the obvious blocking effect of negation and honorification. Moreover, regardless of which locality constraint is adopted, the following puzzle has still remained unsolved: the *Elsewhere* form can be optionally inserted in a morphosyntactic environment that is the appropriate context of a more specific form.

The fundamental question in this paper concerns which part of the grammar is responsible for deriving the properties of optional morphological alternations and how this is accommodated under a derivational system that locally computes the phonological forms of allomorphy. In details, this is the question of how morphology in principle interacts with the phonological computation. In what follows, we first flesh out a proposal along the lines of Embick (2010) and then argue for the serial and local nature of the organization of grammar. The challenges that are posed to both locality and competition are accommodated under this derivational approach where morphology interacts with phonology in a limited way, so that it may adjust the local domain at a particular stage of computation. Specifically, the mechanism of the resolution that we adopt is *post-syntactic*.

#### 4.1. Structure Removal: Pruning

According to Embick (2010), certain nodes with null exponents  $\emptyset$  are transparent for linear relations. This can be explicitly provided by positing a morphological rule called PRUNING that eliminate nodes from concatenation statements. This rule is specified in (18).

$$(18) \quad \text{PRUNING (optional): } \sqrt{\text{Root}} \frown [x, \emptyset], [x, \emptyset] \frown Y \rightarrow \sqrt{\text{Root}} \frown Y$$

The pruning rule cyclically eliminates nodes with zero exponents, from inside out, so that both structurally and linearly non-adjacent nodes can also interact, if all the intervening nodes have zero exponents.<sup>9</sup> Therefore, competition between allomorphs can be conditioned by a local environment at the point when each cyclic head is inserted. Crucially, we claim that this morphological operation is available in Korean, but it is optional.<sup>10</sup>

#### 4.2. Outstretching the Structure: Node-sprouting

With Choi & Harley (2016), we propose that a sprouted agreement morpheme  $\text{HON}^0$  is adjoined to a  $v^0$  node, when the  $v^0$  node is c-commanded by an honorific nominative DP in *post-syntax*.

$$(19) \quad \text{HON}^0\text{-sprouting rule: } v^0 \rightarrow [v^0 \text{ HON}^0] / \text{DP } [+ \text{HON}] [\dots v^0 \dots]$$

<sup>9</sup>This operation is proposed to address opacity of conditioning allomorphy, where outer cyclic nodes  $y$  can trigger root-allomorphy across inner cyclic nodes, as stated in the structure like  $\dots \sqrt{\text{root}} [x] y]$ . The PRUNING readjusts the concatenation statement of the structure above by eliminating the intervening cyclic node  $x$ , so that the root and the outer node  $y$  are linearly adjacent to each other when vocabulary insertion occurs at  $y$ .

<sup>10</sup>Embick (2010:42) points out the PRUNING rule is not obligatorily applied for every node with zero exponents. If all nodes with null exponents are assumed to be pruned obligatorily, it predicts wrongly the agreement endings in the Latin perfect tense.

The Node-sprouting rule adjoins a ‘dissociated’  $\text{Agr}^0$  node to a head and copies features of the controlling DP into it. According to the schema in (19), the  $v$  head is sprouted into a complex Head  $[v^0, \text{HON}^0]$  with  $[\text{+HON}]$  feature, when the addressee in SAP which c-commands the verb bears an  $[\text{+HON}]$  feature.

## 5. Analysis

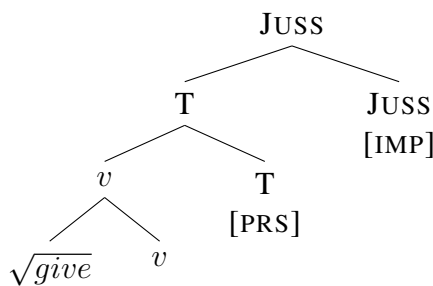
Our analysis provides an account for deriving optional realizations of the allomorphs, either of which violates the locality condition. We argue that the phonological form is computed in a way that is directly related to the derivative process responsible for allomorphy, and that morphosyntax and phonology interact in a limited way that reflects that *local* and *serial* nature of the grammar.

### 5.1. Scenario I: the Suppletive Allomorph /tal/

- (20) (Ne) na-ekey satang-ul **tal**-la.  
 you-NOM I-DAT candy-ACC give-IMP  
 ‘Give me a candy.’

After Spell-Out, the verbal complex has the structure in (21). The  $v$  and T nodes intervene between the  $\sqrt{\text{Root}}$  and the JUSS head, as shown in (22). When Vocabulary Insertion (VI) takes cyclically for each head, Pruning eliminates the  $[v, \emptyset]$  node and in a serial manner from the concatenation statements in (24-c) and (24-e). Due to the effects of Pruning, the root and the C head become part of the same local domain in terms of concatenation statements.

- (21) Structure



- (22) Concatenation Statement

$$\sqrt{\text{give}} \frown v \frown \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$$

- (23) Vocabulary Items

- $\sqrt{\text{GIVE}} \Leftrightarrow /tal/ \text{ / } \text{----} [\text{IMP}]$
- $\sqrt{\text{GIVE}} \Leftrightarrow /cwu/$
- $[\text{PRS}] \Leftrightarrow \emptyset$
- $[\text{IMP}] \Leftrightarrow /la/$

- (24) Derivation of the form /tal/

- Linearizaion:  $\sqrt{\text{give}} \frown v, v \frown \text{T}[\text{PRS}], \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$
- VI at  $v$ :  $\sqrt{\text{give}} \frown [v, \emptyset], [v, \emptyset] \frown \text{T}[\text{PRS}], \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$
- Pruning at  $v$ :  $\sqrt{\text{give}} \frown \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$
- VI at T:  $\sqrt{\text{give}} \frown [\text{T}[\text{PRS}], \emptyset], [\text{T}[\text{PRS}], \emptyset] \frown \text{JUSS}[\text{IMP}]$
- Pruning at T:  $\sqrt{\text{give}} \frown \text{JUSS}[\text{IMP}]$

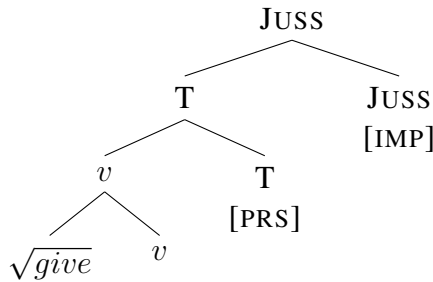
In the last step, VI at JUSS[IMP] takes place when JUSS[IMP] is concatenated with the root  $\sqrt{\text{give}}$ , allowing the root-allomorph /tal/ possible.

### 5.2. Scenario II: How Elsewhere form arises?

Recalling that PRUNING is optional and may fail to apply, the locality domain is relatively less restricted than the former scenario.

- (25) (Ne) na-ekey satang-ul **cwu**-la.  
 you-NOM I-DAT candy-ACC give-IMP  
 ‘Give me a candy.’

(26)



- (27) Concatenation Statement  
 $\sqrt{give} \frown v \frown T[PRS] \frown JUSS[IMP]$

- (28) Vocabulary Items
- $\sqrt{GIVE} \Leftrightarrow /tal/ \text{ / } \_\_\_\_\_\_ [IMP]$
  - $\sqrt{GIVE} \Leftrightarrow /cwu/$
  - $[PRS] \Leftrightarrow \emptyset$
  - $[IMP] \Leftrightarrow /la/$

(29) Derivation of the form /cwu/

- Linearization:  $\sqrt{give} \frown v, v \frown T[PRS], T[PRS] \frown JUSS[IMP]$
- VI at  $v$ :  $\sqrt{give} \frown [v, \emptyset], [v, \emptyset] \frown T[PRS], T[PRS] \frown JUSS[IMP]$
- Pruning at  $v$ :  $\sqrt{give} \frown T[PRS] \frown JUSS[IMP]$
- VI at  $T$ :  $\sqrt{give} \frown [T[PRS], \emptyset], [T[PRS], \emptyset] \frown JUSS[IMP]$
- Pruning at  $T$  is skipped:  $\sqrt{give} \frown \emptyset \frown JUSS[IMP]$

When Pruning is optionally skipped, T head intervenes between the root and JUSS head in the concatenation statement.<sup>11</sup> Consequently, the form /tal/ cannot be inserted, as the configuration does not meet the context for it. Rather, the *Elsewhere* /cwu/ is realized based on the Subset Principle. In other words, the variation in allomorphy can be achieved by relativizing the locality domain, rather than the lexical entries.

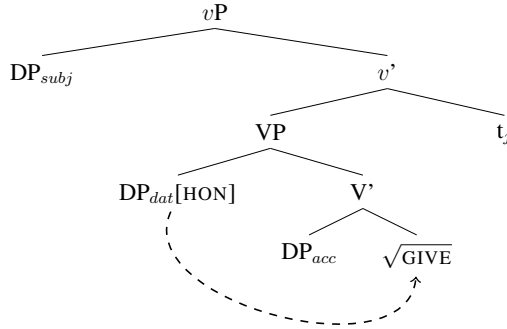
### 5.3. Scenario III: Recipient-driven suppletion

- (30) **Sensayngnim-kkey** satang-ul **tuli/\*cwu/\*tal**-la.  
 teacher-DAT.HON candy-ACC give/give/give-IMP  
 ‘Give the teacher a candy’

<sup>11</sup>Unlike the T head, pruning rules are assumed to apply to the  $v$  heads without any optionality. The root-allomorphy in Korean data apparently exhibits the case in which the outer cyclic node JUSS conditions the suppletive form /tal/ of the root  $\sqrt{give}$  across the verbalizer  $v$ . The overt material is expected to block the linear adjacency between the trigger and the target of allomorphy in terms of the concatenation statement. If  $v$  fails to be pruned, then we could have wrong prediction of other cases of root-allomorphy which do not show any optional competition. Putting the optionality on pruning the T head allows us to keep with the more general observation on the correlation between presence of root-allomorphy and the overtness of verbalizer. Christopoulos & Petrosino (2018) also state the empirical generalization, which is based on the fact that all the root-allomorphy occur with an null verbalizer (See Calabrese (2015a,b) for Italian and Calabrese (in press) for Latin and Sanskrit).

As shown in (30), when the dative argument possesses a [HON] feature, it triggers the insertion of the suppletive allomorph /tuli/. The specific context of insertion for /tuli/ is met, without taking into consideration T head. Therefore, given the Subset Principle, /tuli/ is inserted.<sup>12</sup>

(31) Dative argument has a [+HON] feature



(32) Vocabulary Items

- a.  $\sqrt{\text{GIVE}} \Leftrightarrow /tuli/ / \text{---} DP[HON]$
- b.  $\sqrt{\text{GIVE}} \Leftrightarrow /cwu/$
- c.  $[PRS] \Leftrightarrow \emptyset$
- d.  $[IMP] \Leftrightarrow /la/$

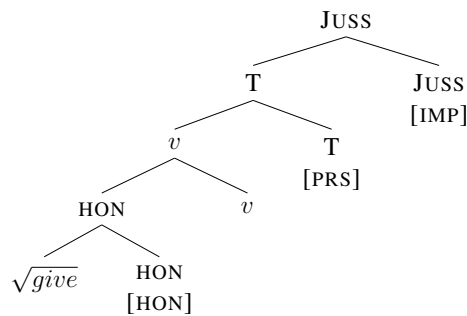
This is a case of competition, rather than an instance of blocking, since the context for /tal/ insertion is not met (the dative argument is not coreferential with the speaker).

#### 5.4. Blocking Effect I: Honorific Addressee

When the Addressee bears the [HON] feature, it also blocks the insertion of the forms /cwu/ and /tal/. The presence of [+HON] feature in c-commanding relation with  $v$  triggers  $v^0$  to be sprouted into  $[v^0 \text{ HON}^0]$ , as illustrated in (34).

(33) Sensayngnim, ce-ekey satang-ul **cwu/\*tal**-si-la.  
 Teacher-HON.NOM I.NON.HON-DAT candy-ACC give-HON-IMP  
 ‘Teacher, give me a candy (please).’

(34) Structure after Node-Sprouting



(35)

Concatenation Statement

$$\sqrt{\text{give}} \frown [HON] \frown v \frown T[PRS] \frown JUSS[IMP]$$

(36)

Vocabulary Items

- a.  $\sqrt{\text{GIVE}} \Leftrightarrow /tal/ / \text{---} [IMP]$
- b.  $\sqrt{\text{GIVE}} \Leftrightarrow /cwu/$
- c.  $[HON] \Leftrightarrow /si/$
- d.  $[PRS] \Leftrightarrow \emptyset$
- e.  $[IMP] \Leftrightarrow /la/$

The sprouted HON head which is realized as an overt morpheme /si/, interrupts the adjacent relation between the root and the JUSS head, even after pruning all the possible heads with the null exponents.

<sup>12</sup>The dative-driven allomorphy still poses a interesting question to structural locality. This brings the Bobaljik (2012)’s original proposal, which can account for recipient-driven suppletion (see Weisser (2018) for Malayalam), since the local domain is defined as a maximal projection XP, not under sisterhood.

## (37) Derivation of the form /cwu-si/

- a. Linearizaion:  $\sqrt{give} \frown \text{HON}, \text{HON} \frown v, v \frown \text{T}[\text{PRS}], \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$
- b. VI at HON:  $\sqrt{give} \frown [\text{HON}, /si/], [\text{HON}, /si/] \frown v, v \frown \text{T}[\text{PRS}] \dots$
- c. VI at v:  $\sqrt{give} \frown /si/ \frown [v, \emptyset], [v, \emptyset] \frown \text{T}[\text{PRS}], \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$

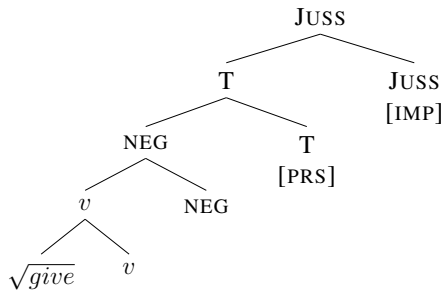
Thus, the only possible vocabulary item to be inserted into the root is *Elsewhere* form.

## 5.5. Blocking Effect II: Negation

The fact that NEG head has an overt exponent, we can straightforwardly predict that only *Elsewhere* form is licit to replace the root node.

- (38) (Ne) na-ekey satang-ul **cwu/\*tal**-ci-ma-la.  
 you-NOM I-DAT candy-ACC give-CI-NEG-IMP  
 ‘Do not give me a candy.’

## (39) Structure



## (40) Concatenation Statement

$$\sqrt{give} \frown [\text{NEG}] \frown v \frown \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$$

## (41) Vocabulary Items

- a.  $\sqrt{\text{GIVE}} \Leftrightarrow /tal/ / \text{----} [\text{IMP}]$
- b.  $\sqrt{\text{GIVE}} \Leftrightarrow /cwu/$
- c.  $[\text{NEG}] \Leftrightarrow /ma/ / \text{----} [\text{IMP}]$
- d.  $[\text{PRS}] \Leftrightarrow \emptyset$
- e.  $[\text{IMP}] \Leftrightarrow /la/$

## (42) Derivation of the negation form

- a. Linearizaion:  $\sqrt{give} \frown v, v \frown \text{NEG}, \text{NEG} \frown \text{T}[\text{PRS}], \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$
- b. VI at v:  $\sqrt{give} \frown [v, \emptyset], [v, \emptyset] \frown \text{NEG}, \text{NEG} \frown \text{T}[\text{PRS}], \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$
- c. Pruning at v:  $\sqrt{give} \frown \text{NEG}, \text{NEG} \frown \text{T}[\text{PRS}], \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$
- d. VI at NEG:  $\sqrt{give} \frown [\text{NEG}, /ma/], [\text{NEG}, /ma/] \frown \text{T}[\text{PRS}], \text{T}[\text{PRS}] \frown \text{JUSS}[\text{IMP}]$

Regardless of whether the Pruning operates or not, it cannot affect the conditions for the allomorph /tal/, as the negation head is an intervener and blocks the linear adjacency between the root and JUSS heads, as shown in the concatenation statement (40).

## 6. Concluding Remarks

In this paper, we focused on a set of data from Korean root-allomorphy that poses two challenges to the morphological theories that rely on locality and on the Subset Principle. Within the framework of Distributed Morphology, we have proposed an analysis of these complex pattern of suppletion and provided further evidence that a stringent locality constraint should hold for suppletion, even for the prima-facie counterexamples. We have adopted Embick (2010)’s *Node Adjacency Hypothesis*, which essentially eliminates adjacency as a locality condition for allomorphy. The (optional) free variation can be explained with the optional application of the

morphological operation Pruning, rather than by unifying the condition of insertion of the two exponents.<sup>13</sup> It gives insight into our conceptual consideration, namely whether the modular components of Grammar, phonology and morphology, operate in the same system at the same time or are rather independent. Our analysis contributes to the discussion about the *local* and *serial* nature of the grammar, where the morphological and phonological computations interact in a limited way.

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<sup>13</sup>Although the optional morphological operation resolves the paradoxical problem of free variation, the question of to what extent Pruning applies remains to be investigated. Morphological operations may be subject to probabilistic application akin to Nevins & Parrott (2010). The rule is a variable rule that applies with the probability  $P_a$ , where  $0 < P_a < 1$ .  $P_a$  is induced as a reflex of ongoing neutralization of the competition between two allomorphs. In other words, the failure of categorical application of PRUNING disrupts the context of insertion of the more marked form. The non-categorical rule application enacts the preservation of the more marked form only probabilistically, rather than deterministically. If  $P_a$  converges to 0, a new grammar with the neutralization in favor of the elsewhere form would emerge. This failure of competition within a grammar hints at a dynamic aspects of rule application.

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