

# The Role of Merger and Typology of $v$ Heads in Serialization

DAEYOUNG SOHN & HEEJEONG KO

*Massachusetts Institute of Technology & Seoul National University*

This paper investigates the role of merger and typology of  $v$  in serialization with special attention to Serial Verb Constructions (SVCs) in Korean. Some SVCs with a derivational suffix (e.g. causative and passive  $v$ ) in Korean display distinct behavior from simple SVCs. We argue that this is due to different merger sites of the derivational  $v$  head in SVCs. A H(igh)-SVC results when a causative or passive  $v$  head is merged to a verbal stem before it is serialized with another verb; a L(ow)-SVC results when the verbal serialization occurs prior to the merger of the  $v$  head. We extend our discussion to a condition on verbal serialization, and propose that verbs can be serialized only when their  $v$  heads bear an identical property in introducing an external argument. We show that our matching condition coupled with the proposed dichotomy of SVCs has broader empirical coverage than previous analyses. Theoretically, our study supports the line of approaches arguing that the morphology and the syntax are intertwined so that the attachment site of derivational suffixes can vary in syntax. Our argument also provides support for the finer-grained classification of  $v$  heads (e.g. Folli and Harley 2005; Harley 2006; Son 2006).

## 1. Different Merger Sites of *v* Heads in Serialization

### 1.1. Two Types of Serial Verb Constructions in Korean

By Serial Verb Construction (SVC), we refer to a construction where two or more lexical verbs appear in a clause without an overt marker of coordination or subordination in-between. Also, one or more arguments are shared by the verbs and only one tense marker appears in the serialized verbal complex. Representative examples of Korean SVCs are given in (1). For convenience, we call the first verb in an SVC  $V_1$ , and the second verb  $V_2$ . For instance, in (1a), *palp-a* ‘to trample’ is referred to as  $V_1$  and *cwuk-i* ‘to kill’ as  $V_2$ .

- (1) a. *John-i kaymi-lul palp-a cwuk-i-ess-ta.*  
John-NOM ant-ACC trample-LK die-CAUS-PAST-DECL  
‘John trampled an ant to death.’  
b. *John-i Mary-lul kkwulh-e anc-hi-ess-ta.*  
John-NOM Mary-ACC kneel-LK sit-CAUS-PAST-DECL  
‘John made Mary kneel down.’

Note that the  $V_2$  *cwuk-i* ‘to kill’ in (1a) and *anc-hi* ‘to seat’ in (1b) are morphologically complex verbs, where a causativizer marker (*i* or *hi*) is suffixed to an intransitive verbal stem *cwuk* ‘to die’ in (1a) and *anc* ‘to sit’ in (1b). The major concern of the paper lies on the role of the derivational suffixes in the formation of SVCs.

On the surface, SVCs in (1a) and (1b) do not seem to contrast with each other, but in fact they show different syntactic distribution with respect to a variety of separability tests. It is well-known that simple SVCs may be separated by a connective *se*, roughly meaning ‘and then’ (Choi H. 1929; Sohn 1976; Lee S. 1992; Choi 2003; Lee Y. 2003; Borer 2004 and many others). This is shown in (2):

- (2) *John-i kom-ul cap-a(se) mek-ess-ta.*  
John-NOM bear-ACC catch-LK-(SE) eat-PAST-DECL  
‘John caught and ate a bear.’

Interestingly, however, the complex SVCs in (1) show different behavior with respect to *se*-insertion. The morpheme *se* may separate  $V_1$  and  $V_2$  in (1a), but not in (1b). The contrast is shown in (3).

- (3) a. *John-i kaymi-lul palp-a-se cwuk-i-ess-ta.*  
 John-NOM ant-ACC trample-LK-SE die-CAUS-PAST-DECL  
 ‘John trampled an ant to death.’  
 b. \**John-i Mary-lul kkwulh-e-se anc-hi-ess-ta.*  
 John-NOM Mary-ACC kneel-LK-SE sit-CAUS-PAST-DECL  
 ‘John made Mary kneel down.’ (intended)

The same type of asymmetry is observed with an adverb test. As shown in (4), (1a) allows an adverb *kuphi* ‘quickly’ to intervene between V<sub>1</sub> and V<sub>2</sub>, whereas (1b) does not.

- (4) a. *John-i kaymi-lul palp-a kuphi cwuk-i-ess-ta.*  
 John-NOM ant-ACC trample-LK quickly die-CAUS-PAST-DECL  
 ‘John trampled an ant to death quickly.’  
 b. \**John-i Mary-lul kkwulh-e kuphi anc-hi-ess-ta.*  
 John-NOM Mary-ACC kneel-LK quickly sit-CAUS-PAST-DECL  
 ‘John made Mary to kneel down quickly.’ (intended)

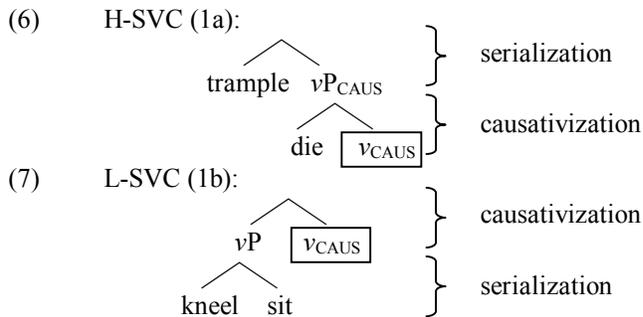
The contrast shown in (5) further suggests the possibility that (1a) and (1b) are distinct from each other. In (5a), the object and the preceding verb V<sub>1</sub> can be scrambled together to the left of the subject, whereas in (5b), they cannot.

- (5) a. *kaymi-lul palp-a John-i cwuk-i-ess-ta.* [cf. (1a)]  
 ant-ACC trample-LK John-NOM die-CAUS-PAST-DECL  
 ‘John trampled an ant to death.’  
 b. \**Mary-lul kkwulh-e John-i anc-hi-ess-ta.* [cf. (1b)]  
 Mary-ACC kneel-LK John-NOM sit-CAUS-PAST-DECL  
 ‘John made Mary kneel down.’ (intended)

We propose that the observed contrast between (1a) and (1b) is not accidental, but the two examples represent two different types of SVCs in Korean. We, in particular, capitalize on the fact that the scope of the causative markers in (1a) and (1b) is distinct from each other. In (1a), the causative marker *i* scopes over V<sub>2</sub> ‘to die’, but not over V<sub>1</sub>: (1a) means that ‘John trampled an ant, and (he) caused the ant to die’. The agent of the preceding verb *palp* ‘to trample’ is John who is also the causer of an ant’s dying event. In contrast, in (1b), the causative marker *hi* scopes over both V<sub>1</sub> *kkwulh* ‘to kneel’ and V<sub>2</sub> *anc* ‘to sit’: (1b) means that ‘John caused Mary to kneel and sit’. We argue that the semantic differences in (1a) and (1b) are rooted from the underlying syntactic structures. In (1a) type sentences, the causative marker is directly attached to the V<sub>2</sub>, whereas in (1b)

type sentences, the causative marker is attached to the serialized verbal complex (V<sub>1</sub> and V<sub>2</sub>).

More generally, we propose that SVCs in Korean can be divided into two types: H(igh)-SVC and L(ow)-SVC. The two types differ from each other depending on the merger site of the derivational suffix in relation to the serialization site of verbs. In H-SVCs, merger of the derivational morpheme occurs prior to verbal serialization, as depicted in (6). In L-SVCs, in contrast, the derivational morpheme is merged after the completion of serialization, as schematized in (7) (we will slightly revise the structure in (6) and (7) in Section 1.2, in accordance with Baker and Stewart 2002)



The structural difference between the sentences in (1a) and (1b) is represented using brackets in (8).

- (8) a. *John-i kaymi-lul [palp-a] [cwuk-i]-ess-ta.*  
 John-NOM ant-ACC [trample-LK] [die-CAUS]-PAST-DECL  
 ‘John trampled an ant to death.’
- b. *John-i Mary-lul [kkwulh-e anc]-hi-ess-ta.*  
 John-NOM Mary-ACC [kneel-LK sit]-CAUS-PAST-DECL  
 ‘John made Mary to kneel down.’

In (8a), the V<sub>2</sub> *cwuk* ‘to die’ is merged with the causative morpheme *i* first and then serialized with the V<sub>1</sub> *palp* ‘to trample.’ In (8b), in contrast, the V<sub>2</sub> *anc* ‘to sit’ is serialized with the V<sub>1</sub> *kkwulh* ‘to kneel’ first and then the serialized verbal complex is merged with the causative morpheme *hi*.

The proposed analysis is in good concert with the different interpretation of the causative morpheme in (8a) and (8b). By definition, a causative construction consists of two sub-events: a causing and a caused one. If contained in the c-command domain of the causative head, a constituent constitutes the caused sub-event; if outside the c-command domain, it

constitutes the causing sub-event. Then it follows that in H-SVCs such as (8a), where the causative morpheme is merged directly with V<sub>2</sub>, V<sub>1</sub> constitutes the causing sub-event; in L-SVCs such as (8b), in contrast, the causative morpheme is merged with a serialized verbal complex, and consequently both V<sub>1</sub> and V<sub>2</sub> constitute the caused sub-events.

The same distinction between H- and L-SVC with a morphological causative verb extends to morphological passive SVCs as well. Examples of H- and L-SVC with a morphological passive verb are given in (9).

- (9) a. *kkoch -i [situl-e] [ppop-hi]-ess-ta.*  
 flolwer-NOM [wither-LK] [break-PASS]-PAST-DECL  
 ‘A flower withered and was pulled up.’  
 b. *John-i (kom-eykey) [cap-a mek]-hi-ess-ta.*  
 John-NOM (bear-BY) [catch-LK eat]-PASS-PAST-DECL  
 ‘John was caught and eaten (by a bear).’

(9a) is an example of a passive H-SVC, where the passive morpheme *hi* scopes over V<sub>2</sub> only. The morpheme cannot scope over V<sub>1</sub> as it is an unaccusative verb which cannot be passivized. (9b) is an example of a passive L-SVC, where the passive morpheme *hi* scopes over both V<sub>1</sub> and V<sub>2</sub>. In (9b), V<sub>1</sub> *cap* ‘to catch’ behaves as if it carries an invisible passive morpheme within it in that the nominative subject *John* is interpreted as the Theme of both catching and eating events. This can be straightforwardly explained by assuming that (9b) belongs to an L-SVC, where serialization occurs between *cap* ‘to catch’ and *mek* ‘to eat’ and then the passive morpheme *hi* is merged with the resultant serialized verbal complex.

As shown in (10), the passive H-SVC in (9a) patterns with the causative H-SVC in (1a) and pass the separability tests such as *se*-insertion, intervening adverbial, and *vP* scrambling. The passive L-SVC in (9b), on the other hand, patterns with the causative L-SVC counterpart in (1b) in that it fails to pass the tests. This is shown in (11).

- (10) Passive H-SVC:  
 a. *kkoch -i situl-e-se ppop-hi-ess-ta.*  
 flower-NOM wither-LK-SE pull.up-PASS-PAST-DECL  
 ‘A flower withered and then was pulled up.’  
 b. *kkoch -i situl-e kuphi ppop-hi-ess-ta.*  
 flower-NOM wither-LK quickly pull.up-PASS-PAST-DECL  
 ‘A flower withered and was pulled up quickly.’  
 c. *?situl-e kkoch -i ppop-hi-ess-ta.*  
 wither-LK flolwer-NOM pull.up-PASS-PAST-DECL  
 ‘Withered, a flower was pulled up.’

- (11) Passive L-SVC:
- a. \**John-i (kom-eykey) cap-a-se mek-hi-ess-ta.*  
 John-NOM (bear-BY) catch-LK-SE eat-PASS-PAST-DECL  
 ‘John was caught and then eaten (by a bear).’ (intended)
- b. \**John-i (kom-eykey) cap-a kuphi mek-hi-ess-ta.*  
 John-NOM (bear-BY) catch-LK quickly eat-PASS-PAST-DECL  
 ‘John was caught and eaten quickly (by a bear).’
- c. \**(kom-eykey) cap-a John-i mek-hi-ess-ta.*  
 (bear-BY) catch-LK John-NOM eat-PASS-PAST-DECL  
 ‘Caught by a bear, John was eaten.’ (intended)

Though it may not be a logical necessity, the correlation between the distinct scope of the derivational suffix and separability tests is now rather straightforwardly expected with one premise: derivational  $v$  heads cannot tolerate a syntactic modifier such as *se* connective or event adverbs. In an H-SVC type (6),  $V_1$  and  $V_2$  form independent domains from each other and it is natural to expect that they can be separated from each other (unless other syntactic factors block it). For instance, in (1a),  $v_{\text{CAUS}}$  is merged with ‘to die’ directly, and  $V_2$  ‘die-CAUS’ forms an independent verbal domain from  $V_1$  ‘to trample’. Hence, other elements such as *se* connective and an adverb may intervene between the two, as in (3a) and (4a). Also, the projection of  $V_2$  may undergo movement to the left of the  $V_1$  without a problem, as in (5a). Note, crucially, that when the interveners such as *se* connective and an adverb are placed between the two verbs, it is always outside the derivational  $v$  head.

In an L-SVC type, in contrast,  $V_1$  and  $V_2$  are merged together within the SVC below the derivational  $v$  head. For instance, in (1b), the argument structure is not complete yet for either ‘to starve’ or ‘to die’ before  $v_{\text{CAUS}}$  is merged. We assume that in such cases, the two verbs  $V_1$  and  $V_2$  cannot be separated from each other by a modifier. In other words, the causative head  $v_{\text{CAUS}}$  cannot tolerate the *se* connective or an event modifier such as ‘quickly’ within its complement domain, as in (3b) and (4b). In the same vein,  $V_1$  and  $V_2$  cannot escape the complement domain of  $v_{\text{CAUS}}$  via movement, separated from its selector  $v$  head, as in (5b).

It requires further research why  $v$  heads cannot tolerate the *se* connective or an event modifier in its complement position. At this moment, we leave it as a premise. Given that, however, the point we would like to highlight here is quite clear. The connection between two verbal projections in L-SVCs is much tighter than the one in H-SVCs due to the attachment site of the derivational morpheme, and thus separation is harder for L-SVCs than for H-SVCs.

Given our discussion of morphologically complex SVCs, let us turn to a consequence of our proposal for simplex SVCs in Korean. A representative example is given in (12).

- (12) *John-i yene-ul cap-a mek-ess-ta.*  
 John-NOM salmon-ACC catch-LK eat-PAST-DECL  
 ‘John caught and ate a salmon.’

In (12), two verbs are serialized and there is no causative or passive morpheme to scope over them. Since there is no derivational *v* head higher than the serialization site, we argue that all the simple SVCs belong to the H-SVC type – it is impossible to form an L-SVC in the absence of a derivational *v* head in the first place. We then predict that all simple SVCs must pass the separability tests, just like the morphologically complex H-SVCs (e.g. (1a), (9a)). Indeed, they pass the separability tests such as *se*-insertion, intervening adverbial, and *vP* scrambling. This is shown in (13).

- (13) a. *John-i yene-ul cap-a-se mek-ess-ta.*  
 John-NOM salmon-ACC catch-LK-SE eat-PAST-DECL  
 ‘John caught a salmon and then ate the salmon.’  
 b. *John-i yene-ul cap-a kuphi mek-ess-ta.*  
 John-NOM salmon-ACC catch-LK quickly eat-PAST-DECL  
 ‘John caught ate a salmon quickly.’  
 c. *yene-ul cap-a John-i mek-ess-ta.*  
 salmon-ACC catch-LK John-NOM eat-PAST-DECL  
 ‘John caught and ate a salmon.’

## 1.2. Internal Structure of Serialized Verbal Complex

Before moving on to the next section, we further elaborate on our dichotomy with reference to the theory of serialization couched under Baker and Stewart (2002). Our proposals on the internal structure of serialized verbal complex are built up on two crucial assumptions.

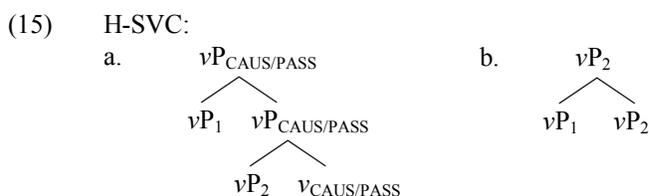
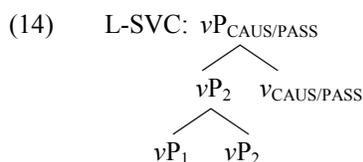
First, we assume that SVCs in Korean involve a *vP-vP* adjunction structure, adopting Baker and Stewart’s (2002) proposal. Baker and Stewart argue that there are three types of SVCs in Edo, Nupe and Yoruba, Niger-Congo languages of West Africa: consequential, purposive and resultative SVCs. They argue that the consequential SVC is formed by adjoining a *vP* to another *vP*. Since the SVCs we deal with in this paper belong to this type of SVC in terms of the interpretation, we adopt the *vP-vP* adjunction structure: the preceding *vP*<sub>1</sub> adjoins to the following *vP*<sub>2</sub>.

Second, we follow a decompositional approach to morphologically derived verbs. The causative and the passive morpheme are phonetic reali-

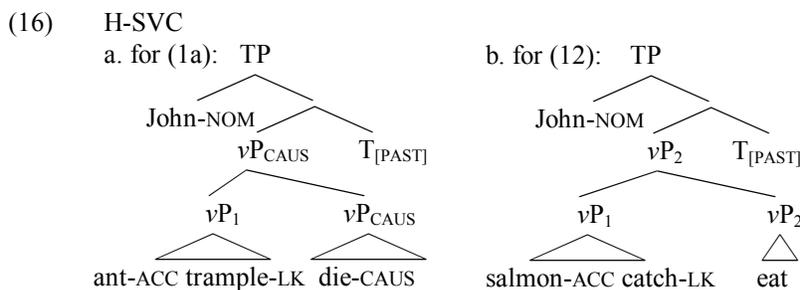
zation of syntactic heads. Specifically, we assume that they are realization of  $v_{\text{CAUS}}$  and  $v_{\text{PASS}}$  heads, each of which takes another  $v\text{P}$  as its complement. On this view, morphologically derived verbs involve two layers of  $v\text{Ps}$  while non-derived ones involve only one  $v\text{P}$  which takes a  $\text{VP}$  as its complement.

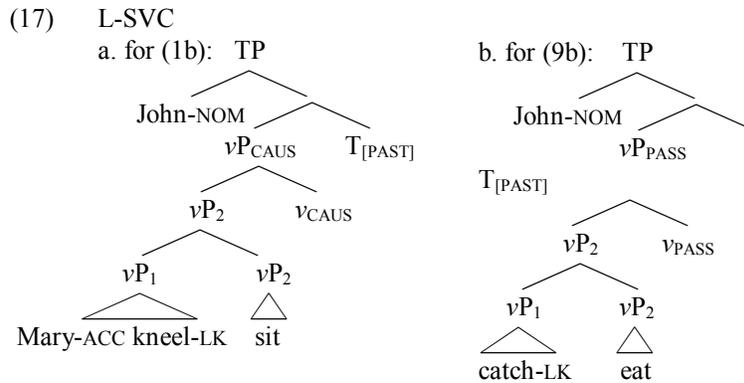
Given the two assumptions addressed above, it follows that the causative or passive SVCs in principle contain two sites available for verbal serialization - the lower level of  $v\text{P}$  and the higher one. If we couple our proposal on the dichotomy of SVCs above with the  $v\text{P}$  adjunction structures, we obtain a more elaborate picture of two types of SVCs in (14) and (15).

If the serialization occurs at the lower  $v\text{P}$  level and the  $v_{\text{CAUS/PASS}}$  is merged subsequently, we obtain an L-SVC, as in (14). If the serialization targets the higher  $v\text{P}$ , an H-SVC results, as in (15a). If there is no causative or passive  $v$  to be introduced in the first place, it belongs to an H-SVC type, where the serialization targets the highest (and the only) light verbal projection, as in (15b).



Under the proposals in (14) and (15), the examples discussed in the previous section can be analyzed as in (16) and (17), with labels specified. The tree structures in (16) represent the H-SVCs in (1a) and (12), and those in (17) represent the L-SVCs in (1b) and (9b).





## 2. Different Types of *v* Heads in Serialization

In this section, we discuss a condition on verbal serialization. We argue that the condition on verbal serialization must be understood with reference to the merger site of *v*, as proposed in (14)-(15), as well as the typology of *v*. We also show that the proposed condition has broader empirical coverage than the ones proposed in previous studies.

### 2.1. Condition on Serialization

The contrast in (18) suggests that not any random combination of verbs can form a legitimate SVC, but there must be a condition to license verbal serialization. (18a) shows that *palp* ‘to trample’ and *cwuk* ‘to die’ cannot be serialized, and (18b) shows that *palp* ‘to trample’ can be serialized with *cwuk-i* ‘to die-CAUS’.

- (18) a. \**John-i kaymi-lul palp-a cwuk-ess-ta.*  
 John-NOM ant-ACC trample-LK die-PAST-DECL  
 ‘John trampled an ant and the ant died.’ (intended)
- b. *John-i kaymi-lul palp-a cwuk-i-ess-ta.*  
 John-NOM ant-ACC trample-LK die-CAUS-PAST-DECL  
 ‘John trampled an ant to death.’

In fact, which combination of verbs can be serialized together has been a recurrent issue in Korean syntax (e.g. Chung 1993; Kang 1997; Lee 2003; Lee 2006; Zubizarreta and Oh 2007). A number of previous studies tried to seek a better generalization to capture the condition on serialization. The previous studies state the condition in different terms: One influential approach, represented by Chung (1993), argues that the condition in SVCs must be stated in terms of  $\theta$ -roles. Another approach by Kang (1997) argues that the condition hinges on syntactic type of verbs. The oth-

er approach by Lee (2003) argues that semantic type of verbs plays a role in serialization.

All of the three previous studies refer to the argument structure of the verb in order to explain a condition for SVCs in Korean. We believe that the idea is basically on the right track. We, however, argue that the key to understanding the condition for SVCs lies in the typology of the  $v$  head, rather than in the  $\theta$ -roles, the syntactic or semantics type of verbs.

Specifically, we propose a Matching Condition on verbal serialization as in (19):

- (19) *Matching Condition on Verbal Serialization*  
Verbs can be serialized with each other only when their  $v$  heads have the same property in introducing an external argument.

We posit different types of  $v$  heads, adapting Harley's (2006) classification of  $v$ . In the preceding section, we used  $v_{\text{CAUS}}$  and  $v_{\text{PASS}}$  responsible for forming a morphological causative and passive verb respectively. Here, we add two more types into the inventory:  $v_{\text{DO}}$  and  $v_{\text{INCH}}$ . The list of  $v$  heads we employ is illustrated in (20).

- (20) a.  $v_{\text{DO}}$ : introduces an external argument carrying an Agent  $\theta$ -role.  
b.  $v_{\text{INCH}}$ : carries an inchoative meaning and does not introduce an external argument.  
c.  $v_{\text{CAUS}}$ : carries a causative meaning and gives its external argument a Causer  $\theta$ -role. (cf. Harley 2006: 16)  
d.  $v_{\text{PASS}}$ : does not introduce an external argument and demotes one introduced by the head of its complement,  $v_{\text{DO}}$ .

Among the four types in (20),  $v_{\text{DO}}$  and  $v_{\text{CAUS}}$  introduce an external argument, and  $v_{\text{INCH}}$  and  $v_{\text{PASS}}$  do not. For convenience, we call the verbal heads that introduce an external argument [+EA class], and those which do not [-EA class]. That is,  $v_{\text{DO}}$  and  $v_{\text{CAUS}}$  belong to the [+EA class] and  $v_{\text{INCH}}$  and  $v_{\text{PASS}}$  the [-EA class]. If (19) is correct, we expect that  $v_{\text{DO}}$  can be serialized with another [+EA class],  $v_{\text{DO}}$  or a  $v_{\text{CAUS}}$ , but not with  $v_{\text{INCH}}$  or  $v_{\text{PASS}}$ . Similarly,  $v_{\text{INCH}}$  can be serialized with another [+EA class]  $v_{\text{INCH}}$  or  $v_{\text{PASS}}$ , but not with [-EA class] verbs.

Possible and impossible combinations of  $v$ Ps are summarized in (21) for H-SVCs.

## (21) Prediction for H-SVC:

| $V_1 \backslash V_2$ | $vP_{DO}$ | $vP_{INCH}$ | $vP_{CAUS}$ | $vP_{PASS}$ |
|----------------------|-----------|-------------|-------------|-------------|
| $vP_{DO}$            | ✓         | *           | ✓           | *           |
| $vP_{INCH}$          | *         | ✓           | *           | ✓           |
| $vP_{CAUS}$          | ✓         | *           | ✓           | *           |
| $vP_{PASS}$          | *         | ✓           | *           | ✓           |

According to the table in (21), the contrast in grammaticality in (18) can be successfully explained. In (18a), the preceding verb, *palp* ‘to trample’ is  $vP_{DO}$  and the following one, *cwuk* ‘to die’ is  $vP_{INCH}$  - Hence, [EA] mismatch. In (18b), on the other hand, the preceding verb, *palp* ‘to trample’ is  $vP_{DO}$  and the following one, *cwuk-i* ‘to kill’ is of  $vP_{CAUS}$  - conforming to (19). (See Sohn and Ko 2009 for a comprehensive list of examples which show that the predictions in (21) are borne out.)

Turning to L-SVCs where the causative/passive  $v$  takes the serialized verbal complex as its complement, possible and impossible combinations of  $vPs$  in L-SVCs are listed in table (22).<sup>1</sup> The prediction is largely borne out, as described in (23). (There are three cases where our prediction seems to fail, which are marked as unexpectedly bad. See Section 2.3.).

## (22) Prediction for L-SVC:

| $V_1+V_2 \backslash$ higher $v$ | $v_{CAUS}$          | $v_{PASS}$                                   |
|---------------------------------|---------------------|----------------------------------------------|
| $vP_{DO}-vP_{DO}$               | ✓                   | ✓                                            |
| $vP_{CAUS}-vP_{DO}$             | ✓ -unexpectedly bad | ✓ -unexpectedly bad                          |
| $vP_{INCH}-vP_{INCH}$           | ✓                   | * ( $v_{PASS}$ does not select $vP_{INCH}$ ) |
| $vP_{PASS}-vP_{INCH}$           | ✓ -unexpectedly bad | * ( $v_{PASS}$ does not select $vP_{INCH}$ ) |
| $vP_{DO}-vP_{INCH}$             | *                   | * ( $v_{PASS}$ does not select $vP_{INCH}$ ) |
| $vP_{INCH}-vP_{DO}$             | *                   | *                                            |
| $vP_{PASS}-vP_{DO}$             | *                   | *                                            |
| $vP_{CAUS}-vP_{INCH}$           | *                   | * ( $v_{PASS}$ does not select $vP_{INCH}$ ) |

## (23) Grammatical L-SVC

a. [ $vP_{DO}-vP_{DO}$ ]- $v_{CAUS}$ :

*John-i Mary-lul [kkwul-e anc]-hi-ess-ta*

John-NOM Mary-ACC [kneel-LK sit]-CAUS-PAST-DECL

‘John made Mary kneel down.’

<sup>1</sup> Throughout the paper, we assume that in L-SVCs, the second  $vP$  is subcategorized for by the higher  $v_{CAUS}$  or  $v_{PASS}$ , and that  $v_{CAUS/PASS}$  cannot select another  $vP_{CAUS}$ .

- b. [ $vP_{\text{INCH}}-vP_{\text{INCH}}$ ]- $v_{\text{CAUS}}$ :  
*John-i kaymi-lul [kwulm-e cwuk]-i-ess-ta.*  
 John-NOM ant-ACC [starve(intr.)-LK die]-CAUS-PAST-DECL  
 ‘John starved an ant to death.’

(24) Ungrammatical L-SVCs (Sohn and Ko 2009 for more examples)

- a. [ $v_{\text{DO}}-v_{\text{INCH}}$ ]- $v_{\text{CAUS}}$ :  
 \**John-i Bill-ul ciloy-lul*  
 John-NOM Bill-ACC landmine-ACC  
 [*palp-a cwuk*]-*i-ess-ta.*  
 [trample-LK die]-CAUS-PAST-DECL  
 ‘John made Bill step on a landmine and die.’ (intended)
- b. [ $v_{\text{INCH}}-v_{\text{DO}}$ ]- $v_{\text{CAUS}}$ :  
 \**John-i Mary-lul laymen-ul*  
 John-NOM Mary-ACC noodle-ACC  
 [*kkulh-e mek*]-*i-ess-ta.*  
 [boil(intr.)-LK eat]-CAUS-PAST-DECL  
 ‘John boiled noodle and feed it to Mary.’ (intended)

**2.2. Comparison**

The merit of our approach can be clearly seen when the same sequence of verbal heads are serialized in different ways. Suppose that three  $v$  heads,  $v_1$ ,  $v_2$ ,  $v_{\text{CAUS}}$ , are combined together to form a complex SVC. If  $vP_1$  and  $vP_2$  are projected and combined together before the causativization (L-SVC), we expect that the [EA class] matching must occur between  $vP_1$  and  $vP_2$ . In contrast, if  $v_{\text{CAUS}}$  is merged to  $vP_2$  first and then serialization happens later (H-SVC), we predict that [EA class] matching must occur between  $vP_1$  and  $vP_{\text{CAUS}}$ . That is, even though we have the same linear sequence of  $v_1$ ,  $v_2$ ,  $v_{\text{CAUS}}$ , we predict different matching effects, depending on the merger site of derivational head. This prediction is borne out, as shown by (25).

The sequence  $v_{\text{DO}}-v_{\text{INCH}}-v_{\text{CAUS}}$  (‘trample-die-CAUS’) in (1a), repeated in (25a), forms a legitimate SVC, while the exactly same sequence does not form a grammatical SVC in (25b).

- (25) a. *John-i kaymi-lul [palp-a] [cwuk-i]-ess-ta.*  
 John-NOM ant-ACC [trample-LK] [die-CAUS]-PAST-DECL  
 ‘John trampled an ant to death.’
- b. \**John-i Bill-ul ciloy-lul*  
 John-NOM Bill-ACC landmine-ACC  
 [*palp-a cwuk*]-*i-ess-ta.*  
 [trample-LK die]-CAUS-PAST-DECL  
 ‘John made Bill<sub>i</sub> trample a landmine to death.’ (intended)

On our view, the contrast in (25) can be explained by different structures. (25a) represents an H-SVC, where the causative morpheme scopes over *cwuk* ‘to die’, not over *palp* ‘to trample’. Thus, we are led to assume that serialization occurs between  $vP_{DO}$  ‘to trample’ and  $vP_{CAUS}$  containing  $vP_{INCH}$  ‘to die-CAUS’. Since both  $vP_{DO}$  and  $vP_{CAUS}$  belong to the [+EA class], we predict that (25a) would be grammatical.

By contrast, (25b) is intended to represent an L-SVC, where the causative morpheme scopes over both *palp* ‘to trample’ and *cwuk* ‘to die’. Since serialization occurs between  $vP_{DO}$  ‘to trample’ and  $vP_{INCH}$  ‘to die’ prior to the merger of  $v_{CAUS}$ , we predict that (25b) is ruled out by our matching condition (19): the heads of the two  $vPs$  do not match in the class (i.e.  $v_{DO}$  belongs to [+EA class] and  $v_{INCH}$  belongs to [-EA class]). The contrast between (25a) and (25b) cannot be explained without positing the two different types of SVCs that we propose.

Our matching condition coupled with the dichotomy of complex SVCs also has broader empirical coverage than the previous analyses (e.g. Chung 1993, Kang 1997, and Lee 2003). First, it is not clear how the previous analyses would explain the grammaticality of L-SVCs in (23)-(24). The previous analyses implicitly or explicitly assume that the internal structure of morphologically derived verbs is opaque in syntax. If the morphological causative and passive verbs are not different from lexical verbs in syntax, however, there is no way for the serialization to precede the merger of the causative or passive morpheme. Hence, the contrast between the two types of SVCs cannot be properly explained. Second, the contrast such as (25) is not expected unless previous studies incorporate our proposal on the two types of SVCs. Lastly, even if one rejects our L-SVC analysis and accommodates the L-SVC data with other mechanisms, it would remain a mystery why scopal differences between H-SVCs and L-SVCs correlate with their different syntactic behavior.

We have seen that all the asymmetries and symmetries observed here can be naturally explained by our Matching Condition on serialization.

### 2.3. Unexpected Gaps

Finally, let us turn to the three unexpectedly bad patterns in L-SVCs. These are L-SVCs made up of two  $vPs$  from the same [EA class], but judged ungrammatical. The problematic examples are given in (26).

- (26) a. [ $vP_{CAUS}$ - $vP_{DO}$ ]- $v_{CAUS}$ :  
           \*yene-ka           [kkulh-i-e   mek]-hi-ess-ta.  
           salmon-NOM   [boil-CAUS-LK eat]-PASS-PAST-DECL  
           ‘A salmon was boiled and eaten.’ (intended)

- b. [ $v_{\text{PASS-}v_{\text{INCH}}}$ ]- $v_{\text{CAUS}}$ :  
 \**John-i kaymi-lul [palp-hi-e cwuk]-i-ess-ta.*  
 John-NOM ant-ACC [trample-PASS-LK die]-CAUS-PAST-DECL  
 ‘John made an ant trampled and die.’ (intended)
- c. [ $v_{\text{P}_{\text{CAUS-}v_{\text{DO}}}}$ ]- $v_{\text{PASS}}$ :  
 \**lamyen-i [kkulh-i-e mek]-hi-ess-ta.*  
 noodle-NOM [boil-CAUS-LK eat]-PASS-PAST-DECL  
 ‘Noodle was boiled and eaten.’ (intended)

We do not have a fully developed answer for these exceptions, but the type of  $v$  seems to matter in capturing the generalization. In (26), the  $v$ Ps contain a derivational head  $v$  (e.g.,  $v_{\text{CAUS}}$  or  $v_{\text{PASS}}$ ) embedded under another derivational  $v$ , unlike (23). For some reason, it seems that a derivational  $v$  head cannot be embedded under another derivational  $v$  head: in other words, causativization of causativized/passivized verbal complex and passivization of causativized/passivized verbal complex seem to be banned for independent reasons. There may be many ways of deriving this generalization from other consideration. At this moment, we simply stipulate that the derivational causative/passive  $v$  head does not select another derivational  $v$  in its domain.

### 3. Concluding Remarks

In this paper, we have argued that Korean SVCs must be divided into two types, depending on whether a causative or passive morpheme is merged before or after verbal serialization. We also argued that the condition on verbal serialization must be understood with reference to the type of  $v$ , and showed that when coupled with the dichotomy of SVCs, it can successfully account for the grammaticality of SVCs in Korean.

Theoretically, our study supports the line of approaches which maintain that the morphology and the syntax are intertwined (e.g. a model represented by Distributed Morphology). That the merger of the derivational suffixes (e.g. causative and passive suffixes) can follow the verbal serialization strongly suggests that the former can occur in the syntax if the latter is a syntactic operation. Our arguments also provide support for the finer-grained classification of  $v$  (e.g. Harley 2006). In addition to the  $v_{\text{CAUS}}$  and  $v_{\text{PASS}}$ , we assumed two more varieties of  $v$ ,  $v_{\text{DO}}$  and  $v_{\text{INCH}}$ , borrowing from Harley (2006). We believe the classification of  $v$  gets strong support from its usefulness in stating the matching condition on verbal serialization as well as in the dichotomy of SVC.

There are other remaining issues that have not been dealt with here. We have not discussed how the shared argument reading obtains in SVC. For example, if SVCs indeed involve a  $v$ P- $v$ P adjunction structure,

one of the vPs should contain empty categories, but we remained inconclusive about their position and identity. We also kept silent about how Case-checking or assignment occurs in SVCs. Also left unspoken of is the issue of what other types of SVC there could be in Korean besides the consequential type. We hope that more complete answer will be given to these questions in the future study.

## References

- Baker, M. and O. T. Stewart. 2002. A Serial Verb Construction Without Constructions. Ms., Rutgers University.
- Borer, H. 2004. *Structuring Sense*. Oxford: Oxford University Press.
- Choi, H.-B. 1929/1989. *Wuli Malpon* (Our Grammar). Seoul: Cheungumsa.
- Choi, S. 2003. Serial Verbs and the Empty Category. *Proceedings of the Workshop on Multi-Verb Constructions*. Trondheim Summer School 2003.
- Chung, T. 1993. Argument Structure and Serial Verbs in Korean. Doctoral dissertation, University of Texas, Austin.
- Folli, R. and H. Harley. 2005. Consuming Results in Italian and English: Flavors of v. *Aspectual Inquiries*, eds. P. Kempchinsky and S. Slabakova. Dordrecht: Springer.
- Harley, H. 2006. The Morphology of Nominalization and the Syntax of vP. To appear in *Quantification, Definiteness, and Nominalization*, eds. A. Giannakidou, and M. Rathert. Oxford: Oxford University Press.
- Kang, S.-M. 1997. A Comparative Analysis of SVCs and Korean V-V Compounds. Ms., University of Florida.
- Lee, S.-H. 1992. The Syntax and Semantics of Serial Verb Constructions. Doctoral dissertation, University of Washington, Seattle.
- Lee, Y. 2003. Two Kinds of Structural Relationships in SVCs. *Proceedings of ICKL 13*.
- Lee, C.-H. 2006. Word Formation Rule and Category Conversion. *Journal of Korean Linguistics* 91: 129-161.
- Sohn, H.-M. 1976. Semantics of Compound Verbs in Korean [in Korean]. *Linguistic Journal of Korea* 1(1): 142-150.
- Sohn, D. and H. Ko. 2009. Condition on Verbal Serialization: The Role of Merger and Typology of v Categories, Ms. MIT& SNU.
- Son, M. 2006. Causation, and Syntactic Decomposition of Events. Doctoral dissertation, University of Delaware, Delaware.
- Zubizarreta, M. L. and E. Oh. 2007. *On the Syntactic Composition of Manner and Motion*. Cambridge, MA: MIT Press