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# Decomposing Complex Serialization: The role of $v$ \*

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## Abstract

This paper investigates the role of merger and the typology of  $v$  in the syntax of Serial Verb Constructions (SVCs) in Korean. Some SVCs with a derivational suffix (e.g. a causative/passive  $v$ ) in Korean display distinct behavior from the others. We argue that this is due to different syntactic structures among SVCs and that SVCs in Korean must be divided into two sub-types: H(igh)-SVC and L(ow)-SVC. Specifically, we propose that different types of SVCs result from different merger sites of the derivational  $v$  head. An H-SVC results when a causative or passive  $v$  head is merged to a verb before it is serialized with another verb; an L-SVC results when verbal serialization occurs prior to the merger of the derivational  $v$  head. We then turn our attention to a condition on verbal serialization, and propose that verbs can be serialized only when their  $v$  heads bear the specific identical property of introducing an external argument. We show that our matching condition coupled with the proposed dichotomy of SVCs has broader empirical coverage than the previous analyses. Theoretically, our study supports the claim that the morphology and the syntax are intertwined so that the attachment site of derivational suffixes may vary in syntax. Our argument also provides novel support for the finer-grained classification of  $v$  heads.

*Keywords:* serial verb constructions,  $v$  heads, external argument, adjunct predicate

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## 1. Introduction

In this paper, we investigate conditions on verbal serialization in Korean, with special focus on the role of  $\nu$  categories. We argue that Serial Verb Constructions (SVCs) in Korean do not show uniform behavior and can be divided into two sub-types: H(igh)-SVC and L(ow)-SVC. The two types differ from each other, depending on when the merger of the highest  $\nu$  head occurs: an H-SVC results if the merger of the highest  $\nu$  precedes serialization while an L-SVC is obtained when serialization occurs prior to the merger of the highest  $\nu$ . We argue that otherwise puzzling sub-regularities among SVCs receive a natural account under our proposal.

We also critically review three previous studies on Korean SVCs and show that they are insufficient to account for distinct properties among SVCs observed in this paper. Departing from previous studies, we argue that the key to understanding the condition for serialization lies in the typology of  $\nu$  heads, rather than in theta roles, transitivity, or semantic type of lexical verbs. Specifically, we propose that two  $\nu$ Ps can be serialized only when their  $\nu$  heads bear an identical property in introducing an external argument (e.g. Agent or Causer). We then show that our proposal correctly predicts the contexts where the legitimate serialization may be formed - both for H-SVCs and L-SVCs.

To conjoin two verbal projections via serialization, we employ an adjunction structure, adapting Baker and Stewart (2002). Our proposal further develops Folli and Harley's (2005, 2007) classification of  $\nu$  heads, and aims to provide novel empirical support for the line of research which argues that the morphology and the syntax are intertwined - in particular, the model represented by Distributed Morphology (e.g. Halle and Marantz 1993, 1994; Marantz 1997; Embick and Noyer 2001, 2006; Folli and Harley 2005; Harley 2005, 2009, among many others). This study also supports the view that verbal projections, especially morphologically derived ones, may contain multiply layered  $\nu$  categories in Korean so that the attachment site of derivational suffixes can vary in the syntax (e.g. Son 2006).

The paper is organized as follows. In section 2, previously unnoticed asymmetries among Korean SVCs are introduced. Based on these observations, we argue that SVCs in Korean can be divided into two sub-types with different structures: H-SVC and L-SVC. In section 3, we propose a condition on verbal serialization, which allows a

unified account for H-SVCs and L-SVCs. Three previous studies on SVCs are critically reviewed in this section. In section 4, some potential challenges to our proposal are examined. In section 5, we discuss the cross-linguistic implications of our proposal and explain why Korean SVCs seem to show different properties from so-called ‘true SVCs’ that require object sharing. Concluding remarks are made in section 6.

## 2. Proposal

### 2.1 Two Types of Serial Verb Constructions in Korean

By serial verb constructions, 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. One or more arguments are shared by the verbs in SVCs and only one tense marker appears in the serialized verbal complex.<sup>1</sup> Some 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* ‘trample’ is referred to as  $V_1$  and *cwuk-i* ‘kill’ as  $V_2$ .<sup>2</sup>

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<sup>1</sup> There has been disagreement regarding which argument must be shared in order to be defined as a proper SVC. Baker (1989) assumes that object sharing is an essential property of a “true SVC” (see also Collins 1997). Others (e.g. Jansen et al. 1978) impose a less strict condition arguing that subject-sharing alone is sufficient. In Korean, an SVC with subject-sharing (but not necessarily with object-sharing) is allowed. As shown in (i), an unergative and a transitive verb can be serialized in Korean, where the subject, but not the object, is shared by the verbs. Thus, we assume that an SVC can be formed in Korean when the verbs share an argument - whether it is the object or subject (see section 3). We return to the cross-linguistic implications of this assumption in section 5.

(i) *John-i wulthali-lul ttwi-e nem-ess-ta.*  
 John-NOM fence-ACC jump-LK go.over-PAST-DC  
 ‘John jumped over a fence.’

<sup>2</sup> A linking vowel, *e* or *a*, glossed in this article as LK (LINKER), appears between serialized verbs in Korean. One might ask whether the LINKER may count as an overt marker of coordination or subordination. The literature, however, suggests that it is a phonological linker to indicate morphological closure. Unlike nominal stems, verbal stems in Korean do not have an independent *base* form (or citation form) and cannot stand alone. A linking vowel must be inserted to pronounce the verbal stem in isolation (see Sohn 1976; Lee 1992; Chung 1993; Kang 1997; Ko 2006). In SVCs, verbal stems are pronounced separately from the tense morpheme, and the LINKER is inserted to pronounce the isolated verbal stem. Note also that the LINKER is attached to an *uninflected* verbal root only (e.g. *\*palp-ass-a* ‘trample-Past-LK’; cf. (1a)). By contrast, syntactic coordinators such as *-ko* ‘and’ in Korean can be attached to an inflected verb (e.g. *palp-ass-ko* ‘trample-Past-and’). Unlike *-ko* ‘and’, the LINKER does not carry a designated grammatical function or semantic content, either. We thus assume that the LINKER is inserted at PF to rescue the stranded verbal stem and do not treat the LINKER as a syntactic head in this paper.

- (1) a. *John-i kaymi-lul palp-a cwuk-i-ess-ta.*  
 John-NOM ant-ACC trample-LK die-CAUS-PAST-DC  
 ‘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-DC  
 ‘John made Mary kneel down.’

Note that  $V_2$  *cwuk-i* ‘kill’ in (1a) and *anc-hi* ‘seat’ in (1b) are morphologically complex verbs, where a causative suffix is attached to an intransitive verb: *cwuk* ‘die’ + *i* ‘CAUS’ in (1a) and *anc* ‘sit’ + *hi* ‘CAUS’ in (1b), respectively.<sup>3</sup> The major concern of the paper lies in the role of the derivational suffix represented by *i* and *hi* in (1) in the formation of SVCs.

On the surface, the SVCs in (1a) and (1b) do not seem to contrast with each other, but in fact they show different 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’ (H. Choi 1937; Sohn 1976; S.-h. Lee 1992; S. Choi 2003; Y. Lee 2003, among many others).<sup>4</sup> This is shown in (2):

<sup>3</sup> In Korean, the causative morpheme /i/ has seven allomorphs, [i], [hi], [li], [ki], [wu], [ku], and [chu]; which one is pronounced is lexically determined. The causative meaning can also be expressed via a periphrastic causative phrase, *-key hata* ‘make (someone) do (something)’. Following the traditional terminology, we call the former ‘morphological causative’, and the latter ‘syntactic causative’. In this paper, we confine our discussion to the morphological causatives only. As will be discussed extensively, however, we assume that morphological causative is *not* formed in the lexicon, but in the syntax – just like periphrastic causatives. Thus, our choice of the term ‘morphological’ causative is purely atheoretical. The same concern extends to passive constructions (see note 6).

<sup>4</sup> Insertion of *-se* makes it explicit that two verbs in SVCs are in some temporal and/or cause-and-result relation (Kang 1993). Insertion of *-se* also has effects on scope. The scope of *an* ‘not’ is ambiguous in SVCs without *-se*, as in (i): it may scope over both verbs, or scope over  $V_1$  to the exclusion of  $V_2$ . When *-se* is attached to  $V_1$ , however, the negation cannot scope over  $V_2$ , as shown in (ii). It has also been reported that *-se* cannot be inserted in directional and idiomatic SVCs, which we do not discuss here (see Y. Lee 2003 for extensive discussion). In this paper, we simply use *-se* insertion as a separation test, but do not provide a syntactic analysis for *-se* itself.

- (i) *John-i sakwa-lul an ssis-e mek-ess-ta.*  
 John-NOM apple-ACC NEG wash-LK eat-PAST-DC  
 a. ‘It is not the case that John washed and ate an apple.’  
 b. ‘John ate an apple without washing it.’
- (ii) *John-i sakwa-lul an ssis-e-se mek-ess-ta.*  
 John-NOM apple-ACC NEG wash-LK-SE eat-PAST-DC  
 a. \*‘It is not the case that John washed and ate an apple.’  
 b. ‘John ate an apple without washing it’

- (2) a. *John-i kom-ul cap-a(-se) mek-ess-ta.*  
 John-NOM bear-ACC catch-LK(-SE) eat-PAST-DC  
 ‘John caught and ate a bear.’
- b. *John-i kwulm-e(-se) cwuk-ess-ta.*  
 John-NOM starve-LK(-SE) die-PAST-DC  
 ‘John starved to death.’

Interestingly, however, the complex SVCs in (1) show diverging behavior with respect to *-se* insertion. The morpheme *-se* may separate  $V_1$  and  $V_2$  in (1a), but not in (1b), as shown in (3). As shown in (3a), the two verbs *palp* ‘trample’ and *cwuk-i* ‘die-CAUS’ can be separated by the connective *-se*. In contrast, the two verbs in (3b), *kkwulh* ‘kneel’ and *anc-hi* ‘sit-CAUS’, cannot be intervened by *-se*. The same type of asymmetry is observed with an adverb test. As shown in (4), (1a) allows an adverb ‘quickly’ to intervene between  $V_1$  and  $V_2$ , whereas (1b) does not.

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

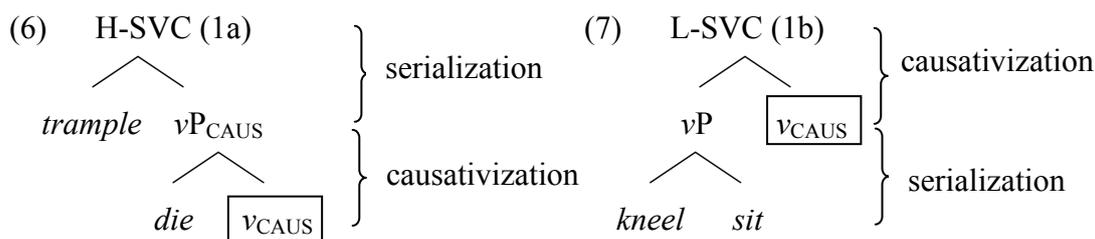
- (4) a. *John-i kaymi-lul palp-a kuphi cwuk-i-ess-ta.*  
 John-NOM ant-ACC trample-LK quickly die-CAUS-PAST-DC  
 ‘John trampled an ant to death quickly.’ [cf. (1a)]
- b. \**John-i Mary-lul kkwulh-e kuphi anc-hi-ess-ta.*  
 John-NOM Mary-ACC kneel-LK quickly sit-CAUS-PAST-DC  
 ‘John made Mary kneel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

The contrast shown in (5) further suggests that (1a) and (1b) are distinct from each other. In (5a), the object and the preceding verb  $V_1$  can be scrambled together to the left of the subject, whereas in (5b), the same operation is not allowed.

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

We propose that the observed contrast between (1a) and (1b) is not accidental, but that 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. In (1a), the causative marker *-i* scopes over  $V_2$  ‘die’, but not over  $V_1$ : (1a) does not mean that ‘John caused an ant to trample (something) and die’. Instead, it means that ‘John trampled an ant, and (he) caused the ant to die’. The agent of the preceding verb *palp* ‘trample’ is ‘John’, who is the causer of an ant’s dying event. In contrast, in (1b), the causative marker *-hi* scopes over both  $V_1$  ‘kneel’ and  $V_2$  ‘sit’: (1b) means that ‘John caused Mary to kneel and sit’. In other words, ‘Mary’ is the agent of the kneeling event as well as the sitting event.

We argue that the observed semantic difference between (1a) and (1b) is rooted in different syntactic structures. In sentences of the type (1a), the causative marker is directly attached to the  $V_2$ , whereas in sentences of the type (1b), the causative marker is attached to the serialized verbal complex ( $V_1$  and  $V_2$ ). 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 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 2.2, in accordance with Baker and Stewart 2002.)



The structural difference is represented in (8), using bracketing conventions for the examples in (1). In (8a), the V<sub>2</sub> *cwuk* ‘die’ is merged with the causative morpheme *i* first and then it is serialized with the V<sub>1</sub> *palp* ‘trample.’ In (8b), in contrast, the V<sub>2</sub> *anc* ‘sit’ is serialized first with the V<sub>1</sub> *kkwulh* ‘kneel’ and then the serialized verbal complex is merged with the causative morpheme.

- (8) a. *John-i kaymi-lul [palp-a] [cwuk-i]-ess-ta.*  
 John-NOM ant-ACC [trample-LK] [die-CAUS]-PAST-DC  
 ‘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-DC  
 ‘John made Mary kneel down.’

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. It follows then that in H-SVCs such as (8a), where the causative morpheme is merged directly with V<sub>2</sub>, only V<sub>2</sub> belongs to the caused sub-event; in L-SVCs such as (8b), in contrast, the causative morpheme is merged with the serialized verbal complex, and consequently both V<sub>1</sub> and V<sub>2</sub> constitute caused sub-events.<sup>5</sup>

<sup>5</sup> Matsumoto (1998) presents the same analysis as our L-SVC for the following Japanese SVCs where two intransitive verbs are serialized under a causative morpheme. Nishiyama (1998), on the other hand, argues that examples like (1) result from serialization of *huki* ‘boil’ and transitive verb *kobosi* ‘spill’.

(i) *John-ga soup-o huki-kobo-si-ta.*  
 John-NOM soup-ACC boil.over-spill-CAUS-PAST  
 ‘The soup boiled over and John spilled it.’

The same distinction can be extended to morphological passive SVCs as well. Some examples of H-SVCs and L-SVCs with a morphological passive verb are given in (9). Example (9a) is a type of a passive H-SVC, where the passive morpheme */-hi/* scopes over  $V_2$  only. The passive morpheme cannot scope over  $V_1$  because the  $V_1$  *situl* ‘wither’ is an unaccusative verb that cannot be passivized. In contrast, (9b) belongs to a passive L-SVC, where the passive morpheme *-hi* scopes over both  $V_1$  and  $V_2$ . In (9b),  $V_1$  *cap* ‘catch’ seems to carry an invisible passive morpheme within it in that ‘John’ is interpreted as the theme of both ‘catching’ and ‘eating’ event. This can be straightforwardly explained by assuming that (9b) belongs to an L-SVC, where serialization occurs between the verbs, *cap* ‘catch’ and *mek* ‘eat’, and then the passive morpheme *hi* is merged with the resultant serialized verbal complex.<sup>6</sup>

- (9) a. *kkoch -i*      [*situl-e*]      [*ppop-hi*]-*ess-ta*.  
 flolwer-NOM    [wither-LK]    [break-PASS]-PAST-DC  
 ‘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-DC  
 ‘John was caught and eaten by a bear.’

As shown in (10), the passive H-SVC in (9a) patterns with the causative H-SVC in (1a) and passes the separability tests such as *se*-insertion, adverbial intervention, and  $vP$  scrambling (but with some judgment variations for (10c)). The passive L-SVC in (9b), on the other hand, patterns with the causative L-SVC seen in (1b) in that it fails to pass the separability tests. This is shown in (11).

- (10) a. *kkoch-i*      *situl-e-se*      *ppop-hi-ess-ta*.  
 flower-NOM    wither-LK-SE    pull.up-PASS-PAST-DC  
 ‘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-DC  
 ‘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-DC  
 ‘Withered, a flower was pulled up.’

<sup>6</sup> The passive morpheme has four allomorphs: [i], [hi], [li], and [ki]. It is lexically determined which one to pronounce (see Kim 1990 for an overview of lexical and periphrastic passive *-eci* constructions in Korean). As mentioned for causatives in note 3, this paper discusses the morphological passive only.

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

The correlation between the distinct scope of the derivational suffix and separability tests is now rather straightforwardly expected. Syntactic modifiers or event adverbs cannot intervene between the derivational  $\nu$  head and its complement. For instance, event adverbs such as ‘quickly’ cannot intervene between the causativizer [-i] and its complement VP in a simple clause, as shown in (12). Moreover, as illustrated in (13), scrambling of a VP, stranding a causative or passive morpheme, is also banned. We argue that the same constraint holds in SVCs.

- (12) a. *John-i* *aki-eykey* *wuywu-lul* ***kuphi*** *mek-i-ess-ta*.  
 John-NOM baby-Dat milk-ACC quickly eat-CAUS-PAST-DC  
 ‘John fed a baby with milk quickly.’
- b. \* *John-i* *aki-eykey* *wuywu-lul* *mek-kuphi-i-ess-ta*.  
 John-NOM baby-Dat milk-ACC eat-quickly-CAUS-PAST-DC  
 ‘John fed a baby with milk quickly.’
- (13) \*[***wuywu-lul*** ***mek***]<sub>1</sub> *John-i* *aki-eykey* *t*<sub>1</sub> *i-ess-ta*.  
 milk-ACC eat John-NOM baby-DAT CAUS-PAST-DC  
 ‘Feed milk, John did to a baby.’

Just as a syntactic modifier in a simple clause cannot intervene between  $\nu$  and its complement, we argue that two lexical verbs in an L-SVC cannot be separated from its selector  $\nu$  by a modifier. Specifically, we argue that the presence of the *-se* connective or an event modifier such as ‘quickly’ in (3b) and (4b) interferes with the selectional relationship between  $\nu$  and the two verbs in L-SVCs. A lexical verb (plus its internal argument) cannot be fronted, stranding a  $\nu$  head as shown in (13). Similarly,  $V_1$  and  $V_2$  in L-SVCs cannot move out of the complement domain of their selector  $\nu_{\text{CAUS}}$  in (5b) (see note 11 for further discussion).

In contrast to L-SVCs, the two verbs in H-SVCs form independent domains from each other and it is natural to expect that they can be separated from each other (unless other syntactic factors make this impossible). For instance, in (1a),  $v_{\text{CAUS}}$  is merged with ‘die’ directly, and ‘die-CAUS’ forms an independent verbal domain from ‘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  $V_1$  may undergo movement to the left of the subject via scrambling, as in (5a). Note, crucially, that when interveners such as the *-se* connective and an adverb are placed between the two verbs, it is always outside the derivational  $v$  head in H-SVCs, in contrast to the cases seen with L-SVCs. In short, the connection between the two verbal projections in L-SVCs is much tighter than in H-SVCs due to the attachment site of the  $v$  head; thus separation is more restricted for L-SVCs than for H-SVCs.<sup>7</sup>

Given our discussion of complex SVCs, let us turn to a consequence of our proposal for simplex SVCs in Korean such as (14). In (14), two verbs are serialized

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<sup>7</sup> One cannot simply assume that L-SVCs are lexical compounds, so that they are inseparable in syntax. Most importantly,  $V_1$  and  $V_2$  in L-SVCs are not totally inseparable, in contrast to lexical compounds (without a linking vowel) such as *o-ka-ta* ‘come-go-DC’ in (i). For instance, as in (ii), predicate doubling can be applied to one verb, to the exclusion of the other, in L-SVCs. In sharp contrast to (ii), partial predicate doubling is not allowed in lexical compound verbs, as shown in (iii)-(iv). Examples like (v), where the first verb is doubled without a derivational morpheme are ruled out. These facts are in harmony with our conjecture that nothing intervenes between the derivational  $v$  head and two verbs in its complement domain of L-SVC. If one of the two verbs is doubled, the derivational  $v$  must appear in both verbal projections, so that both verbs can be interpreted under the scope of  $v$ , as in (vi). On a purely lexicalist approach to SVCs, the contrasts in (i)-(vi) would remain a mystery, let alone the contrasts between H-SVCs and L-SVCs discussed here.

- (i) *John-i cip-kwa hakkyo-lul mayil o-ka-ss-ta.*  
 John-NOM house-and school-ACC everyday come-go-PAST-DC  
 ‘John went back and forth between (his) house and (his) school.’
- (ii) *John-i (kom-eykey) cap-a mek-hi-ki-nun mek-hi-ess-ta.*  
 John-NOM (bear-BY) catch-LK eat-PASS-NMN-TOP eat-PASS-PAST-DC  
 ‘It is true that John was caught and eaten by a bear.’
- (iii) \**John-i cip-kwa hakkyo-lul mayil o-ki-nun o-ka-ss-ta.*  
 John-NOM house-and school-ACC everyday come-NMN-TOP come go-PAST-DC  
 ‘John went back and forth between (his) house and (his) school.’
- (iv) \**John-i cip-kwa hakkyo-lul mayil o-ka-ki-nun ka-ss-ta.*  
 John-NOM house-and school-ACC everyday come-go-NMN-TOP go-PAST-DC  
 ‘John went back and forth between (his) house and (his) school.’
- (v) \**John-i (kom-eykey) cap-ki-nun cap-a mek-hi-ess-ta.*  
 John-NOM (bear-BY) catch-NMN-TOP catch-LK eat-PASS-PAST-DC  
 ‘It is true that John was caught and eaten by a bear.’
- (vi) *John-i (kom-eykey) cap-hi-ki-nun cap-hi-e mek-hi-ess-ta.*  
 John-NOM (bear-BY) catch-PASS-NMN-TOP catch-PASS-LK eat-PASS-PAST-DC  
 ‘It is true that John was caught and eaten by a bear.’

and there is no overt causative or passive morpheme. Since there is no derivational *v* head higher than the serialization site, we argue that the simple (non-idiomatic) SVCs belong to the H-SVC type; it is impossible to form an L-SVC in the absence of a derivational *v* head since L-SVCs are obtained under the scope of a derivational *v* head only. We then predict that the simple SVCs such as (14) must pass separability tests, just like complex H-SVCs (e.g. (1a), (9a)). Indeed, they pass separability tests such as *se*-insertion, adverbial intervention, and *v*P scrambling, as shown in (15).<sup>8</sup>

- (14) *John-i yene-ul cap-a mek-ess-ta.*  
 John-NOM salmon-ACC catch-LK eat-PAST-DC  
 ‘John caught and ate a salmon.’
- (15) a. *John-i yene-ul cap-a-se mek-ess-ta.*  
 John-NOM salmon-ACC catch-LK-SE eat-PAST-DC  
 ‘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-DC  
 ‘John caught ate a salmon quickly.’
- c. *yene-ul cap-a John-i mek-ess-ta.*  
 salmon-ACC catch-LK John-NOM eat-PAST-DC  
 ‘John caught and ate a salmon.’

So far, we have argued that SVCs in Korean must be divided into two types, and that the two types have distinct syntactic and semantic properties, as summarized in

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<sup>8</sup> This paper does not discuss simple SVCs in which the second verb is used with an idiomatic meaning (see Y. Lee 2003 for extensive discussion). In some directional and locative SVCs such as (i) and (ii), the second verb loses its own lexical meaning and metaphorically denotes the result status of the event denoted by the first verb. Thus, examples like (ii) and (iv) are simply ungrammatical. Interestingly, examples like (i) and (iii) disallows *-se* insertion, *v*P-scrambling or adverbial insertion, like L-SVCs seen here. We leave it for future research whether a unified account for these two types of SVCs can be provided. Korean also has TP-adjunction structures, which are very similar to H-SVCs (*v*P-adjunction) on the surface orderings. We reserve Section 4 to discuss this.

- (i) *Kenmwul-i nayli-e anc-ass-ta.*  
 building-NOM fall-LK-SE sit-PAST-DC  
 ‘A building fell down.’
- (ii) \**Kenmwul-i anc-ass-ta.*  
 building-NOM sit-PAST-DC  
 ‘A building sat down.’
- (ii) *Mary-ka John-ul ccoch-a nay-ess-ta.*  
 Mary-NOM John-ACC chase-LK take.out-PAST-DC  
 ‘Mary drove John out.’
- (iv) \**Mary-ka John-ul nay-ess-ta.*  
 Mary-NOM John-ACC take.out-PAST-DC  
 ‘Mary took out John.’

(16). In the next sub-section, we further elaborate on our dichotomy with reference to the theory of serialization couched under Baker and Stewart (2002).

(16) Two types of SVCs in Korean

Korean	H-SVC	L-SVC
morphologically complex	The derivational suffix (e.g. causative/passive) scopes over the $V_2$ , but not over $V_1$ .	The derivational suffix (e.g. causative/passive) scopes over the entire serialized complex.
simplex	(Non-idiomatic) simple SVCs	Not applicable (cf. note 8)
separability tests	$V_1$ and $V_2$ are separable.	$V_1$ and $V_2$ are inseparable. (cf. note 7)

## 2.2 Internal Structure of Serialized Verbal Complex

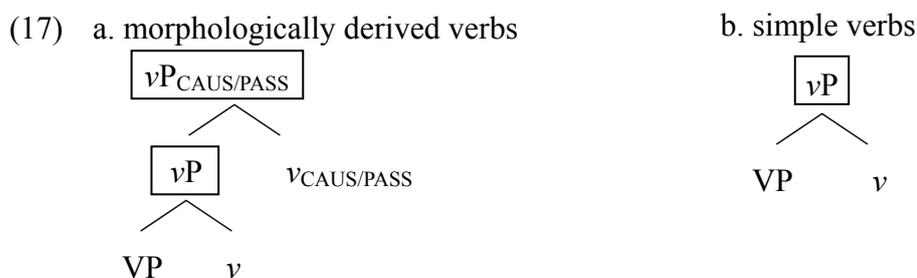
Before we present our proposals on the structure of SVCs in Korean, two assumptions regarding the verbal syntax must be spelled out. First, following Baker and Stewart (2002), we assume that SVCs are formed by *adjunction* of one verbal projection to another verbal projection. In particular, a verbal projection can be adjoined to another verbal projection of the same type, and form a complex predicate in syntax and denote a single event in semantics (cf. Baker's (1989) double-headed VP analysis; cf. Collins' (1997) VP-complementation analysis, among others).<sup>9</sup>

We, however, depart from Baker and Stewart (2002) in one crucial aspect. Baker and Stewart (2002) claim that the Agent theta role is assigned by Voice, separately from a distinct lower head  $v$ . The distinct lower  $v$  checks transitive verb forms and accusative Case. Baker and Stewart (2002) argue that typical serialization in West African languages occurs below the Voice head, and the verbal projections in SVCs must share an internal argument merged below the Voice head. Contrary to this claim, we propose that the verbal projections in Korean SVCs may *include* a head which introduce an external argument (a Voice head in Baker and Stewart's term). For simplicity, we use the term  $vP$  to refer to a verbal projection contained in SVCs, but crucially, our  $v$  head carries the function of introducing (or suppressing) an external

<sup>9</sup> Baker and Stewart (2002) argue that XP can be an adjunct predicate of YP only if XP and YP are comparable syntactic categories and share an open variable (see section 5 for a brief overview). We adopt this proposal, but as will be seen, we argue that the proposal must be further elaborated to require that XP and YP are comparable feature types as well as comparable syntactic categories (see section 3).

argument in syntax (see note 10). In section 5, we show that our departure from Baker and Stewart (2002) explains some unexpected differences between Korean and West African SVCs.

Second, we follow the general assumption in Distributed Morphology that every piece of the morphology has a correlate in syntactic structure. Specifically, we take a decompositional approach to morphologically derived verbs, and assume that causative and passive morphemes are phonetic realization of syntactic heads. More specifically, they are realization of  $v_{\text{CAUS}}$  and  $v_{\text{PASS}}$  heads, each of which takes a  $v\text{P}$  as its complement. On this view, morphologically derived verbs involve two layers of  $v\text{Ps}$  while non-derived or simplex verbs involve only one  $v\text{P}$  which takes a  $\text{VP}$  as its complement.<sup>10</sup> This is shown in (17):

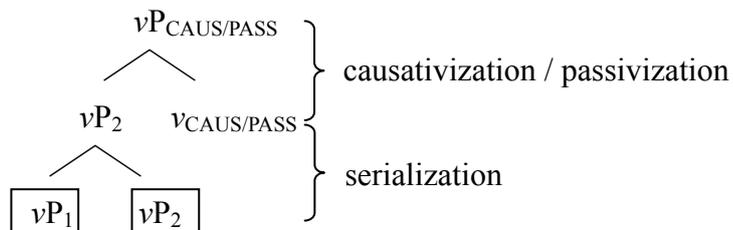


Given the two assumptions addressed above, it follows that the causative or passive SVCs may in principle contain two sites available for verbal serialization - the lower level of  $v\text{P}$ , and the higher  $v\text{P}$ , as seen in (17a). If we couple our proposal on the dichotomy of SVCs in section 2, we obtain a more elaborate picture for two types of SVCs, illustrated in (18) and (19). If the serialization occurs at the lower  $v\text{P}$  level and  $v_{\text{CAUS/PASS}}$  is merged subsequently, we obtain an L-SVC, as in (18). If the serialization

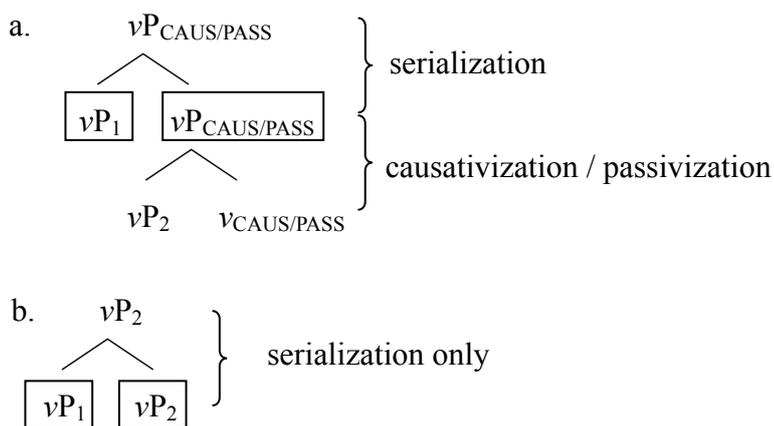
<sup>10</sup> Several terminologies have been employed to refer to a category that introduces an external argument (e.g. Kratzer's (1996) Voice, Hale and Keyer's outer V in VP shells, Chomsky's agent-introducing  $v$ ). Linguists working in Distributed Morphology (DM) also identified  $v$  with a verbalizer. Under this view, the phrase selected by the verbalizer  $v$  is not termed as VP but as an acategorical root, which functions as a proper verb only after the root undergoes head-movement to the upper  $v$ . In this paper, we follow the DM's perspective that the  $v$  category refers to a category that verbalizes the root and introduces/suppresses the external argument (in this respect, our  $v$  is a conflation of Kratzer's Voice and verbalizer  $v$ , cf. Harley 2009 for an attempt to separate the two). We use the term VP for convenience, but our term VP corresponds to a root (rather than a proper verb) in the DM framework. See Son (2006) and Miyagawa (1994, 1998) for a view positing multiple layers of  $v\text{Ps}$  in Korean and Japanese respectively. (cf. Marantz 2007 for a view that causatives involve a  $v\text{P}_{\text{CAUS}}$  dominating a root.) For clarification, we argue against the view that passive constructions simply lack a  $v$  category in syntax (cf. Chomsky 1995, 2001). Rather, we assume that passive constructions (as well as unaccusative verbs) contain a  $v$  category, which is marked with a [-agent] feature specification (see Section 3, note 16 for theoretical discussion).

targets the higher  $vP$ , an H-SVC results, as in (19a). If there is no causative or passive  $v$  to be introduced, it belongs to an H-SVC type, where the serialization targets the highest (and the only available) merger site, as in (19b).

(18) L-SVC:



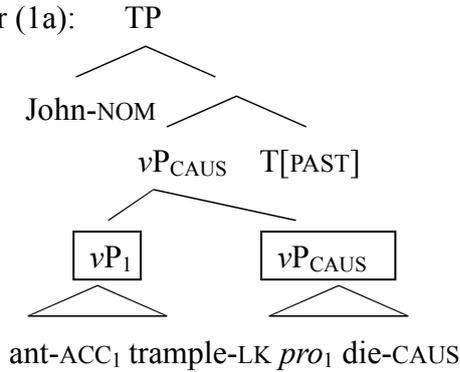
(19) H-SVC:



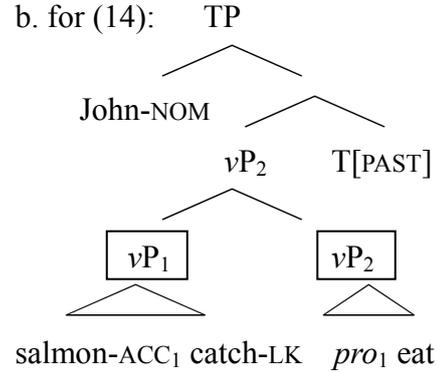
According to the proposed structures, the examples in (1), (9), and (14) can be analyzed as in (20) and (21), with labels specified. The tree structures in (20) represent the H-SVCs in (1a) and (14), and those in (21) represent the L-SVCs in (1b) and (9b).

## (20) H-SVC

a. for (1a):

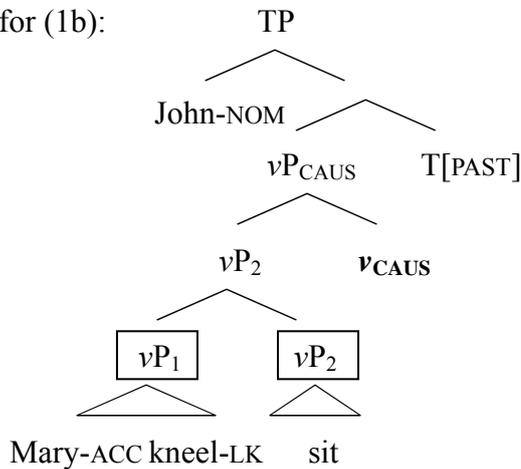


b. for (14):

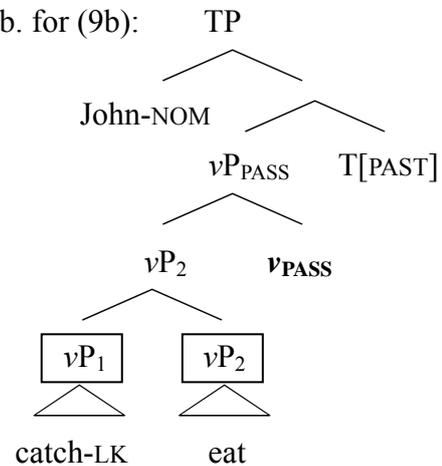


## (21) L-SVC

a. for (1b):



b. for (9b):



As discussed in section 2.1, we argue that the H-SVC in (20) allows separation of the two vPs by phrasal modifiers, whereas the L-SVC in (21) does not. We explain this by assuming that v<sub>CAUS</sub>/v<sub>PASS</sub> does not embed an event modifiers or *-se* connective in its complement position. We now can clearly see that vP<sub>1</sub> in (20) may undergo scrambling to the left of the subject (e.g. (5a)), adjoining in TP or higher projections. In (21), in contrast, such scrambling is impossible since both vP<sub>1</sub> and vP<sub>2</sub> must stay under the scope of v<sub>CAUS</sub>/v<sub>PASS</sub> to be interpreted as an L-SVC.<sup>11</sup>

<sup>11</sup> For clarification, in the H-SVC (20), both vP<sub>1</sub> and vP<sub>2</sub> may undergo movement, whereas in L-SVC (21), neither vP<sub>1</sub> nor vP<sub>2</sub> undergo movement. Marcel den Dikken (p.c.) points out that vPs in (21) may not undergo movement due to the A-over-A condition, or general conditions on locality of movement. If a head triggers movement of a vP in (21), the local vP<sub>CAUS/PASS</sub> will undergo movement: serialized vPs are embedded too deep to be accessible to a higher head. In contrast, in (20), vP<sub>1</sub> is adjoined to vP<sub>2</sub>, and there is no verbal head that may intervene between an attractor and the serialized vPs. Furthermore, if the adjoined vP<sub>1</sub> and vP<sub>2</sub> are equidistant from a higher head, both of them can be attracted by it (assuming that closeness is defined by strict domination, not by containment: see Chomsky 1995).

### 3. Condition on verbal serialization

In the previous section, we have seen that it is necessary to divide SVCs in Korean into two sub-types with different structures. 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  $v$ , proposed in (18)-(19) as well as the typology of  $v$ . We also show that the proposed condition has broader empirical coverage than those proposed in previous studies.

#### 3.1 *Not all verbs can be serialized together, but why?*

The contrast in (22) indicates that not any random combination of verbs can form a legitimate SVC; rather there must be a condition licensing verbal serialization. (22a) shows that *palp* ‘trample’ and *cwuk* ‘die’ cannot be serialized, and (22b) shows that *palp* ‘trample’ can be serialized with *cwuk-i* ‘die-CAUS’.

- (22) a. \**John-i kaymi-lul palp-a cwuk-ess-ta.*  
 John-NOM ant-ACC trample-LK die-PAST-DC  
 (Intended meaning) ‘John trampled an ant to death.’
- b. *John-i kaymi-lul palp-a cwuk-i-ess-ta.*  
 John-NOM ant-ACC trample-LK die-CAUS-PAST-DC  
 ‘John trampled an ant to death.’

In fact, which combination of verbs may constitute a legitimate SVC has been a recurrent issue in Korean syntax. A number of previous studies have proposed generalizations to capture the condition on serialization (e.g. Chung 1993; Kang 1997; S.-h. Lee 1992; Y. Lee 2003; C.-h. Lee 2006; Zubizarreta and Oh 2007). We cannot do justice to all the previous research here, but we critically review three types of previous approaches to SVCs in Korean, which are closely related to our own proposal. The previous studies state the condition in different terms from each other: One influential approach, represented by Chung (1993), argues that the condition for SVCs must be stated in terms of theta-roles. Kang’s (1997) approach argues that the condition hinges on the syntactic type of the verbs in the SVC. Lee’s (2003) approach argues that the semantic type of the verbs plays a crucial role in serialization.

Let us first consider the thematic approach proposed by Chung (1993). Chung

(1993) states the condition on verbal serialization in terms of matching theta-roles. In particular, Chung proposes the two conditions in (23) and (24) along with the prominence hierarchy in (25). Chung argues that theta-roles are hierarchically organized, as in (25), and that the highest theta-role that the head verb ( $V_2$  in our terms) assigns cannot be lower than that of the preceding verbs ( $V_1$ ).

(23) *Condition on Argument Identification (CAI)*

Two arguments may be identified only if they have the same absolute prominence value. (Chung 1993: 169)

(24) *Preservation of the Highest Argument of Head (PHAH)*

In a Verb-Verb Compound, the Absolute Prominence value of the highest argument of a head verb cannot be lower than that of the highest argument of a non-head verb.<sup>12</sup> (Chung 1993: 211)

(25) *Absolute Prominence hierarchy* (Chung 1993: 164)

a. Thematic Role	Agent Experiencer	Instrument	Theme Patient	Goal Source	Locative
b. Absolute Prominence Value	<i>ag</i> >	<i>ins</i> >	<i>th</i> >	<i>go</i> >	<i>loc</i>

To illustrate Chung's system, let us take the grammatical SVC in (26). In (26), neither condition in (23) nor (24) is violated, thus the sentence is correctly predicted to be well-formed.<sup>13</sup> Specifically, the theta-role of the preceding unergative verb 'jump' is identified with the agent theta-role of the following verb 'go over', abiding by (23). PHAH is also observed in (24): the *agent role* that the  $V_2$  'go over' assigns remains the highest role in the prominence hierarchy after serialization.

- (26) *John-i wulthali-lul ttwi-e nem-ess-ta.*  
 John-NOM fence-ACC jump-LK go.over-PAST-DC  
 'John jumped over a fence.'  
 a.  $V_1$  *ttwi* 'jump': <ag>  
 b.  $V_2$  *nem* 'go over': <ag', th'>

<sup>12</sup> Under Chung's account, the head parameter plays a crucial role. Korean is a head-final language and thus the last verb in the SVC is considered to be the head verb, according to Chung (1993) and many others (see also Y. Lee (2003) for justification of this claim based on predicate clefting tests). See Li (1993) for an approach to Japanese V-V compounds similar to Chung's (1993) theta identification.

<sup>13</sup>  $V_3$  refers to a serialized verbal complex in Chung (1993).

c.  $V_3$  *ttwi-e nem* ‘jump over’: <ag=ag’, th’>

Chung’s proposal also successfully accounts for the ungrammaticality of some H-SVCs such as (27), where a non-head transitive verb *palp* ‘trample’ is serialized with an unaccusative verb *cwuk* ‘die’. As stated in (27c), PHAH (24) is violated because the prominence value of the highest argument of  $V_2$  <theme> is lower than that of  $V_1$  <agent>. Thus, under Chung’s account, (27) is correctly ruled out.

- (27) \**John-i kaymi-lul palp-a cwuk-ess-ta.*  
 John-NOM ant-ACC trample-LK die-PAST-DC  
 ‘John trampled an ant to death.’ (intended)
- a.  $V_1$  *palp* ‘trample’: <ag, th>  
 b.  $V_2$  *cwuk* ‘die’: <th’>  
 c.  $V_3$  *palp-a cwuk* ‘trample and die’: <ag, th=th’>

However, there are two types of SVCs whose (un)grammaticality is not predicted by Chung’s account. First, Chung incorrectly rules in some ungrammatical H-SVCs such as (28). In (28), an unaccusative non-head  $V_1$  is serialized with a transitive  $V_2$ . As illustrated in (28c), neither (23) nor (24) is violated. Specifically, the theme of the two verbs are identified (as required by (23)), and the highest theta-role of the head verb ‘drink’ is <agent>, which remains the highest theta-role after serialization (as required by (24)). Thus, Chung’s approach predicts that (28) should be grammatical, contrary to fact.

- (28) \**John-i mwul-lul kkulh-e masi-ess-ta.*  
 John-NOM water-ACC boil(intr.)-LK drink-PAST-DC  
 ‘John boiled and drank water.’ (intended)
- a.  $V_1$  *kkulh* ‘boil’(intr.): <th>  
 b.  $V_2$  *masi* ‘drink’: <ag’, th’> - head  
 c.  $V_3$  *kkulh-e masi* ‘boil and drink’: <ag’, th=th’>

Secondly, Chung’s conditions incorrectly rule out some grammatical L-SVCs such as (29). Under Chung’s account, (29) is predicted to be ill-formed for the same reason as (27) is rejected (*i.e.* violation of (24)). Since the prominence value of the highest argument of  $V_2$  <theme>, is lower than that of  $V_1$  <agent>, Chung predicts that (29)

should be ungrammatical, contrary to fact. Chung’s failure to account for (29) can be attributed to his treatment of morphological passive verbs on a par with unaccusative verbs. Indeed, Chung explicitly claims that passivization of the transitive verb *mek* ‘eat’ occurs prior to serialization, so the demoted agent is no longer available in serialization.

- (29) *yene-ka kom-eykey cap-a mekhi-ess-ta.*  
 salmon-NOM bear-DAT catch-LK be.eaten-PAST -DC  
 ‘A salmon was caught and eaten by a bear.’  
 a. V<sub>1</sub> *cap* ‘catch’: <ag, th>  
 b. V<sub>2</sub> *mekhi* ‘be eaten’: <th> - head  
 c. V<sub>3</sub> *cap-a mekhi* ‘catch and be eaten’: \*<ag, th=th>

The next study of Korean SVC that we review is Kang (1997). Kang argues that two verbs can form a legitimate SVC if they are of the same syntactic type. That is, only the same types of verbs (e.g. transitive-transitive, unaccusative-unaccusative, and unergative-unergative verbs) may be serialized. However, Kang’s account faces the same challenge as Chung’s thematic approach in accounting for complex L-SVCs such as (30). Kang (1997) treats verbs like *anc-hi* ‘sit-CAUS’ as simplex transitive verbs.<sup>14</sup> Thus, under Kang’s (1997) account, (30) would be ruled out because it (apparently) serializes an intransitive verb *kneel* ‘kneel’ with a transitive verb *anc-hi* ‘sit-CAUS’. However, the sentence is judged to be grammatical.

- (30) *John-i Mary-lul [kkwulh-e anc]-hi-ess-ta.*  
 John-NOM Mary-ACC [kneel-LK sit]-CAUS-PAST-DC  
 ‘John made Mary kneel down.’

Lastly, let us consider Y. Lee’s (2003) approach. Lee (2003) suggests that two

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<sup>14</sup> Kang’s (1997) original examples involve *cwuk-i* ‘die-CAUS’, and Kang argues that causativized verbs are all transitive verbs. Thus, our criticism extends to Kang’s treatment of all other types of L-SVCs, where two verbs are interpreted under a causative or passive morpheme. An anonymous reviewer notes that ‘kneel’ in Korean can be used as a transitive verb when it takes *mwulup* ‘knee’ as its object, as in (i). Note, however, that in examples like (30), the object of ‘kneel’ is not ‘knee’, but *Mary*, which cannot function as the object of *kkwulh* ‘kneel’ in Korean. ‘kneel’ in (30) is used as an intransitive verb here. When ‘kneel down’ is used as a transitive verb as in (i), ‘kneel down’ (transitive) and ‘sit’ (unaccusative) can be combined not as a H-SVC, but as a TP-adjunction structure due to mismatch in agentivity (see the next section for further discussions).

(i) *John-i mwulup-ul kkwulh-e(-se) anc-ass-ta.*  
 John-NOM knee-ACC kneel.down-and sit-PAST-DC  
 ‘John kneel down and sat.’

verbs must match in their semantic type in order to form a legitimate SVC. That is, two verbs in an SVC should be both of the type  $\langle e, t \rangle$  or the type  $\langle e, \langle e, t \rangle \rangle$ ; otherwise, serialization is banned. Though Lee's account captures some interesting generalization on SVCs (which we will incorporate in our own proposal), it does not provide a ready and sufficient account for other cases. First, Lee's analysis does not make the right prediction for grammatical H-SVCs such as (31), where a transitive  $\langle e, \langle e, t \rangle \rangle$  verb and an unergative  $\langle e, t \rangle$  verb are serialized.

- (31) *John-i wulthali-lul ttwi-e nem-ess-ta.*  
 John-NOM fence-ACC jump-LK go.over-PAST-DC  
 'John jumped over a fence.'  
 a.  $V_1$  *ttwi* 'jump':  $\langle e, t \rangle$   
 b.  $V_2$  *nem* 'go over':  $\langle e, \langle e, t \rangle \rangle$   
 c.  $V_3$  *ttwi-e nem* 'jump and go over': ???

Lee (2003) proposes a head-head adjunction structure for the sequential SVCs such as (31) (cf. Lee's (2003) treatment of directional/idiomatic SVCs as a head-complement structure). Under Lee's proposal, sentences like (31) would be incorrectly ruled out since the two verbs in (31) do not match in their semantic type. Even if the type theory assumes that unergative verbs are of type  $\langle e, \langle e, t \rangle \rangle$ , the grammaticality of (31) still poses non-trivial challenges because Lee assumes that the object of  $\langle e, \langle e, t \rangle \rangle$  type verbs must be shared. In other words, we would expect that the internal argument of the unergative verb *ttwi* 'jump' should match with that of the transitive verb *nem* 'go over'. But clearly, this is not the case. The unergative verb *ttwi* 'jump' cannot take objects like *wulthali* 'fence' in Korean (e.g. *wulthali-lul ttwi-ta* 'jump a fence' is ungrammatical.)

Secondly, Lee's approach does not consider complex L-SVCs such as (32). If  $V_2$  *mekhi* 'be eaten' is analyzed as a simplex intransitive verb  $\langle e, t \rangle$ , Lee's approach would predict that (32) is ungrammatical, contrary to fact. To avoid this problem, it is necessary to combine our analysis of L-SVCs with Lee's approach. Below we will propose such a solution to explain the condition on verbal serialization, without losing Lee's insight.

- (32) *yene-ka kom-eykey cap-a mekhi-ess-ta.*  
 salmon-NOM bear-DAT catch-LK be.eaten-PAST-DC  
 ‘A salmon was caught and eaten by a bear.’
- a.  $V_1$  *cap* ‘catch’:  $\langle e, \langle e, t \rangle \rangle$   
 b.  $V_2$  *mekhi* ‘be eaten’:  $\langle e, t \rangle$   
 c.  $V_3$  *cap-a mekhi* ‘catch and be eaten’: ??

As we saw, the three previous studies are either too weak or too strong. Though the details differ, the approaches have a common issue concerning complex L-SVCs. Their failure is in part due to their implicit or explicit treatment of the morphological causative or passive verbs as lexical verbs. This suggests that one needs to discard the strong lexicalist assumption that the causative and passive verbs are all base-generated with V in the lexicon. Rather, it is necessary to assume that (at least) some derivational morpheme is introduced in the syntax. This in turn supports our decompositional approach to causative/passive constructions. In the next section, we introduce our own proposal on this issue and show that our approach together with the dichotomy of SVCs proposed in section 2 has non-trivial advantages over the previous analyses.

### 3.2 Proposal: Matching Condition and Two Types of SVCs

The previous studies reviewed above all mention “argument structure” of the verb at some level in order to derive the condition for serialization in Korean. We believe that this idea is essentially on the right track. We, however, argue that the key to understanding the condition for legitimate SVCs lies in the typology of the  $\nu$  head, rather than in theta-roles, syntactic types, or semantic types of the lexical verb. We argue that this approach can incorporate the positive aspects of the previous analyses and overcome their shortcomings at the same time.

We propose that verbal projections can be serialized with each other only when their  $\nu$  heads are of a comparable feature type, and that the relevant feature for SVCs in Korean is  $[\pm\text{agent}]$ . Specifically, we argue that  $[\text{+agent}]$   $\nu$  introduces an external argument in its Spec whereas  $[\text{-agent}]$   $\nu$  does not introduce an external argument, and that only the same type of  $\nu$  with respect to the  $[\pm\text{agent}]$  feature value can be combined to form an SVC. This is informally stated in (33).<sup>15</sup>

<sup>15</sup> An anonymous reviewer notes that (33) has almost the same effect as Kageyama’s (1993) *Harmony Principle* for Japanese V-V compounds (see Fukushima 2005, Nishiyama 1998, 2008 for discussion). In

(33) **Matching Condition on Verbal Serialization:**

Verbs can be serialized with each other only when their  $v$  heads have the same featural property in introducing an external argument.

The Matching Condition in (33) makes sense only when there exist several types of  $v$  heads in syntax, and some of them form a natural class in terms of feature composition. We follow Folli and Harley (2005) in adopting the view that there are several “flavors” of  $v$  heads in syntax. In particular, we propose that there are different varieties of  $v$  heads, which express distinct meanings having to do with the initiation or lack thereof of the verbal event (see also Harley 1999, 2005, Folli and Harley 2007; cf. Harley 2009 for separation of the verbalizer  $v$  and the Voice head).<sup>16</sup>

Possible feature specifications defining ‘flavors’ of  $v$  suggested in Harley (2009) are as follows (the list is not meant to be exhaustive, however):  $v_{\text{CAUS}}$  [+dynamic, +change of state, +cause],  $v_{\text{BECOME}}$  [+dynamic, +change of state, -cause],  $v_{\text{DO}}$  [+dynamic, -change of state, -cause],  $v_{\text{BE}}$  [-dynamic, -change of state, -cause].  $v_{\text{CAUS}}$  introduces an external argument with a causative meaning (e.g. *-ify* in *horrify*, *gratify*, *certify*, *specify*, etc.).  $v_{\text{BECOME}}$  are found in inchoative verbs (e.g. *-ate* in causative/inchoative alternating verbs such as *coagulate*, *activate*, *detonate*, *dilate*, etc.; *-ate* in purely unaccusative verbs such as *capitulate*, *deteriorate*, *gravitate*, *stagnate*, etc.).  $v_{\text{DO}}$  is an agentive activity-denoting  $v$  (e.g. *-ate* in unergative verbs such as *dissertate*, *elaborate*, *commentate*, *hesitate*, etc.).  $v_{\text{BE}}$  characterizes a stative  $v$  head.

The feature that we pay attention to is [ $\pm$ agent]. Though the [ $\pm$ agent] feature was not explicitly mentioned in Folli and Harley (2005) or Harley (2009), it is rather

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this paper, we focus on the distribution of L-SVCs, which show different syntactic behavior from V-V compounds in Korean (recall note 7). However, it does not seem to be accidental that Japanese V-V compounds show similar matching effects as L-SVCs in Korean since both cases allow adjunction of two predicates in serialization. We leave it for future research whether it is possible to provide a unified account for V-V compounds and L-SVCs in Korean and Japanese.

<sup>16</sup> We assume that the  $v$  head is not reserved for transitive/causative verbs, but also found in intransitive verbs such as unaccusative and unergative verbs. See Kratzer 1996, Harley 1995, Folli and Harley 2005, Marantz 1997, among many others, for distinctions between  $v$  heads that introduce an external argument and  $v$  heads that do not. Harley (2009), however, suggests that Voice heads must exist independently of the verbalizer  $v$  to explain nominalization patterns in English. In this paper, however, we assume that the verbalizer  $v$  and Voice are not separate heads. If the Voice head, instead of a verbalizer, introduces external arguments, one could reinterpret our claim to mean that the feature specification of Voice heads must be matched in verbal serialization.

straightforward to see which  $v$  heads are [+agent]. The light verb with the [+agent] feature introduces an external argument into the syntax, whereas the light verb with [-agent] does not introduce an external argument. Specifically,  $v_{DO}$  and  $v_{CAUS}$  belong to the [+agent] class, whereas  $v_{PASS}$  and  $v_{INCH(OATIVE)}$  belong to the [-agent] class. The list of  $v$  heads we employ is illustrated in (34).<sup>17</sup> In the preceding section, we argued that  $v_{CAUS}$  and  $v_{PASS}$  are responsible for forming causative and passive verbs respectively. Here, two more types are added into the inventory from Folli and Harley (2005), namely  $v_{DO}$  and  $v_{INCH}(v_{BECOME})$  (see also Harley 2009 for further discussion and potential problems with this approach when it is extended to deverbal nominalization).<sup>18</sup>

(34) *Inventory of  $v$  heads:*

- a.  $v_{DO}$  introduces an external argument and assigns an Agent role ([+agent])
- b.  $v_{INCH}$  carries an inchoative meaning and does not introduce an external argument in its Spec ([-agent])
- c.  $v_{CAUS}$  carries a causative meaning and assigns a Causer role ([+agent])
- d.  $v_{PASS}$  does not introduce an external argument and demotes the external argument introduced by the head of its complement  $vP_{DO}$  ([-agent])

Given the types of  $v$  head proposed in (34), the tree structures in (17) can be further specified with relevant feature values, as depicted in (35). We assume that  $v_{PASS}$

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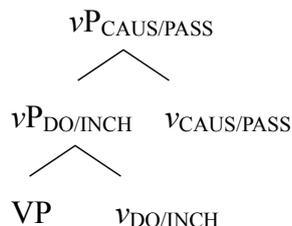
<sup>17</sup> For clarification, agent *position* must be distinguished from the agent *theta-role*. Our [ $\pm$ agent] feature denotes the presence or absence of the agent position, not of the agent theta-role itself. For instance, we assume that the passive  $v$  lacks an external argument in its Spec, but it does not mean that passives totally lack agent *theta-role*. It is well-known that *implicit agents* do exist in passives; implicit agents can function as syntactic controllers for PRO in adjuncts, as in (i). We do not argue against the existence of an agent theta-role in passives. Rather, we assume that the passive suffix itself takes the agent theta-role, so that the position Spec $v$ P is left empty in passives (see Roeper (1987) and Baker, Johnson, and Roberts (1989)). What is crucial for our Matching Condition is whether the relevant  $v$  has its Spec filled, as the item in spec may function as an open variable to connect the verbs in SVCs (see section 5 for discussion).

(i) *The boat was sunk to collect the insurance.* (Roeper 1987: 268)

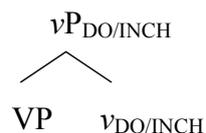
<sup>18</sup> To be more specific, Folli and Harley (2005) argue that  $v_{DO}$  imposes an animacy restriction on its subject (so that only agentive animate subjects may appear in its subject position), whereas  $v_{CAUS}$  is compatible with animate or inanimate subjects; however,  $v_{DO}$  and  $v_{CAUS}$  form a natural class in that they introduce an external argument of the verbal event. We use the term  $v_{INCH}$  and  $v_{BECOME}$  interchangeably, but there is no theoretical import to this distinction. The  $v_{PASS}$  head does not appear in Folli and Harley's list, but we believe that it is only accidental. If  $v_{CAUS}$  exists in the grammar, it is natural that  $v_{PASS}$  also exists.  $v_{BE}$  is not included in the list (32) just because we could not find an SVC involving a stative  $vP_{BE}$  in Korean, but if a SVC could be formed with  $v_{BE}$ , we predict that it would belong to the [-agent] class and behave as such. The list in (34) is not meant to be an exhaustive list of  $v$  types; it cites only the  $v$  heads relevant to forming SVCs in Korean.

selects  $vP_{DO}$ , but not  $vP_{INCH}$ , because  $vP_{INCH}$  does not introduce an external argument for  $v_{PASS}$  to demote (an assumption adopted from Baker, Johnson, Roberts 1989; see also note 19, 21 for implications).<sup>19</sup>

(35) a. morphologically derived verbs



b. simple verbs



Among the four types of  $v$  heads in (34),  $v_{DO}$  and  $v_{CAUS}$  introduce an external argument, and  $v_{INCH}$  and  $v_{PASS}$  do not. Thus, if our Matching Condition (33) is on the right track, we predict that [+agent]  $vP_{DO}$  can be serialized with another [+agent]  $vP_{DO}$  or a  $vP_{CAUS}$ , but not with the [-agent] class,  $vP_{INCH}$  or  $vP_{PASS}$ . Similarly, [-agent]  $vP_{INCH}$  can be serialized with another [-agent]  $vP_{INCH}$  or  $vP_{PASS}$ , but not with the [+agent] types. Furthermore, if our proposal advanced in section 2 is correct, we predict that the level where the Matching Condition applies to varies, depending on when the serialization happens. For H-SVCs, we predict that the Matching Condition applies *after* causativization or passivization occurs in syntax. For L-SVCs, on the other hand, we expect that the Matching Condition would apply *before* the merger of causativizer or passivizer  $v$ . In the following, we show that these predictions are indeed upheld.

Consider first the relevant predictions for H-SVCs. Since we assume that H-SVCs are formed after causativization or passivization occurs, we predict that the Matching Condition would apply to the causativized/passived  $vPs$  and adjoined  $vPs$ . The overall predictions are described in (36).

<sup>19</sup> Clearly, however, this is not true of all languages. As discussed in Baker et al. (1989), some languages allow passives of unaccusative verbs or double passives. Baker et al. argue that Universal Grammar allows two types of passives: in English/Dutch type languages, the passive morpheme is an Infl that cliticizes to a verb whereas in Lithuanian/Turkish type languages, it is an N that cliticizes to an Infl. The former bans passive of a passive or of an unaccusative verb, but the latter allows such “unusual” passives (for details, see Baker et al.’s account on *1-Advancement Exclusiveness Law of Relational Grammar*). Korean belongs to the former and disallows unaccusative/double (morphological) passives, and thus we assume that  $v_{PASS}$  does not select  $vP_{INCH}$  or  $vP_{PASS}$  in Korean.

## (36) Predictions: H-SVCs

$V_1 \backslash V_2$	$vP_{DO}$	$vP_{INCH}$	$vP_{CAUS}$	$vP_{PASS}$
$vP_{DO}$	√(37a)	*(38a)	√(37b)	*(38b)
$vP_{INCH}$	*(38e)	√(37e)	*(38f)	√(37f)
$vP_{CAUS}$	√(37c)	*(38c)	√(37d)	*(38d)
$vP_{PASS}$	*(38g)	√(37g)	*(38h)	√(37h)

As illustrated in (37) and (38), the predictions in (36) are borne out: *only the verbal projections that belong to the same [agent] class can be serialized together*. For instance,  $vP_{DO}$  *cap* ‘catch’ and  $vP_{DO}$  *mek* ‘eat’ can be serialized together, as in (37a).  $vP_{DO}$  *palp* ‘trample’ and  $vP_{CAUS}$  *cwuk-i* ‘die-CAUS’ can be serialized together, as shown in (37b).  $vP_{INCH}$  *el* ‘freeze’ and  $vP_{INCH}$  *kwut* ‘solidify’ may form an SVC, as in (37e).  $vP_{PASS}$  *palp-hi* ‘trample-PASS’ and  $vP_{INCH}$  *cwuk* ‘die’ can be combined and form an SVC, as in (37g). In each example, the subject or the object is shared by association with *pro* in  $vP$  (e.g. the object in (37a-d)) or the subject (deep object) in (37e-h); see the detailed discussion of argument-sharing in Section 5). Crucially, in all the grammatical cases in (37),  $vPs$  with the same types of [agent] feature value are serialized together, and as predicted, they are grammatical.

## (37) Grammatical H-SVCs

- a.  $vP_{DO}$ – $vP_{DO}$ : serialization of [+agent] and [+agent]  $vPs$

*John-i thokki-lul cap-a mek-ess-ta.*  
 John-NOM rabbit-ACC catch-LK eat-PAST-DC  
 ‘John caught and ate a rabbit.’

- b.  $vP_{DO}$ – $vP_{CAUS}$ : serialization of [+agent] and [+agent]  $vPs$

*John-i kaymi-lul palp-a cwuk-i-ess-ta.*  
 John-NOM ant-ACC trample-LK die-CAUS-PAST-DC  
 ‘John trampled an ant to death.’

- c.  $vP_{CAUS}$ – $vP_{DO}$ : serialization of [+agent] and [+agent]  $vPs$

*John-i mwul-ul kkulh-i-e masi-ess-ta.*  
 John-NOM water-ACC boil(int.)-CAUS-LK drink-PAST-DC  
 ‘John boiled and drank water.’

- d.  $vP_{\text{CAUS}}-vP_{\text{CAUS}}$ : serialization of [+agent] and [+agent] vPs  
*John-i kaymi-lul kwulm-ki-e cwuk-i-ess-ta.*  
 John-NOM ant-ACC starve(intr.)-CAUS-LK die-CAUS-PAST-DC  
 ‘John starved an ant to death.’
- e.  $vP_{\text{INCH}}-vP_{\text{INCH}}$ : serialization of [-agent] and [-agent] vPs  
*ceylli-ka el-e kwut-ess-ta*  
 Jelly-NOM freeze-LK solidify-PAST-DC  
 ‘Jelly got frozen and became solid.’
- f.  $vP_{\text{INCH}}-vP_{\text{PASS}}$ : serialization of [-agent] and [-agent] vPs  
*so-ka cwuk-e mwu-hi-ess-ta*  
 cow-NOM die-LK bury-PASS-PAST-DC  
 ‘A cow died and was buried.’
- g.  $vP_{\text{PASS}}-vP_{\text{INCH}}$ : serialization of [-agent] and [-agent] vPs  
*kaymi-ka palp-hi-e cwuk-ess-ta.*  
 ant-NOM trample-PASS-LK die-PAST-DC  
 ‘An ant was trampled to death.’
- h.  $vP_{\text{PASS}}-vP_{\text{PASS}}$ : serialization of [-agent] and [-agent] vPs  
*John-i kom-eykey cap-hi-e mek-hi-ess-ta.*  
 John-NOM bear-DAT catch-PASS-LK eat-PASS-PAST-DC  
 ‘John was caught and eaten by a bear.’

The examples in (38) show that when different types of vPs are combined, the SVC is ruled out. For instance, when  $vP_{\text{DO}}$  *cap* ‘catch’ and  $vP_{\text{PASS}}$  *mek-hi* ‘eat-PASS’ are combined, a legitimate SVC cannot be formed, as in (38b).  $vP_{\text{CAUS}}$  *kulm-ki* ‘starve-CAUS’ and  $vP_{\text{INCH}}$  *kwuk* ‘die’ cannot form a SVC, as in (38d).  $vP_{\text{INCH}}$  *kkulh* ‘boil’ and  $vP_{\text{DO}}$  *masi* ‘drink’ cannot be combined together, as in (38e).  $vP_{\text{PASS}}$  *cap-hi* ‘catch-PASS’ and  $vP_{\text{DO}}$  *mek* ‘eat’ cannot form a SVC, as in (38g). In contrast to the examples in (37), all the ungrammatical examples in (38) involve serialization of vPs which belong to different [agent] types and they cannot form a legitimate SVC, as predicted.<sup>20</sup>

<sup>20</sup> Some examples in (38) can be judged grammatical with a different reading from the intended one. For instance, (38a) can be judged grammatical if it means ‘John died because he trampled an ant’. We will discuss these interpretations in detail in section 4. We argue that the (apparently) unexpected cases have significantly different syntactic/prosodic structures from the intended ones listed in (36). We also note in advance that (38f) is ruled out as an H-SVC where John is not a causer of the ant’s starving event. However, the same sequence of verbs is marginally acceptable as an L-SVC where it means an ant’s starving is caused by John (see (40b)).

(38) *Ungrammatical H-SVCs*

- a.  $vP_{DO}-vP_{INCH}$ : serialization of [+agent] and [-agent] vPs  
\**John-i kaymi-lul palp-a cwuk-ess-ta.*  
John-NOM ant-ACC trample-LK die-PAST-DC  
'John trampled an ant to death.' (intended)
- b.  $vP_{DO}-vP_{PASS}$ : serialization of [+agent] and [-agent] vPs  
\**John-i kaymi-lul cap-a mek-hi-ess-ta.*  
John-NOM ant-ACC catch-LK eat-PASS-PAST-DC  
'John caught an ant and the ant was eaten.' (intended)
- c.  $vP_{CAUS}-vP_{INCH}$ : serialization of [+agent] and [-agent] vPs  
\**John-i kaymi-lul kulm-ki-e cwuk-ess-ta.*  
John-NOM ant-ACC starve(intr.)-CAUS-LK die-PAST-DC  
'John starved an ant to death.' (intended)
- d.  $vP_{CAUS}-vP_{PASS}$ : serialization of [+agent] and [-agent] vPs  
\**John-i kaymi-lul cwuk-i-e mwut-hi-ess-ta.*  
John-NOM ant-ACC die-CAUS-LK bury-PASS-PAST-DC  
'John killed an ant and the ant was buried.' (intended)
- e.  $vP_{INCH}-vP_{DO}$ : serialization of [-agent] and [+agent] vPs  
\**John-i mwul-ul kkulh-e masi-ess-ta.*  
John-NOM water-ACC boil(intr.)-LK drink-PAST-DC  
'John boiled and drank water.' (intended)
- f.  $vP_{INCH}-vP_{CAUS}$ : serialization of [-agent] and [+agent] vPs  
\**John-i kaymi-lul kwulm-e cwuk-i-ess-ta.*  
John-NOM ant-ACC starve(intr.)-LK die-CAUS-PAST-DC  
'An ant starved and John killed the ant.' (intended)
- g.  $vP_{PASS}-vP_{DO}$ : serialization of [-agent] and [+agent] vPs  
\**John-i kom-eykey cap-hi-e mek-ess-ta.*  
John-NOM bear-BY catch-PASS-LK eat-PAST-DC  
'John was caught by a bear and ate the bear.' (intended)
- h.  $vP_{PASS}-vP_{CAUS}$ : serialization of [-agent] and [+agent] vPs  
\**John-i kom-eykey cap-hi-e cwuk-i-ess-ta.*  
John-NOM bear-BY catch-PASS-LK die-CAUS-PAST-DC  
'John was caught by a bear and killed the bear.' (intended)

Let us now turn to our predictions for L-SVCs where causative/passive *v* takes the serialized verbal complex as its complement. If our proposal is on the right track, the

serialization in L-SVCs occurs prior to the merger of a causativizer or passivizer. We thus predict that the Matching Condition applies before causativization or passivization in L-SVCs, in contrast to H-SVCs seen above. In other words, the internal structure of vPs below  $v_{CAUS}$  or  $v_{PASS}$  matters in capturing the well-formedness of L-SVCs. For instance, when the verbal complex is composed of the sequence of ‘ $vP_{DO}+vP_{DO}+v_{CAUS}$ ’ (e.g. *kkwulh* ‘kneel’ + *anc* ‘sit’ + *hi* ‘-CAUS’ in (40a)), the Matching Condition regulates the serialization between  $vP_{DO}$  and  $vP_{DO}$  (e.g. *kkwulh* ‘kneel’ + *anc* ‘sit’), not between  $vP_{DO}$  and  $vP_{CAUS}$  (e.g. *kkwulh* ‘kneel’ + *anc-hi* ‘sit-CAUS’ in (40a)) (cf. predications for H-SVCs in (36)). The overall predictions for L-SVCs are presented in (39).<sup>21</sup>

(39) *Predictions: complex L-SVCs*

$v_{CAUS/PASS}$ $V_1+V_2$	$v_{CAUS}$	$v_{PASS}$
$vP_{DO}+vP_{DO}$	√(40a)	√(40c)
$vP_{CAUS}+vP_{DO}$	√(42a) (see section 4)	√(42c) (see section 4)
$vP_{INCH}+vP_{INCH}$	√(40b)	* ( $v_{PASS}$ does not select $vP_{INCH}$ )
$vP_{PASS}+vP_{INCH}$	√(42b) (see section 4)	* ( $v_{PASS}$ does not select $vP_{INCH}$ )
$vP_{DO}+vP_{INCH}$	*(41a)	* ( $v_{PASS}$ does not select $vP_{INCH}$ )
$vP_{INCH}+vP_{DO}$	*(41b)	*(41c)
$vP_{PASS}+vP_{DO}$	*(41d)	*(41e)
$vP_{CAUS}+vP_{INCH}$	*(41f)	* ( $v_{PASS}$ does not select $vP_{INCH}$ )

As illustrated in (40) and (41), the set of predictions in (39) is largely borne out (but see section 4 for potential challenges posed by (42)): *only the verbal projections that belongs to the same [agent] class can be serialized together and embedded under  $v_{CAUS}$  or  $v_{PASS}$  to form an L-SVC*. The grammatical cases are illustrated in (40). As in (40a),  $vP_{DO}$  *kkwulh* ‘kneel’ and  $vP_{DO}$  *anc* ‘sit’ are serialized and embedded under the causative *v -hi*. As in (40c),  $vP_{DO}$  *cap* ‘catch’ and  $vP_{DO}$  *mek* ‘eat’ can be combined and embedded under the passive *hi*, as well. (40b) is slightly degraded for some speakers, but if it is acceptable, it carries an L-SVC reading where the causative *i* scopes over

<sup>21</sup> Following Chung (1993), we claim that the second vP heads the serialized verbal complex. Hence, we predict that  $v_{CAUS/PASS}$  imposes a selectional restriction on the second vP in L-SVCs. In particular, passive L-SVCs cannot be formed when the second vP is [-agent]  $vP_{INCH}$  (even if the first vP is [+agent]  $vP_{DO}$ ), whereas passive L-SVCs can be formed when the second vP is [+agent]  $vP_{DO}$  (even if the first vP is [-agent]  $vP_{INCH}$ ). Recall note 19 for relevant discussion.

both vPs ‘starve’ and ‘die’ (*i.e.* John is the causer of two events, ‘starving an ant’ and ‘killing an ant’.) Recall that (40b) is ungrammatical with the H-SVC reading where the causative *i* scopes over the second vP only, as described in (38f).<sup>22</sup>

(40) *Grammatical L-SVCs*

- a. [ $vP_{DO}$ - $vP_{DO}$ ]- $v_{CAUS}$ : serialization of [+agent] and [+agent] vPs

*John-i Mary-lul [kkwulh-e anc]-hi-ess-ta*  
 John-NOM Mary-ACC [kneel-LK sit]-CAUS-PAST-DC  
 ‘John made Mary kneel down.’

- b. [ $vP_{INCH}$ - $vP_{INCH}$ ]- $v_{CAUS}$ : serialization of [-agent] and [-agent] vPs

?*John-i kaymi-lul [kwulm-e cwuk]-i-ess-ta.*  
 John-NOM ant-ACC [starve(intr.)-LK die]-CAUS-PAST-DC  
 ‘John starved an ant to death.’

- c. [ $vP_{DO}$ - $vP_{DO}$ ]- $v_{PASS}$ : serialization of [+agent] and [+agent] vPs

*yene-ka (kom-eykey) [cap-a mek]-hi-ess-ta.*  
 salmon-NOM (bear-DAT) [catch-LK eat]-PASS-PAST-DC  
 ‘A salmon was caught and eaten (by a bear).’

The sentences in (41) exemplify ungrammatical L-SVCs - which involve serialization of different types of vPs embedded under  $v_{CAUS}$  or  $v_{PASS}$ . As predicted,  $vP_{DO}$  *palp* ‘trample’ and  $vP_{INCH}$  *cwuk* ‘die’ cannot be serialized (under  $v_{CAUS}$ ), as shown in (41a).  $vP_{INCH}$  *kkulh* ‘boil’ and  $vP_{DO}$  *mek* ‘eat’ cannot be combined (under  $v_{PASS}$  or

<sup>22</sup> An anonymous reviewer notes a contrast between (i) and (ii) in Korean and asks why (i) is ungrammatical to him/her as an H-SVC. We also find (ii) is more natural than (i), but both sentences are grammatical to us. Especially if we add adverbs like *tancenghi* ‘neatly’ in front of *anc* ‘sit’, we do not see a difference between (i) and (ii). The reviewer also asks why possessor ascension is not allowed in L-SVCs such as (iii) (cf. (40a)). However, judgments for (iii) are rather controversial, and moreover, possessor ascension is degraded regardless of SVC status when it is combined with the verb *kkwulh* ‘kneel’. We take the reported difference between (iii) and (40a) to be interesting, but in this paper, we do not intend to provide a developed answer for the relationship between possessor ascension and L-SVCs.

- (i) %*Mary-ka mwulup-ul kkwulh-e (tancenghi) anc-ass-ta.*  
 Mary-NOM knee-ACC kneel-LK neatly sit-PAST-DC  
 ‘Mary kneeled down and sat (neatly).’
- (ii) *Mary-ka mwulup-ul kkwulh-ko (tancenghi) anc-ass-ta.*  
 Mary-NOM knee-ACC kneel-and neatly sit-PAST-DC  
 ‘Mary kneeled down and sat.’
- (iii) ??*John-i Mary-lul mwulup-ul [kkwulh-e anc]-hi-ess-ta.*  
 John-NOM Mary-ACC knee-ACC kneel-LK sit-CAUS-PAST-DC  
 ‘John made Mary kneel her knee and sit down.’
- (iv) ?\**John-i Mary-lul mwulup-ul kkwulh-ess-ta.*  
 John-NOM Mary-ACC knee-ACC kneel-PAST-DC  
 ‘John made Mary kneel her knee.’

$v_{CAUS}$ ), as shown in (41b) and (41c). The rest of the examples show the same point.<sup>23</sup>

(41) *Ungrammatical L-SVCs*

- a. [ $vP_{DO-vP_{INCH}}$ ]- $v_{CAUS}$ : serialization of [+agent] and [-agent]  $vPs$   
 \* *John-i Bill-ul ciloy-lul [palp-a cwuk]-i-ess-ta.*  
 John-NOM Bill-ACC landmine-ACC [trample-LK die]-CAUS-PAST-DC  
 ‘John made Bill step on a landmine and die.’ (intended)
- b. [ $vP_{INCH-vP_{DO}}$ ]- $v_{CAUS}$ : serialization of [-agent] and [+agent]  $vPs$   
 \* *John-i Mary-lul lamyen-ul [kkulh-e mek]-i-ess-ta.*  
 John-NOM Mary-ACC noodle-ACC [boil(intr.)-LK eat]-CAUS-PAST-DC  
 ‘John boiled noodles and feed them to Mary.’ (intended)
- c. [ $vP_{INCH-vP_{DO}}$ ]- $v_{PASS}$ : serialization of [-agent] and [+agent]  $vPs$   
 \* *lamyen-i [kkulh-e mek]-hi-ess-ta.*  
 noodle-NOM [boil(intr.)-LK eat]-PASS-PAST-DC  
 ‘Noodles were boiled and eaten.’ (intended)
- d. [ $vP_{PASS-vP_{DO}}$ ]- $v_{CAUS}$ : serialization of [-agent] and [+agent]  $vPs$   
 \* *John-i Mary-eykey [kkul-li-e kkwulh]-li-ess-ta.*  
 John-NOM Mary-BY [pull-PASS-LK kneel]-CAUS-PAST-DC  
 ‘John caused himself to be pulled by Mary and kneeled her down.’ (intended)
- e. [ $vP_{PASS-vP_{DO}}$ ]- $v_{PASS}$ : serialization of [-agent] and [+agent]  $vPs$   
 \* *John-i kom-eykey [kkul-li-e mek]-hi-ess-ta.*  
 John-NOM bear-BY [pull-PASS-LK eat]-PASS-PAST-DC  
 ‘John was pulled by a bear and was eaten by it.’ (intended)
- f. [ $vP_{CAUS-vP_{INCH}}$ ]- $v_{CAUS}$ : serialization of [+agent] and [-agent]  $vPs$   
 \* *John-i Mary-ul kom-ul [kkulh-i-e cwuk]-i-ess-ta.*  
 John-NOM Mary-ACC bear-ACC [boil-CAUS-LK die]-CAUS-PAST-DC  
 ‘John made Mary boil a bear and made her die.’ (intended)

<sup>23</sup> We want to emphasize here that the examples in (41) are ungrammatical with the interpretation of L-SVCs, where the derivational morpheme scopes over both verbs. One could entertain the possibility that some of the examples in (41) are potentially parsed as H-SVCs. These possibilities are ruled out for independent reasons in (41). For instance, in (41c), if *-hi* does not scope over  $V_1$ , one might expect a scenario where *kkulh* ‘boil’ [-agent] and *mek-hi* ‘eat-PASS’ [-agent] would be an acceptable pair as an H-SVC. Note, however, that an inanimate subject such as *lamyen* ‘noodle’ cannot function as the subject of *hi*-passives in Korean. If we change the subject into an animate one such as *so* ‘cow’, such a sequence is in fact possible with the interpretation of an H-SVC. Note that (41d-f) may also be ruled out independently for the reasons discussed below (a derivational  $v$  head cannot be embedded under another derivational  $v$ ). Examples in (41d-f) are included here, however, for the sake of completeness.

(i) *so-ka [cwuk-e] [mwuh-hi]-ess-ta.*  
 cow-NOM die-LK bury-PASS-PAST-DC  
 ‘A cow died and was buried.’

The facts illustrated in (40) and (41) confirm our prediction that only the same [agent] types of vPs can be combined and embedded under a derivational *v* head. To complete the picture, however, we note that there are some L-SVCs that are predicted to be grammatical, but are unexpectedly bad. These are exemplified in (42). In section 4, we deal with these cases and show that our proposal in (33) remains intact.

(42) *Unexpectedly ungrammatical L-SVCs*

- a. [ $vP_{\text{CAUS}}-vP_{\text{DO}}$ ]- $v_{\text{CAUS}}$ : serialization of [+agent] and [+agent] vPs  
 \**yene-ka* (kom-eykey) [kkulh-i-e mek]-hi-ess-ta.  
 salmon-NOM (bear-DAT) [boil-CAUS-LK eat]-PASS-PAST-DC  
 ‘A salmon was boiled and eaten (by a bear).’ (intended)
- b. [ $vP_{\text{PASS}}-v_{\text{INCH}}$ ]- $v_{\text{CAUS}}$ : serialization of [-agent] and [-agent] vPs  
 \**John-i kaymi-lul* [palp-hi-e cwuk]-i-ess-ta.  
 John-NOM ant-ACC [trample-PASS-LK die]-CAUS-PAST-DC  
 ‘John caused an ant to be trampled and die.’ (intended)
- c. [ $vP_{\text{CAUS}}-vP_{\text{DO}}$ ]- $v_{\text{PASS}}$ : serialization of [+agent] and [+agent] vPs  
 \**lamyen-i* [kkulh-i-e mek]-hi-ess-ta.  
 noodle-NOM [boil-CAUS-LK eat]-PASS-PAST-DC  
 ‘Noodles were boiled and eaten.’ (intended)

### 3.3 Comparison

We have argued that SVCs in Korean must be divided into two types, and that the two types have different syntactic and semantic properties. We have also seen that the distinction between the two types is crucial to understand the Matching Condition of complex SVCs. The merit of our approach can be more 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 causativization (L-SVC), we expect that [agent] feature matching must occur between  $vP_1$  and  $vP_2$ . In contrast, if  $v_{\text{CAUS}}$  is merged to  $vP_2$  first and serialization happens later (H-SVC), we predict that [agent] feature 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 the derivational head. The prediction is tested

with the examples in (43). The sequence  $v_{DO}$ - $v_{INCH}$ - $v_{CAUS}$  (‘trample-die-CAUS’) in (1a), repeated in (43a), forms a legitimate SVC, but the exact same sequence does not form a grammatical SVC in (43b).<sup>24</sup>

- (43) a. *John-i kaymi-lul [palp-a] [cwuk-i]-ess-ta.*  
 John-NOM ant-ACC [trample-LK] [die-CAUS]-PAST-DC  
 ‘John trampled an ant to death.’
- b. \**John-i Bill-ul ciloy-lul [palp-a cwuk]-i-ess-ta.*  
 John-NOM Bill-ACC landmine-ACC [trample-LK die]-CAUS-PAST-DC  
 ‘John caused Bill to trample a landmine and die.’ (intended)

On our view, the contrast in (43) can be explained by different structures. (43a) represents an H-SVC, where the causative morpheme scopes over ‘die’, but not over ‘trample’. Thus, we are led to assume that serialization occurs between  $vP_{DO}$  ‘trample’ and  $vP_{CAUS}$  containing  $vP_{INCH}$  ‘die-CAUS’. Since both  $vP_{DO}$  and  $vP_{CAUS}$  belong to the [+agent] class, we predict that (43a) would be grammatical.

By contrast, the example in (43b) is intended to represent an L-SVC, where the causative morpheme scopes over both ‘trample’ and ‘die’. Since serialization occurs between  $vP_{DO}$  ‘trample’ and  $vP_{INCH}$  ‘die’ prior to the merger of  $v_{CAUS}$ , we predict that (43b) is ruled out by our Matching Condition (33): the heads of the two  $vPs$  do not match in the class (i.e.  $v_{DO}$  ‘trample’ belongs to [+agent] class and  $v_{INCH}$  ‘die’ belongs to the [-agent] class), and we correctly predict that (43b) is ungrammatical. The asymmetry between (43a) and (43b) cannot be explained without positing the two different types of SVCs that we proposed in this paper. None of the previous studies can explain the contrast illustrated by (43a) and (43b).

Our Matching Condition coupled with the dichotomy between the two types of complex SVC also has a broader empirical coverage than the previous analyses

<sup>24</sup> The ungrammaticality of (43b) cannot be attributed to the fact that there are two accusative-marked objects in SVCs. An example in (i) shows that it is possible for two accusative objects to appear in an SVC. Note also that a periphrastic causative of (43b) is grammatical, as in (ii), so one cannot attribute the ungrammaticality of (43b) to the semantics.

- (i) *John-i Bill-ul si-lul oywu-e ilk-hi-ess-ta.*  
 John-NOM Bill-ACC poem-ACC memorize-LK read-CAUS-PAST-DC  
 ‘John made Bill recite a poem.’
- (ii) *John-i Bill-ul ciloy-lul palp-a cwuk-key ha-ess-ta*  
 John-NOM Bill-ACC landmine-ACC trample-LK die-CAUS(PERL.) PAST-DC  
 ‘John made Bill trample a landmine and die.’

reviewed above. Our proposal correctly rules out cases like (28) and (29), repeated here as (44) and (45), which Chung (1993) fails to account for. Under our approach, the example in (44) is ruled out by feature mismatch, and (45) is correctly predicted to be grammatical because both ‘catch’ and ‘eat’ are  $vP_{DO}$ , and belong to the same [+agent] class. Our proposal also successfully explains the grammaticality of H-SVC in (46), which is potentially problematic for Kang (1997) and Lee (2003).

(44)  $vP_{INCH}$ - $vP_{DO}$ : [-agent] and [+agent]  $vP$

\**John-i mwul-lul [kkulh-e] [masi]-ess-ta.*  
 John-NOM water-ACC [boil(intr.)-LK] [drink]-PAST-DC  
 ‘John boiled and drank water.’ (intended)

(45) [ $vP_{DO}$ - $vP_{DO}$ ]- $vP_{PASS}$ : [+agent] and [+agent] under  $vP_{PASS}$

*yene-ka kom-eykey [cap-a mek]-hi-ess-ta.*  
 salmon-NOM bear-DAT [catch-LK eat]-PASS-PAST -DC  
 ‘A salmon was caught and eaten by a bear.’

(46)  $vP_{DO}$ - $vP_{DO}$ : unergative [+agent] and transitive [+agent]  $vP$

*John-i wulthali-lul ttwi-e nem-ess-ta.*  
 John-NOM fence-ACC jump-LK go.over-PAST-DC  
 ‘John jumped over a fence.’

#### 4. Challenges and Possible Solutions

In this section, we address two potential challenges to our proposal. One involves a set of grammatical H-SVCs which are predicted to be ungrammatical by (33). The other involves the ungrammatical L-SVCs which are predicted to be grammatical by (33). We have a rather elaborate answer to the first puzzle which leads us to discover a new generalization regarding judgment variation for H-SVCs; we also have a tentative suggestion for the second problem. We show, in any case, that neither of the challenges undermines the overall coverage of our proposal. In the following, we show that the challenge posed by the problematic H-SVCs can be circumvented on the basis of the fact that they are not serial verb constructions after all, but involve adjunction of constituents bigger than  $vPs$ . For the problematic L-SVCs, we suggest that an independent constraint blocks them in syntax.

Let us first consider the problematic judgments for H-SVCs. Some representative cases are given in (47). Our Matching Condition rules out serializations of  $vPs$  that

belong to different [agent] types, but some speakers accept (47) under certain prosodic condition, and often with a totally different interpretation from the intended SVC interpretation.

(47) a.  $vP_{DO}-vP_{INCH}$ :

*John-i kaymi-lul palp-a \*#### cwuk-ess-ta.*

John-NOM ant-ACC trample-LK die-PAST-DC

‘John trampled an ant to death.’ (intended)

or ‘John<sub>i</sub> trampled an ant and (as a result) he<sub>i</sub> died.’ (unintended)

b.  $vP_{DO}-vP_{PASS}$ :

*John-i kaymi-lul cap-a \*#### mek-hi-ess-ta.*

John-NOM ant-ACC catch-LK eat-PASS-PAST-DC

‘John caught an ant and the ant was eaten.’ (intended)

or ‘John<sub>i</sub> caught an ant and he<sub>i</sub> was eaten.’ (unintended)

c.  $vP_{CAUS}-vP_{INCH}$ :

*John-i kaymi-lul kulm-ki-e \*#### cwuk-ess-ta.*

John-NOM ant-ACC starve(intr.)-CAUS-LK die-PAST-DC

‘John starved an ant and the ant died.’ (intended)

or ‘John<sub>i</sub> starved an ant and he<sub>i</sub> died.’ (unintended)

As described above, the sentences are grammatical only when there is a significant pause between two verbs; otherwise, they are ungrammatical. Furthermore, some rich (and very often pragmatically odd) contexts must precede the sentences to render them acceptable, and if acceptable, either the subject or the object can be interpreted as the shared argument. We take these facts to indicate that the unexpectedly grammatical H-SVCs are not real SVCs, and that they involve adjunction of two TPs instead. Put differently, the sentences in (47) may be parsed as grammatical because the structures described in (48) are available. The T head in the preceding TP is realized as phonetically null, and the following TP has a *pro* subject which can be co-indexed with the preceding object or the subject, pending the plausibility of the interpretation.<sup>25</sup>

<sup>25</sup> We are not the first one to suggest this possibility. Our TP-adjunction structure roughly corresponds to Baker’s (1989) *covert conjunction* or Collins’ (1997) *covert I'-coordination*, which these authors proposed to explain certain exceptions to ‘true SVCs’. See section 5 for discussion.

- (48) a. [TP *John-i kaymi-lul palp-ø-a*], ## [TP *pro cwuk-ess-ta*].  
 John-NOM ant-ACC trample-TNS-LK it die-PAST-DC  
 ‘John<sub>i</sub> trampled an ant<sub>j</sub> and he<sub>i</sub>/the ant<sub>j</sub> died.’
- b. [TP *John-i kaymi-lul cap-ø-a*], ## [TP *pro mek-hi-ess-ta*].  
 John-NOM ant-ACC catch-TNS-LK it eat-PASS-PAST-DC  
 ‘John<sub>i</sub> caught an ant<sub>j</sub> and he<sub>i</sub>/the ant<sub>j</sub> was eaten.’
- c. [TP *John-i kaymi-lul kulm-ki-ø-e*], ## [TP *pro cwuk-ess-ta*].  
 John-NOM ant-ACC starve-CAUS-TNS -LK it die-PAST-DC  
 ‘John<sub>i</sub> starved an ant<sub>j</sub> and he<sub>i</sub>/the ant<sub>j</sub> died.’

In fact, the examples in (48) allow two overt nominative subjects to co-occur, as illustrated in (49). Assuming that nominative Case is licensed by the T head in Korean, this fact lends support for the TP-adjunction analysis.<sup>26</sup>

- (49) a. *John-i kaymi-lul palp-ø-a ku/kaymi-ka cwuk-ess-ta*.  
 John-NOM ant-ACC trample-TNS-LK he/ant-NOM die-PAST-DC  
 ‘John<sub>i</sub> trampled an ant<sub>j</sub> and he<sub>i</sub>/the ant<sub>j</sub> died.’
- b. *John-i kaymi-lul cap-ø-a ku/kaymi-ka mek-hi-ess-ta*.  
 John-NOM ant<sub>i</sub>-ACC catch-TNS-LK he/ant<sub>i</sub>-NOM eat-PASS-PAST-DC  
 ‘John<sub>i</sub> caught an ant<sub>j</sub> and he<sub>i</sub>/the ant<sub>j</sub> was eaten.’
- c. *John-i kaymi-lul kulm-ki-ø-e hu/kaymi-ka cwuk-ess-ta*.  
 John-NOM ant<sub>i</sub>-ACC starve-CAUS-TNS-LK he/ant<sub>i</sub>-NOM die-PAST-DC  
 ‘John<sub>i</sub> starved an ant<sub>j</sub> and he<sub>i</sub>/the ant<sub>j</sub> died.’

Furthermore, two different time adverbials may appear in these types of SVCs, as shown in (50). In (50), each temporal adverbial is associated with a different verb in the SVC: *ecey* ‘yesterday’ is associated with the preceding verb *palp* ‘trample’ and *onul* ‘today’ is with the following verb *cwuk* ‘die’. If the time adverbials adjoin at TP, the grammaticality of (50) also renders supports for our suggestion.<sup>27</sup>

<sup>26</sup> cf. Kim (1990) and Ahn and Yoon (1989) among others for an alternative view that nominative Case in Korean is not assigned by Tense but is given by default, by other factors such as agentivity, or by other functional categories such as AGRs.

<sup>27</sup> Marcel den Dikken (p.c.) points out that the evidence with temporal modifiers in (50) could be somewhat inconclusive. A simple clause may contain two different temporal adverbs even in English, as (i). If two TPs are adjoined in (50), one could reasonably ask why only one tense morpheme appears in (50) (cf. Collins (1997), who shows that *covert I'-coordination* requires double tense marking). We do not know precise answers to these questions, but TPs in Korean may lack a tense morpheme when they are adjoined to another TP, as in (ii). We hope that future research will show the exact manner in which

(50) *Adverbial test*

- a. *John-i ecey kaymi-lul palp-ø-a onul cwuk-ess-ta.*  
 John-NOM yesterday ant-ACC trample-TNS-LK today die-PAST-DC  
 ‘John<sub>i</sub> trampled an ant yesterday and he<sub>i</sub>/the ant died today.’
- b. *John-i ecey kaymi-lul cap-ø-a onul mek-hi-ess-ta.*  
 John-NOM yesterday ant-ACC catch-TNS-LK today eat-PASS-PAST-DC  
 ‘John<sub>i</sub> caught an ant yesterday and he<sub>i</sub>/the ant was eaten today.’
- c. *John-i ecey kaymi-lul kulm-ki-ø-e onul cwuk-ess-ta.*  
 John-NOM yesterday ant-ACC starve-CAUS-TNS-LK today die-PAST-DC  
 ‘John<sub>i</sub> starved an ant yesterday and he<sub>i</sub>/the ant died today.’

Note that if our suggestion for (47) is on the right track, we in fact predict that the TP-adjunction parse is available for other H-SVCs as well. All the grammatical H-SVCs may be parsed alternatively as a TP-adjunction construction. We thus expect that all other grammatical H-SVCs may allow two different overt subjects and objects when the relevant TP-parse is available. As exemplified by (51), this is indeed the case.

- (51) *John-i thokki-lul cap-a (Mary-ka kkoli-lul) mek-ess-ta.*  
 John-NOM rabbit-ACC catch-LK Mary-NOM tail-ACC eat-PAST-DC  
 ‘John caught a rabbit and Mary ate its tail.’

If a TP-adjunction parse can be applied across the board, however, the strength of our Matching Condition would be significantly weakened. If all the ungrammatical SVCs could be reparsed with the TP-adjunction structure, it would be wrongly predicted that SVCs are basically all grammatical, regardless of the typology of *v* head. This concern, however, does not vitiate the validity of our main points because TP-adjunction analysis can be employed only in some limited contexts.

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T-sharing occurs in Korean, but the point is clear that the nature of T-sharing is independent of our major claim that TP-adjunction exists as well as vP-adjunction in Korean.

(i) *Today, John will do it tomorrow, but tomorrow John will do it next week.*

- (ii) a. *Nay-ka Mary-lul ttayly-e-se, John-i hwa-ka na-ss-ta*  
 I-NOM Mary-ACC hit-LK-because John-NOM anger-NOM arise-PAST-DC  
 ‘Because I hit Mary, John got angry.’
- b. *\*Nay-ka Mary-lul ttayly-e-ess-se, John-i hwa-ka na-ss-ta*  
 I-NOM Mary-ACC hit-LK-PAST-because John-NOM anger-NOM arise-PAST-DC  
 ‘Because I hit Mary, John got angry.’

Specifically, the TP-adjunction parse can be employed only when each verbal constituent can be analyzed as a legitimate TP. As mentioned above, all the grammatical H-SVCs satisfy the constraint and can be reparsed with a TP-adjunction structure, but crucially, only a limited set of ungrammatical H-SVCs pass the TP-adjunction test. Thus, most ungrammatical SVCs remain ungrammatical even with extremely rich pragmatic/prosodic contexts. More specifically, when a transitive  $\nu$ P precedes the other  $\nu$ P in an H-SVC, it is in principle possible to parse the SVC with a TP-adjunction structure, as in (47) (e.g. (38a-d)). When an intransitive  $\nu$ P precedes a transitive  $\nu$ P, however, it is *impossible* to assign such TP-adjunction structures. This is illustrated with the examples in (52).

As shown in (52a), the verb *kkulh* ‘boil’ cannot form a legitimate constituent with the object *mwul-ul* ‘water-ACC’ because it is an inchoative/intransitive verb. As in (52b), the intransitive verb *kwulm* ‘starve’ cannot be parsed together with the object *kaymi-lul* ‘ant-ACC’, either. Thus, the examples like (52a) and (52b) never allow TP-adjunction parse for the first verbal constituent, and remain utterly ungrammatical regardless of prosodic/pragmatic condition, as expected.

- (52) a. \* *John-i*      *mwul-ul*      *kkulh-e*      ##      (*masi-ess-ta*)  
           John-NOM    water-ACC    boil(intr.)-LK           drink-PAST-DC  
           ‘John boiled and drank water.’ (intended) (cf. (38e))
- b. \* *John-i*      *kaymi-lul*      *kwulm-e* ##      (*cwuk-i-ess-ta*)  
           John-NOM    ant-ACC      starve(intr.)-LK      die-PAST-DC  
           ‘An ant starved and John killed the ant.’ (intended) (cf. (38f))

Our contention that TP-adjunction parse does not undermine our proposal can be more firmly supported by the total lack of a TP-parse for L-SVCs of all types. Under our proposal, L-SVCs involve a structure where the derivational  $\nu$  selects a  $\nu$ P as its complement. Hence, a TP-level structure cannot be embedded under the  $\nu$  head in L-SVCs at all. As soon as a TP-adjunction parse is employed, the construction would not allow the L-SVC reading in which the derivational  $\nu$  head scopes over both verbs. Thus, we predict that L-SVCs will never be parsed with a TP-adjunction structure and remain ungrammatical when  $\nu$ Ps of different [agent] types are combined. Indeed, all the ungrammatical L-SVCs remain ungrammatical irrespective of prosodic/pragmatic contexts. Furthermore, even grammatical L-SVCs are incompatible with a TP-adjunction parse. As shown (53), neither an overt subject nor a temporal adverb can be

inserted between two verbs in otherwise grammatical L-SVCs (cf. the opposite facts with H-SVCs in (49)-(50)).

- (53) a. \*<sub>[TP</sub> *John-i kaymi-lul kwulm-e*] <sub>[TP</sub> *John-i pro cwuk-i-ess-ta*].  
 John-NOM ant-ACC starve-LK John-NOM it die-CAUS-PAST-DC  
 ‘John starved an ant to death.’ (cf. (40b))
- b. \*<sub>[TP</sub> *John-i hansikan-ceney Mary-lul kkwule-e*]  
 John-NOM one.hour-ago Mary-ACC kneel-LK  
 [*pro pro cikuwm anc-hi-ess-ta*]  
 he her now sit-CAUS-PAST-DC  
 ‘John made Mary kneel an hour ago and made her sit down now.’ (cf. (40a))

In short, a TP-adjunction parse is not available randomly. It can be applied to some H-SVCs (*i.e.* grammatical H-SVCs in (37) and H-SVCs in (38) where a transitive *vP* precedes an intransitive *vP*), but it is totally inapplicable to the other types of SVCs (*i.e.* L-SVCs of all types and H-SVCs in (38), where an intransitive *vP* is combined with a transitive *vP*). Thus, judgment variation is observed only for sub-types of H-SVCs, for which the TP-adjunction parse can be employed.

Let us now turn to the unexpected patterns in L-SVCs. There are some L-SVCs made up of two *vP*s from the same [agent] types, but judged ungrammatical. The problematic cases are given in (54) - repetition of examples in (42).

- (54) a. [*vP*<sub>CAUS</sub>-*vP*<sub>DO</sub>]-*v*<sub>CAUS</sub>: serialization of [+agent] and [+agent] *vP*s under *v*<sub>CAUS</sub>  
 \**yene-ka (kom-eykey) [kkulh-i-e mek]-hi-ess-ta.*  
 salmon-NOM (bear-DAT) [boil-CAUS-LK eat]-PASS-PAST-DC  
 ‘A salmon was boiled and eaten (by a bear).’ (intended)
- b. [*vP*<sub>PASS</sub>-*v*<sub>INCH</sub>]-*v*<sub>CAUS</sub>: serialization of [-agent] and [-agent] *vP*s under *v*<sub>CAUS</sub>  
 \**John-i kaymi-lul [palp-hi-e cwuk]-i-ess-ta.*  
 John-NOM ant-ACC [trample-PASS-LK die]-CAUS-PAST-DC  
 ‘John caused an ant to be trampled and die.’ (intended)
- c. [*vP*<sub>CAUS</sub>-*vP*<sub>DO</sub>]-*v*<sub>PASS</sub>: serialization of [+agent] and [+agent] *vP*s under *v*<sub>PASS</sub>  
 \**lamyen-i [kkulh-i-e mek]-hi-ess-ta.*  
 noodle-NOM [boil-CAUS-LK eat]-PASS-PAST-DC  
 ‘Noodle was boiled and eaten.’ (intended)

We do not have a fully developed account for these exceptions, but the type of  $v$  seems to matter significantly in capturing the facts. In all the examples of (54), a derivational head  $v$  ( $v_{\text{CAUS}}/v_{\text{PASS}}$ ) embeds another derivational  $v$  ( $v_{\text{CAUS}}/v_{\text{PASS}}$ ), unlike the ones in (40a-c) that behave in the expected way. Specifically, causativization of causativized SVCs (54a), causativization of passivized SVCs (54b), or passivization of causativized SVCs (54c), are all banned.

These facts suggest that a derivational  $v$  head cannot be embedded under another derivational  $v$  head for some independent reason. In fact, this generalization holds in Korean, independently of the status of SVCs. Even in a simple clause with a single verb, causativization of a causativized verb, causativization of a passivized verb, or passivization of a causativized verb are not allowed (see also note 19). A periphrastic passive or periphrastic causative must to be employed to encode such an interpretation. This is illustrated with the examples in (55)-(62).

The examples in (55)-(56) show that the verb *mek* ‘eat’ can be passivized with the passive morpheme [hi], and it can also be causativized with the causative morpheme [i]. It is also possible to form a periphrastic causative of a passivized verb *mek-hi* ‘eat-PASS’, using *key ha* ‘make do’, as in (57). Importantly, however, a morphological causative of the passivized verb *mek-hi* ‘eat-PASS’ is ungrammatical, as shown in (58). Similarly, morphological causativization of the causativized verb *mek-i* is banned, as in (60). This contrasts with the grammaticality of the periphrastic counterpart in (59). As in (62), morphological passivization of a causativized verb *mek-i* is ungrammatical, in sharp contrast to the periphrastic counterpart in (61).

- (55) *Yene-ka kom-eykey mek-hi-ess-ta.*  
 salmon-NOM bear-DAT eat-PASS-PAST-DC  
 ‘A salmon was eaten by a bear.’
- (56) *Mina-ka kom-eykey yene-lul mek-i-ess-ta.*  
 Mina-NOM bear-DAT salmon-ACC eat-CAUS-PAST-DC  
 ‘Mina made a bear eat salmon (i.e. Mina fed a bear with a salmon)’

*periphrastic vs. morphological causative of a passivized predicate*

- (57) *Mina-ka yene-lul kom-eykey mek-hi-keyha-yess-ta.*  
 Mina-NOM salmon-ACC bear-DAT eat-PASS-CAUS(PERI.)-DC  
 ‘Mina made salmon be eaten by a bear.’

- (58) \**Mina-ka yene-lul kom-eykey mek-hi-i-ess-ta.*  
 Mina-NOM salmon-ACC bear-DAT eat-PASS-CAUS-DC  
 ‘Mina made salmon be eaten by a bear.’ (cf. (57))

*periphrastic vs. morphological causative of a causativized predicate*

- (59) *Mina-ka colyensa-eykey yene-lul mek-i-keyha-yess-ta.*  
 Mina-NOM trainer-DAT salmon-ACC eat-CAUS-CAUS(PERI.)-DC  
 ‘Mina caused a trainer to feed salmon (to some animal).’

- (60) \**Mina-ka colyensa-eykey yene-lul mek-i-i-yess-ta.*  
 Mina-NOM trainer-DAT salmon-ACC eat-CAUS-CAUS-DC  
 ‘Mina caused a trainer to feed salmon (to some animal).’ (cf. (59))

*periphrastic vs. morphological passive of a causativized predicate*

- (61) *Yene-ka Mina-eyuyhay kom-eykey mek-i-eci-yess-ta.*  
 salmon-NOM mina-by bear-ACC eat-CAUS-PASS(PERI.)-DC  
 ‘A salmon was eaten by a bear by Mina.’

- (62) \**Yene-ka Mina-eyuyhay kom-eykey mek-i-hi-yess-ta.*  
 salmon-NOM Mina-by bear-ACC eat-CAUS-PASS-DC  
 ‘A salmon was eaten by a bear by Mina.’ (cf. (61))

The facts presented in (55)-(62) support our conjecture that there exists an independent principle which blocks morphological causativization or passivization of an already causativized or passivized verb, and this holds generally in Korean - even in a simple clause with a single verb. At this moment, we are not sure of why a derivational  $\nu$  head cannot be embedded under another derivational  $\nu$  head, and we acknowledge that it is beyond the scope of the paper. The point is clear, however, that whatever independent principle explains the (un)grammaticality of (55)-(62) will extend to the L-SVC examples in (54), whose ungrammaticality therefore does not threaten the main points that we advance in this paper.

## 5. Cross-linguistic Perspectives

From a cross-linguistic perspective, the SVCs in Korean discussed in this paper have significantly different properties from what Baker (1989) originally called ‘true SVCs’ in Kwa languages of West Africa. In this section, we compare the strikingly distinct

properties of SVCs in Korean and West African languages, and attempt to show that they can in fact be analyzed by a unified theory of adjunction. We argue that the cross-linguistic differences in SVCs come from different adjunction sites allowed in each language, which correlates with argument sharing effects. We also attempt to show that our Matching Condition is a consequence of a general theory of predication that is independently motivated in the grammar.

### 5.1 Object Sharing Effects?

As extensively discussed in Baker (1989), “object sharing” is a core property of SVCs in West African languages. Specifically, two verbs must share the *internal argument* to form a legitimate SVC in these languages. For instance, *ti* ‘push’ and *subú* ‘fall’ in (63) must share the internal argument and thus *omọ náà* ‘the child’ is taken to be the theme of the two verbs. The agent of *ti* ‘push’, *Olú*, cannot be interpreted as an theme (subject) of the second verb *subú* ‘fall’.

(63) Yoruba (Bamgbose 1974, cited from Baker 1989:529)

*Olú ti omọ náà subú.*  
 Olu push child the fall  
 ‘Olu pushed the child down.’

Baker (1989) further shows that only an unaccusative-type intransitive verb may follow a transitive or unaccusative  $V_1$  in a ‘true SVC’ because only an intransitive verb of an unaccusative type, but not of an unergative type, may share an internal argument with the preceding verb (cf. Collins 1997, Baker and Stewart 2002, and references therein for different analyses of object sharing effects). Indeed, as illustrated in (64), combination of a transitive  $V_1$  *bú* ‘pour’ and unergative  $V_2$  *muni* ‘drink’ is impossible in Yoruba.<sup>28</sup>

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<sup>28</sup> There are exceptions to this generalization, however. Baker (1989) shows that “object sharing effects” can be suppressed when  $V_2$  takes a locative, instrumental, comitative, manner, and benefactive argument related to the direct object of  $V_1$ . Baker argues that these are only apparent exceptions and shows how to handle them in parallel with ‘true SVCs’. Baker, however, suggests that there are real exceptions to “object sharing effects”, which must be handled separately using a different structure from ‘true SVCs’. We return to the “real exceptions” in the next sub-section (see note 33).

(64) Yoruba (Carstens 1988, recited from Baker 1989:531)

\**Mo bú omi muni.*  
 I pour water drink(intr.)  
 ‘I poured water and drank.’

Interestingly enough, however, Korean SVCs do not show the “object sharing effects” which Baker (1989) takes as the core property of ‘true SVCs’. For instance, an unergative V1 and a transitive V2 may form a legitimate SVC, as in (65). This is exactly the opposite of what we observed in Yoruba (64). As illustrated in (66), the agent of the first verb *mil* ‘push’ in Korean can be the theme (subject) of the second verb *nemeci* ‘fell’, and in fact this is the most salient interpretation in Korean. This also contrasts with the Yoruba example in (63), which bans such an interpretation.<sup>29</sup>

(65) *Korean: unergative + transitive verb*

*John-i wulthali-lul ttwi-e nem-ess-ta.*  
 John-NOM fence-ACC jump-LK cross-PAST-DC  
 ‘John jumped over a fence.’ (cf. Yoruba (64))

(66) *Korean: transitive + unaccusative verb*

*Mini-ka ai-lul mil-e nemeci-ess-ta.*  
 Mini-NOM child-ACC push-LK fall-PAST-DC  
 ‘Mini<sub>i</sub> pushed a child and (she<sub>i</sub>) fell down.’ (cf. Yoruba (64))

Furthermore, the SVCs in Korean are subject to different matching constraints from the ones in West African SVCs. As discussed in section 3, the combination of a transitive V<sub>1</sub> and an unaccusative V<sub>2</sub> typically results in ungrammaticality as an SVC (e.g. (38a) and (38e)): they belong to a different [agent] class in our term (cf. section 4 for variation due to the availability of TP-adjunction). This sharply contrasts with the major claim on SVCs in West African languages made in Baker (1989). The so-called ‘true SVCs’ allows adjunction of an intransitive verb to a transitive verb only when the intransitive verb is an unaccusative one, in contrast to Korean SVCs (see Baker 1989 and Baker and Stewart 2002 for relevant examples and discussion).

<sup>29</sup> Precisely speaking, (66) is grammatical as a TP-TP adjunction structure, not as a serialized vP. Since an inchoative/unaccusative verb *nemeci* ‘fall’ is adjoined to the transitive verb *mil* ‘push’ in (66), it is not possible to form a legitimate SVC at the vP level under the Matching Condition. The only possible analysis for (66) is to assume that TP<sub>2</sub> ‘*pro* fell’ is adjoined to TP<sub>1</sub> ‘Mina pushed a child’, where Mina in TP<sub>1</sub> co-refers with *pro* in TP<sub>2</sub> (recall section 4 for discussion).

Thus, at least on the surface, Korean and West African SVCs seem to be quite different from each other and it seems that they cannot be analyzed in the same way. Moreover, our Matching Condition seems to have nothing to do with argument sharing effects in West African SVCs. We, however, argue that this is not the case. In the next section, we argue that the theory of SVCs proposed by Baker and Stewart (2002) in fact leads us to predict that the SVCs of Korean type would exist in the grammar, together with the SVCs found in West African languages. We also show that a unified theory of SVCs explains the cross-linguistic variations among SVCs as well as their systematic correlation with argument sharing effects.

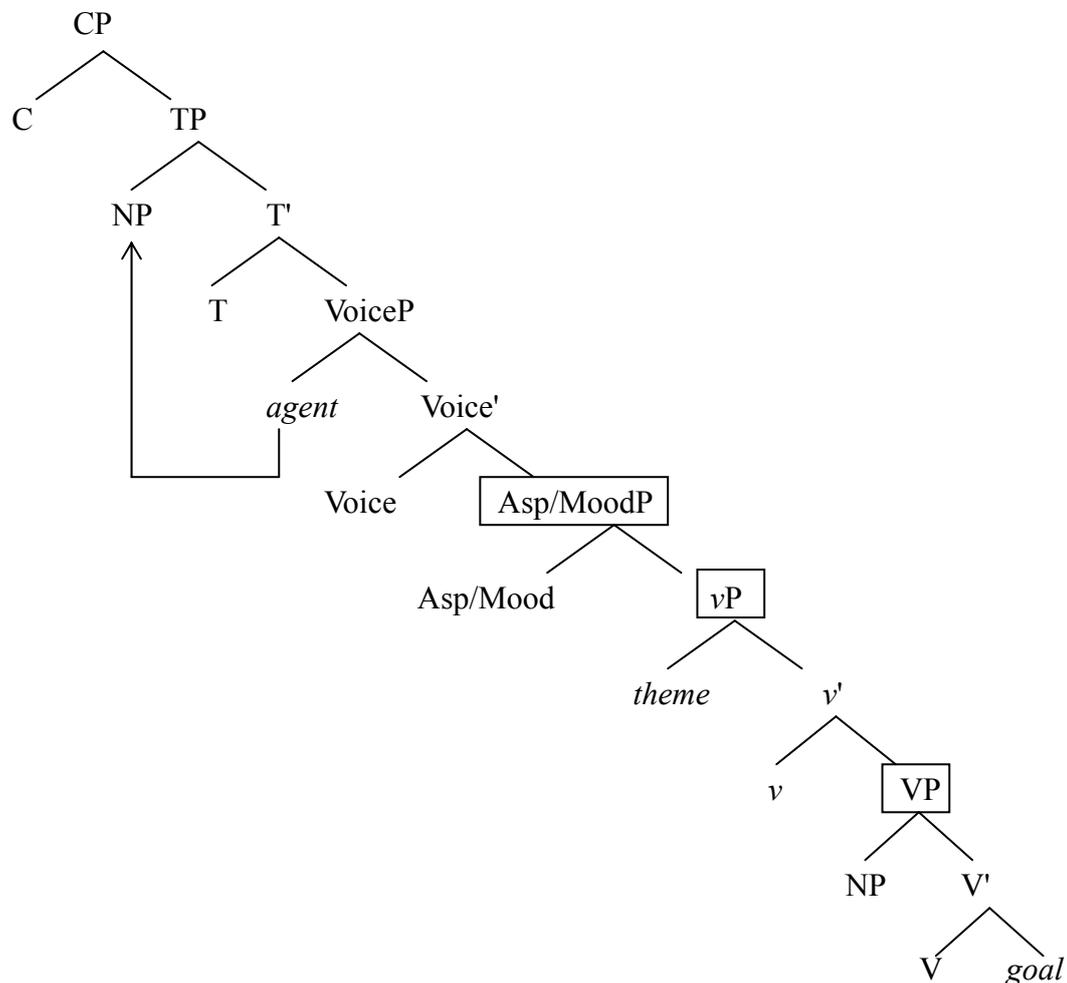
## *5.2 Towards Unified Account*

Baker and Stewart (2002) explain the core syntactic properties of SVCs in West African languages by assuming the structure in (67). They argue that the Agent role is assigned by a Voice head, whereas transitive verb forms and accusative Case are checked by a distinct lower head *v*. The theme argument is base-merged at [Spec,*v*P] below the Asp/Mood phrase.<sup>30</sup> Baker and Stewart (2002) claim that verbal adjunction may occur below Voice, but not above Voice, in West African languages, and thus that there are only three types of SVCs available in these languages.

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<sup>30</sup> Note that the *v*P in (67) is significantly different from the *v*P that we assume in this paper. The *v*P in (67) is separate from an agent-introducing head but carries the function of licensing accusative Case. Thus, the *v*P in (67) roughly corresponds to an object-licensing projection between the agent-introducing head and the lexical verb: e.g. ArgO (Koizumi 1993), AspP (Travis 1991, 2010), ProcP (Ramchand and Svenonius 2002), AspQP (Borer 2003).

(67) Basic tree: Baker and Stewart (2002)



When verbal adjunction occurs at the Asp/MoodP level, a purposive SVC is obtained, where the event denoted by the second verb is interpreted as the purpose of the first event, as exemplified in (68). When verbal adjunction occurs at the  $v$ P level, a consequential SVC is obtained, which describes composite events made up of two distinct sub-events, as in (69). Lastly, when predicate formation occurs at the VP level, a resultative SVC is formed, as in (70). The resultative SVC describes a single event with the second verb characterizing a state that the theme argument comes to be in a result of the action denoted by the first verb.<sup>31</sup>

<sup>31</sup> More precisely speaking, Baker and Stewart (2002) assume that the resultative SVCs are formed by complementation, rather than adjunction, of a VP (an unaccusative/stative VP) under  $v$  in (67) (as in English resultative *John hammered the metal flat*). Baker and Stewart show that the resultative SVCs show different characteristics from consequential or purposive SVCs, which are formed by adjunction of one transitive verbal projection into another transitive verbal projection. A reviewer notes, however, that

(68) Edo: Purposive SVCs

*Òzó ghá mièn iyánèvá lé.*

Ozo Fut find yamtwo cook

‘Ozo will find two yams to cook’

(69) Edo: Consequential SVCs

*Òzó ghá gbè èwé khièn.*

Ozo Fut hit goat sell

‘Ozo will kill the goat and sell it.’

(70) Edo: Resultative SVCs

*Òzó ghá gbè èwé wù.*

Ozo Fut hit goat die

‘Ozo will strike the goat dead.’

Baker and Stewart (2002) provide a variety of types of evidence to show that the three types of SVCs have distinct syntactic properties, which can be captured by assuming the different attachment sites for SVCs. More relevant to us, however, the three SVCs share one crucial characteristic that contrasts with Korean SVCs: “object sharing effects” are observed in all the three types of SVCs. Baker and Stewart (2002) claim that this is because all three types of SVCs in West African languages must be formed below the Voice head.

Adopting the theory of predication by Williams (1980), Baker and Stewart argue that complex predicates could be constructed by providing them with an “open position” that acts as a predicate variable. In the case of SVCs in West African, the object provides such an open position. More specifically, when the second verbal projection is adjoined to the first verbal projection (which heads the serial verb), the second verbal projection must contain an open variable which co-refers with the argument of the first verbal projection. Otherwise, two verbal projections cannot form a legitimate predicate structure.

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the three attachment sites in (67) cannot be filled at the same time, allowing multiple SVCs in one sentence. We take this a potential problem of (67) and leave it for future research how to block multiple “object sharing” in the grammar (cf. Collins 1997 for a suggestion that there is only one position for all types of serialized VPs). The main thrust of our arguments for Korean, however, is not crucially affected by this question since we are mainly concerned with adjunction on/above VoiceP here.

In other words, two verbal phrases can be stitched together only by virtue of the nouns that they share. Since all three types of SVCs are merged below Voice, the agent cannot be the shared open variable: simply, the agent does not exist in VPs,  $\nu$ Ps, or Asp/MoodPs. In contrast, the theme can be shared at the VP,  $\nu$ P, Asp/Mood levels, and all three types of SVCs must share the theme argument to be licensed as a legitimate predication structure.<sup>32</sup>

As shown in the previous section, Baker and Stewart's (2002) proposals for SVCs in West African languages cannot be directly extended to Korean SVCs. It is perfectly clear that Korean SVCs do not show "object sharing effects". The line of reasoning developed by Baker and Stewart (2002), however, naturally suggests itself that Korean SVCs may represent the fourth type of SVCs that have not been explored before extensively (cf. note 33): namely, adjunction of a VoiceP to another VoiceP.

Throughout the paper, we have argued that Korean SVCs are formed by adjunction of  $\nu$ Ps whose head determines the presence or absence of an agent. This amounts to saying that our  $\nu$ P adjunction corresponds to VoiceP adjunction in Baker and Stewart's structure (67). In fact, under Baker and Stewart (2002), there is no reason to block adjunction of VoiceP to VoiceP in the grammar. Verbal projections can be adjoined to another and form an SVC as long as they can share an open variable to form a complex predicate.<sup>33</sup>

In the case of West African SVCs seen above, the theme is the only argument that can function as the shared open variable, and thus "object sharing effects" become obligatory. In Korean SVCs, however, verbal projections higher than  $\nu$ Ps are adjoined,

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<sup>32</sup> Baker and Stewart (2002) argue that the open variable in SVCs can be *pro*, PRO, or a *wh*-variable. Specifically, the second verb of consequential SVCs takes a *pro* argument, co-referent with the theme of the first verb. The second verb of purposive SVCs contains a trace of an operator at [Spec,AspP], co-referent with the theme of the first verb. The resultative SVCs do not contain an empty category (since the resultative SVC involves a complementation structure, not an adjunction structure: see note 31), but the two verbs share the object and assign theta-role to the object simultaneously via head-raising.

<sup>33</sup> In fact, Baker (1989) and Baker and Stewart (2002) suggest that this possibility may explain the real exceptions to object sharing effects in West African languages. Baker (1989) called this *covert conjunction*, where two verbal projections are coordinated together (rather than two verbs forming co-heads of a SVC). In such configuration, both verbs could  $\theta$ -mark the subject, and the subject could be their only shared argument. Baker and Stewart (2002) show that TP-TP adjunction may be obtained in purposive SVCs in Edo, which seems to be an exception to "object sharing effects". Neither Baker (1989) nor Baker and Stewart (2002) pursue this possibility in languages other than West African, but Baker (1989) reports that such a construction may exist in Akan, Fon, Senufo languages, and Chinese (see Baker 1989: 549 for references). See also Collins (1997) for *covert I'-coordination*.

and it is rather straightforwardly expected that “object sharing” would not be required in Korean. The subject/agent (or Spec of VoiceP) may fulfill the function of the open variable to license the VoiceP complex as a legitimate predicate.<sup>34</sup>

The current claim is naturally tied into the deeper question of why the Matching Condition holds in the way it is formulated here. We have argued that Korean SVCs can be formed only when the two verbal projections belong to the same type of  $\nu$  category (*i.e.* Voice category in Baker and Stewart’s terms). This can be understood as an extension of a theory of adjunction proposed by Baker and Stewart (2002). Baker and Stewart show that *XP can be an adjunct predicate of YP only if XP and YP are comparable syntactic categories*: AspPs can be adjoined only to AspPs,  $\nu$ Ps only to  $\nu$ Ps, and TPs only to TPs, etc. By the same logic, it is expected that VoicePs can be adjoined only to VoicePs to function as an adjunct predicate in Korean.

The Matching Condition proposed in this paper is in fact a further elaboration of this claim. In this paper, we have shown that VoicePs are not adjoined to VoicePs randomly. Rather, only the same type of Voice heads ([+agent] or [-agent]) can be combined together. This means that XP can be an adjunct predicate of YP only if XP and YP are *comparable feature types* as well as *comparable syntactic categories*. On this view, the Matching Condition is not a separate principle from a theory of adjunct predication. Furthermore, it naturally follows that the legitimacy of Korean SVCs are sensitive to the characteristics of  $\nu$  (Voice) heads rather than to semantic type of lexical verbs, theta hierarchy of arguments, or simple transitivity. Since predicate adjunction (or serialization) is formed at the  $\nu$  (Voice) level, it is expected that the Matching Condition applies at the  $\nu$  (Voice) level as well.

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<sup>34</sup> While both the subject/agent and the object/theme are a possible open variable that can be shared by two verbs, the data suggest that whenever available, the agent must be shared in Korean SVCs. In the examples in (37) and (40), the highest argument *agent/causer* of two verbs must be shared whenever available while the theme argument may optionally be shared (theme-sharing becomes obligatory only when the agent is absent in the structure as in adjunction of inchoative/passive  $\nu$ Ps). This observation is also in line with that of Baker (1989) and Baker and Stewart (2002) for West African. Baker (1989) and Baker and Stewart (2002) report that when the second verb is a ditransitive, the theme (rather than the goal) must be shared by two verbs in West African consequential SVCs. Under the structure (67), the theme is base-merged at [Spec, $\nu$ P] higher than the goal within VP. In this paper, we have focused on the role of *agent sharing* in Korean SVCs, and we did not make a distinction between agent and experiencer. It remains an important future research whether they show different behaviors in SVCs.

## 6. Concluding remarks

In this paper, we have discussed the role of merger and typology of  $v$  in verbal serialization in Korean. 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 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, having broader empirical coverage than the previous studies. The evidence adduced in this paper strongly suggests that the merger of a derivational suffix (e.g. causative and passive affixes) may follow or precede verbal serialization in syntax. Thus, our study provides new empirical support for the line of analyses which maintain that the morphology and the syntax are intertwined (e.g. a model represented by Distributed Morphology).

Our arguments also provide empirical support for the finer-grained classification of  $v$  from a new area of research, verbal serialization (cf. Folli and Harley 2005, Harley 2009). In addition to  $v_{\text{CAUS}}$  and  $v_{\text{PASS}}$ , we assumed two more varieties of  $v$  heads,  $v_{\text{DO}}$  and  $v_{\text{INCH}}$ . Assuming two-layered  $v$ Ps for morphological causative and passives, we located  $v_{\text{CAUS}}$  and  $v_{\text{PASS}}$  at a higher tier, and  $v_{\text{DO}}$  and  $v_{\text{INCH}}$  at the lower. We have argued that  $v_{\text{CAUS}}$  and  $v_{\text{DO}}$  form a natural class [+agent] and introduce an external argument in its Spec while  $v_{\text{PASS}}$  and  $v_{\text{INCH}}$  belong to the other class [-agent], lacking an external argument. We have seen that the finer-grained classification of  $v$  heads is absolutely necessary to understand the condition for serialization as well as the characteristics of sub-varieties among SVCs. We have also shown that the proposed Matching Condition provides a novel account on which types of verbs may form a legitimate SVC in non-object-sharing SVC languages such as Korean.

We acknowledge, however, that many other issues remain open. We have not discussed how the shared argument reading obtains in an SVC. If SVCs indeed involve a  $v$ P- $v$ P adjunction structure, one of the  $v$ Ps should contain an empty category to license the complex predicate, but we remain agnostic about the identity of the null argument. We also kept silent about how Case is licensed in SVCs. The fundamental question still remains open concerning why languages such as Korean allow verbal adjunction at the level of VoiceP, whereas others such as the West African languages studied by Baker and Stewart (2002) and others license verbal adjunction at the lower

levels, showing object sharing effects. We believe that these issues are closely related with one another. We hope that the present study provides a useful backdrop for investigation of these questions, and for a deeper understanding of serialization across languages.

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