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# Numeral classifiers in Korean *-ki* nominalizations*

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**Barrie, Michael, Heeryun Chung, and Duk-Ho An. 2022. Numeral classifiers in Korean -ki nominalizations.** *Linguistic Research* 39(3): 499-518. This paper discusses the structure of numeral classifiers in two types of Korean *-ki* nominalizations. In the first type (NOM-*ki*), the object is a full KP, and the properties of numeral classifiers are identical to those of any full KP nominal. In the second type (GEN-*ki*), the object is a bare *n*P, and is missing the functional structure necessary for hosting numeral classifiers. As such, the numeral classifier simply adjoins to *n*P and gives rise to idiosyncratic or culturally relevant readings only. We argue that the Div head is part of the functional spine in Korean. Div is responsible for making the *n*P countable and able to semantically compose with the numeral classifier. In a full KP object (in NOM-*ki*), Div is present, and the numeral classifier composes Div+*n*P, giving rise to standard counting semantics. In a bare *n*P object (in GEN-*ki*), Div is absent. The numeral classifier cannot semantically compose with *n*P. We argue, following Harley (2009), that a non-compositional meaning can arise akin to compounds. **(Sogang University · Konkuk University)**

**Keywords** numeral classifiers, nominalization, case-marking, nominal structure, idiomatic interpretation

## 1. Introduction

This short paper discusses a novel observation on numeral classifiers in Korean nominalizations and shows how it can be captured under the analysis proposed by Barrie and Chung (2019) and Chung (2019). While one type of nominalization (NOM-*ki*, with

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nominative subjects, (1a) allows full KP objects with the usual range of meanings with the numeral classifier, the other type of nominalization (GEN-*ki*, with genitive subjects, (1b)) allows the numeral classifier on objects only in limited cases and with restricted or idiomatic meanings. For example, while (1b) refers to a specific situation that requires someone to draw two apples such as a game or a school project, (1a) has no such restriction in meaning.

(1) a. Yumi-nun [Ciswu-ka sakwa-lul twu kay kuli-ki]-lul
Yumi-TOP Ciswu-NOM apple-ACC two Cl draw-NMLZ-ACC
pala-n-ta.
want-PRS-DECL
'Yumi wants Ciswu to draw two apples.'

b. Yumi-nun [Ciswu-uy sakwa twu kay kuli-ki]-lul
Yumi-TOP Ciswu-GEN apple two Cl draw-NMLZ-ACC
tow-a-cwu-ess-ta.
help-LINK-BEN-PST-DECL
'Yumi helped Ciswu draw two apples.'

The gist of the analysis is quite simple and goes as follows. Starting with the conclusion in Barrie and Chung (2019) and Chung (2019) that the caseless object in a GEN-*ki* nominalization (*sakwa* 'apple') is a bare *n*P, we argue that it does not possess the functional structure necessary to host the numeral classifier. Instead, the numeral classifier adjoins to *n*P essentially as a compound, thus giving rise to the restricted or idiomatic readings discussed here. Before moving on, we address optional case drop on nouns. We suggest that it is the result of a phonologically null case allomorph as caseless noun in verbal constructions do not exhibit the same properties as caseless nouns in GEN-*ki* constructions.

(2) a. Minswu-ka sakwa(-lul) twu kay(-lul) kuli-ess-ta.
Minswu-NOM apple(-ACC) two Cl(-ACC) draw-PST-DECL
'Minswu drew two apples.'

There is no appreciable difference in meaning in (2) between the case-marked and caseless object. Crucially, there is no requirement that the caseless form refers to a

culturally relevant concept in which two apples are eaten. Caseless nouns in verbal constructions, however, are beyond the scope of this paper and are left for future research.

Although many studies have examined the syntactic status of numeral classifiers (Kitahara 1993; Kakegawa 2000; Watanabe 2006; Park 2009), so far as we know, no study accounts for the asymmetry in (1). We adopt Wiltschko's (2014) analysis that number (and heads in general) either project (as with number in English) or adjoin (as with number in Halkomelem, see below). We propose that Korean numeral classifiers are a constituent (#P) and appear in the specifier of a DivP. The Div head mediates the measuring interpretation of the numeral allowing the object in question to be counted in the usual way (Borer 2005). In GEN-*ki* nominalizations, however, the object is a bare *n*P, and #P adjoins to *n*P as a modifier. Since the Div head is necessary to provide a counting function for the numeral-classifier, the #P-*n*P combination is subject to idiosyncratic interpretation. In essence, it acts as a compound and is used to name a nameworthy or culturally relevant concept (Mithun 1984; Dayal 2015). We hasten to add at reviewer's behest that the Div head we assume is the same as the Div head in Borer's proposal. We differ from Borer, however, in assuming that the classifier does not instantiate the Div head in Korean. As will become clear in the discussion below, there is a diverse range in classifiers among the world's languages. While in some language the classifier can be shown to instantiate a Div head (as Borer explains), it is not the case that the classifier does so in all languages. We argue below that Korean is such a language. The reader should keep this in mind when the structures are presented below.

The rest of this paper is organized as follows. Section 2 introduces Wiltschko's (2014) diagnostics to determine whether a given linguistic object (e.g., plural marking) merges as a head or as an adjunct. Also, it discusses the status of numeral classifiers in Korean. Section 3 discusses the phenomenon of numeral classifiers inside nominalizations in more detail. In section 4, we adapt Wiltschko's proposal to the Korean numeral classifiers in nominalized constructions, and propose a slight extension to her theory of projecting versus adjoining heads. Section 5 is a brief conclusion.

## 2. Background

Korean is a classifier (Cl) language with four types of numeral classifier constructions

as illustrated in (3) (Kang 2002; Park 2008a; Choi 2011; An 2018 inter alia).

(3) a. [N Num Cl-ACC]
Chelswu-ka [chayk sey kwen-ul] ilk-ess-ta.
Chelswu-NOM book three Cl-ACC read-PST-DECL
'Chelswu read (the) three books.'

b. [N-ACC Num Cl]
Chelswu-ka [chayk-ul sey kwen] ilk-ess-ta.
Chelswu-NOM book-ACC three Cl read-PST-DECL

c. [N-ACC Num Cl-ACC]
Chelswu-ka [chayk-ul sey kwen-ul] ilk-ess-ta.
Chelswu-NOM book-ACC three Cl-ACC read-PST-DECL

d. [Num Cl-GEN N-ACC]
Chelswu-ka [sey kwen-uy chayk-ul] ilk-ess-ta.
Chelswu-NOM three Cl-GEN book-ACC read-PST-DECL

In the numeral classifier constructions in (3a-c), the nominal host precedes the numeral classifier and differs only in the position of the accusative case marker *-ul*, which is marked on the classifier in (3a), on the noun host in (3b), and on both in (3c). In (3d) there is a genitive case marker on the classifier, and the accusative case marker appears on the noun.

In the remainder of this section we introduce basic aspects of *-ki* nominalization based on the discussions in Barrie and Chung (2019) and Chung (2019). We also introduce numeral classifier constructions in Korean.

### 2.1 Nominalization in Korean

Barrie and Chung (2019) and Chung (2019) analyze the following two kinds of nominalization in Korean. The first type of nominalization, (4a), is abbreviated NOM-*ki*, following the convention in Barrie and Chung (2019) and Chung (2019) as the subject of the nominalized verb bears a nominative case. The second type, (4b), is abbreviated as GEN-*ki*, as the subject bears a genitive case.[1]

1 It is tempting to compare these facts with *-ga*/*-no* conversion in Japanese (Harada 1971; Watanabe 1996);

(4) a. Yumi-nun [Ciswu-ka sakwa*(-lul) kuli-ki]-lul
Yumi-TOP Ciswu-NOM apple-*(ACC) draw-NMLZ-ACC
pala-n-ta.
want-PRS-DECL
'Yumi wants Ciswu to draw an apple/apples.'

b. Yumi-nun [Ciswu-uy sakwa(*-lul) kuli-ki]-lul
Yumi-TOP Ciswu-GEN apple(*-ACC) draw-NMLZ-ACC
tow-a-cwu-ess-ta.
help-LINK-BEN-PST-DECL
'Yumi helped Ciswu draw an apple/apples.'

As shown in (4), there is a case asymmetry between NOM-*ki* and GEN-*ki* nominalizations, depending on the case of the subject of the *-ki* nominalization. The asymmetry is found in the presence or absence of accusative case on the object. Accusative case marking on the direct object is obligatory in the NOM-*ki* construction, (4a), while it is not allowed in the GEN-*ki* construction (4b). Crucially for the current discussion Barrie and Chung also proposed that the object in NOM-*ki* nominalizations is a full KP, while the caseless object in GEN-*ki* nominalization is a bare *n*P. We present some of the evidence here, but refer the reader to Barrie and Chung for a full discussion.

Briefly, the evidence for a full KP object in NOM-*ki* nominalization is as follows. The verb in a NOM-*ki* nominalization can appear with past tense as shown in (5a), and therefore the NOM-*ki* construction must include TP and, *a fortiori*, VoiceP. The Full KP object of the nominalized verb is assigned accusative Case by Voice. Thus, the KP object in NOM-*ki* nominalizations is expected to behave similarly to a KP object in a standard clause. On the contrary, the bare *n*P object in GEN-*ki* nominalizations is caseless as in

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however, Japanese *-ga*/*-no* conversion takes place in a completely different set of environments. Crucially, it is found in main, finite clauses in Japanese. This is incompatible with the analysis here, which relates lack of nominative case to the lack of TP. Yosuke Sato (pc) informs us of the following contrast, however, which resembles the pattern here. Observe that the genitive subject improves (but is still degraded) if the object is caseless. We leave the implications of this similarity to future research.

(i) a. *John-no saikin kane-o kasita hito-tte dare-da-kke?
John-GEN recently money-ACC lent person-as for-who-remind.me
('Who was it that John lent money to?')

b. ?John-no saikin kane kasita hito-tte dare-da-kke?
John-GEN recently money lent person-as for-who-remind.me
'Who was it that John lent money to?'

(4b) and (5b), and the absence of an accusative Case aligns with the absence of VoiceP, suggesting the GEN-*ki* construction does not contain a TP. Note the impossibility of tense marking in (5b).[2]

(5) a. Mina-nun [Yunu-ka swukcey-lul ceychwul-ha-yess]-ki-lul
Mina-TOP Yunu-NOM homework-ACC submit-do-PST-NMLZ-ACC
pala-n-ta.
hope-PRS-DECL
'Mina hopes that Yunu submitted his homework.'

b. Mina-nun [Yunu-uy swukcey ceychwul-ha(*-yess)]-ki-lul
Mina-TOP Yunu-GEN homework submit-do-PST-NMLZ-ACC
tow-a-cwu-ess-ta.
help-LINK-BEN-PST-DECL
'Mina helped Yunu submit his homework.'

The claim from Barrie and Chung, then, is that nominalized verbs can take either KP or *n*P as a complement.[3] This is actually not an unexpected result in light of the literature on pseudo noun incorporation, most analyses of which argue that the pseudo incorporated root is a bare *n*P, which we take to be a bare *n*P in the current framework (van Geenhoven 1998; Massam 2001, 2020; Dayal 2011, 2015). Crucially, what is found in the literature on pseudo noun incorporation is that verbs do not freely merge with a nominal of any size. Thus, our claim that nominalized verbs take either a KP or an *n*P complement, but not a DivP complement aligns quite naturally with the literature cited above.

What was not discussed by Barrie and Chung is the behaviour numeral classifiers in such nominalizations, which we move to next.

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2 Note in passing that English has a similar construction, which requires *of*-insertion rather than a reduced nominal, as in *Pat's reading of the novel* (see Kratzer 1996 for discussion).

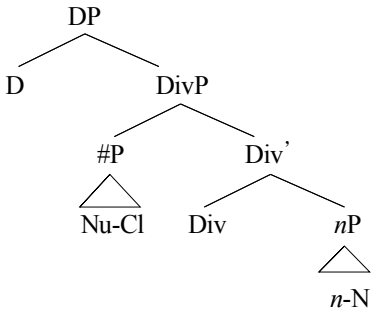
3 At the moment we have no explanation as to why only nominalized verbs have this option while regular verbs seemingly take only KP. If we consider the *n*P object as a kind of pseudo incorporation, then it patterns with West Circassian, which allows noun incorporation only with nominalized verbs and not with regular verbs (Ershova 2020).

## 2.2 Numeral classifier constructions

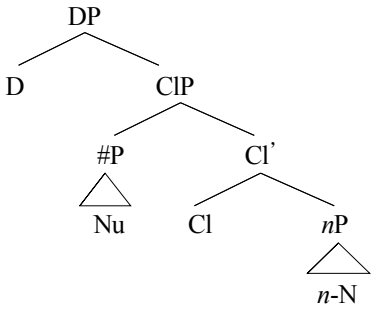
We discuss next the status of numeral classifiers in Korean. We argue that the numeral and the classifier form a constituent (Kang 2016), which we call #P for convenience. The #P appears in the specifier of a functional project that is part of the extended nominal projection. We lay the arguments out for this claim here.

There is an emerging literature comparing languages in which the classifier composes with the numeral, as in (6a), with those in which the classifier composes with the noun projecting a ClP as is traditionally assumed (Tang 1990; Bale and Coon 2014; Jenks 2017; An 2018; Little et al. To appear), as in (6b).

(6) a.




b.




While it is beyond the scope of this paper to run through the full range of diagnostics distinguishing these two types, we do note some evidence in favour of the structure in (6a) for Korean.[4] In Chinese languages, there are certain environments in which a

4 Recently, Park (2022) has argued that the classifier and numeral each head their own projection. It is unlikely that numerals are heads, however, since there is a potentially infinite number of them and numerals higher than ten in Korean are structurally complex. It is much more likely they are phrases (Ionin and Matushansky

classifier can appear independently of the numeral such as with demonstratives and (in Cantonese) with possessives.

(7) a. zen ben shu
DEM Cl book
'this book' [Mandarin]
b. ngo bun syu
I Cl book
'my book' [Cantonese]

If classifiers are required for numerals as in (6a), then the data in (7) would be surprising. Mandarin and Cantonese, then, have a traditional structure in which the classifier merges with the NP forming a ClP, (6b). The numeral appears in the specifier of ClP, so it is predicted that the classifier can appear independently of the numeral. There is no situation in Korean where a classifier appears without a numeral, suggesting that the structure in (6a) is on the right track for Korean.

Further evidence that the structure in (6a) is on the right track is afforded by conjoined numeral classifiers. Consider the following example.

(8) sakwa tases kay-na yetelp kay-lul tam-a-la.
apple five Cl-or eight Cl-ACC put-IFV-IMP
'Put five or eight apples (in something).'

Observe that the numeral and classifier are conjoined. This is possible only with the structure in (6a) and not with a conventional classifier phrase, (6b), in which the classifier and the numeral do not form a constituent.

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2018) and, as such, would occupy SpecNumP in her analysis. Park also notes that the classifier can be absent with human nouns (*haksayng twul* 'two students'). We note, however, that this is possible only for low numerals. Above thirteen, the classifier is required. We mention this because this kind of interaction between numerals and classifiers is the same kind of evidence used to support the structure in (6a). See in particular Bale and Coon (2014) and Little et al. (to appear) for more in depth argumentation.

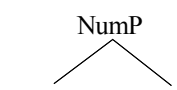
### 2.3 Adjoining versus projecting heads

We continue with a brief introduction of Wiltschko's (2008, 2014) theory of projecting versus adjoining heads. Observe that in (9a) plural marking is obligatory in English when a plural interpretation is intended. Under Wiltschko's proposal this indicates that Num merges as a projecting head giving rise to a NumP. In Halkomelem, however, plural marking is optional under a plural interpretation, (9b). Under Wiltschko's proposal this indicates that Num merges as an adjoining head, giving rise to an *n*P with an adjoined Num.

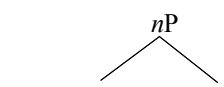
(9) a. the three boy*(-s)
b. te lhíxw swíweles/swóweles
DET three boy/boy.PL
'the three boys' (Wiltschko 2008: 648)

The proposed structures are shown below. When the Num head in English merges with *n*P it projects to form a NumP, (10a).[5] In contrast, when the pluralizer in Halkomelem merges with *n*P it adjoins and does not change the category (10b). In Wiltschko's terms it merges as a modifier.

(10) a. Projecting heads (English)




b. Adjoining heads (Halkomelem)




(Wiltschko 2014: 667)

Note further that the status of a head can differ in one and the same language. Specifically, Kim et al. (2017) argue convincingly that full KPs in Blackfoot have projecting number (as in English) and that reduced nominals (in pseudo noun

5 We update Wiltschko's original structures to include *n*P.

incorporation construction) have adjoining number (as in Halkomelem). We argue below that Korean instantiates the same variation, but with numeral classifiers. Specifically, we will argue below that full KP nominals have a DivP projection, in which the head projects, hosting the #P in its specifier, and that the *n*P object in GEN-*ki* constructions lacks DivP. Instead, #P can adjoin to *n*P. We describe this proposal in detail in section 4.

## 3. Numeral classifiers and nominalization

This section presents novel data on numeral classifiers in nominalizations in Korean. The subjects inside the nominalizations in (11) are marked with nominative case -*ka*. In the NOM-*ki* construction, accusative case marking is required on either the object noun (11a) or the classifier (11b) (or both). The object cannot appear without accusative case (11c).[6]

(11) Numeral Classifiers in NOM-*ki* nominalization

a. Yumi-nun [Ciswu-ka sakwa-lul twu kay sa-ki]-lul
Yumi-TOP Ciswu-NOM apple-ACC two Cl buy-NMLZ-ACC
pala-n-ta.
want-PRS-DECL

b. Yumi-nun [Ciswu-ka sakwa twu kay-lul sa-ki]-lul
Yumi-TOP Ciswu-NOM apple two Cl-ACC buy-NMLZ-ACC
pala-n-ta.
want-PRS-DECL

c. %Yumi-nun [Ciswu-ka sakwa twu kay sa-ki]-lul
Yumi-TOP Ciswu-NOM apple two Cl buy-NMLZ-ACC
pala-n-ta.
want-PRS-DECL
'Yumi wants Ciswu to buy two apples.'

6 A reviewer points out that (11c) is grammatical for them in casual speech. One of the authors finds it not too bad. Thus, we give the % grammaticality judgment to indicate this variation. Note, however, that in standard clauses case marking can be dropped in certain environments in casual speech. We argue below that the object in NOM-*ki* has the same structure as the object noun phrase in a standard clause. Thus, we expect similar case-drop facts to hold. The vital difference is that accusative case marking is impossible on the object inside a GEN-*ki* nominalization.

In the other kind of nominalization examined here, the subject noun inside the nominalization is marked with genitive case *-uy* (12). Unlike NOM-*ki*, the accusative case cannot appear on the object inside a GEN-*ki* nominalization. Furthermore, numeral classifiers tend to vary in their acceptability.[7,8]

(12) Numeral classifiers in GEN-*ki* nominalization

%Yumi-nun [Ciswu-uy sakwa(*-lul) twu kay(*-lul)
Yumi-TOP Ciswu-GEN apple(*-ACC) two Cl(*-ACC)
sa-ki]-lul tow-a-cwu-ess-ta.
buy-NMZL-ACC help-LINK-BEN-PST-DECL
'Yumi helped Ciswu buy two apples.'

The other difference between NOM-*ki* and GEN-*ki* involves the variety of meanings available. There is a range of judgments for the numeral classifier in GEN-*ki* nominalization, either degraded or with restricted/idiosyncratic meanings (hence the % marcation). The NOM-*ki* construction in (13a) simply refers to an event in which Minswu makes ten hamburgers. The GEN-*ki* construction in (13b), however, implies a specific activity that requires exactly ten hamburgers, such as a cooking contest.[9]

(13) a. Yengi-nun [Minswu-ka haympeke-lul yel kay
Yengi-TOP Minswu-NOM hamburger-ACC ten Cl
mantul-ki]-lul pala-n-ta.
make-NMLZ-ACC want-PRS-DECL

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7 Note that the subjects marked with a genitive case *-uy* are all interpreted as an agent in this study. We do not examine the cases in which the genitive subject is interpreted as a possessor. The presence of the accusative case *-lul* is obligatory when the genitive subject *Minswu* is interpreted as a possessor of the apple as follows:

(i) Minswu-uy sakwa*(-lul) sa-ki
Minswu-GEN apple*(-ACC) buy-NMLZ
'Buying Minswu's apple(s)'

8 The grammaticality of the sentences in (11) and (12) was tested with fifteen native Korean speakers.

9 A similar analogy in English is the following:

(i) a. John cooked three-egg omelettes.
b. John cooked omelettes with three eggs.

In (ib), John could have cooked several omelettes using only three eggs in total, or he could have cooked several omelettes, each of which is made with three eggs. (ia) only has the second reading. To wit, a three-egg omelette is understood as a specific kind of omelette.

'Yengi wants Minswu to make ten hamburgers.'

b. Yengi-nun [Minswu-uy haympeke yel kay
Yengi-TOP Minswu-GEN hamburger ten Cl
mantul-ki]-lul tow-a-cwu-ess-ta.
make-NMLZ-ACC help-LINK-BEN-PST-DECL
'Yengi helped Minswu make ten hamburgers.'

We provide here one naturally occurring example of this type. The example is used as a title for a book reading campaign to encourage students to read at least one book in a semester.[10] Here, if an accusative case is attached to the noun *chayk* 'book', the sentence becomes ungrammatical or the genitive case-marked subject is interpreted as a possessor or author of the book rather than as the reader.

(14) 2(i), 3(sam)-haknyen-uy chayk(*-ul) han kwen ilk-ki-nun...
second, third-grader-GEN book(*-ACC) one Cl read-NMLZ-TOP
'Second and third-graders' reading of one book is...'
[(*-ul) added by authors]

Thus, we have the following two asymmetries. The first is the difference in the case marking on the object (accusative in NOM-*ki*, absent in GEN-*ki*). This was dealt with at length in Barrie and Chung (2019) and Chung (2019), whose analysis we adopt here. The second asymmetry is, to the best of our knowledge, a novel observation. Namely, the observation that numeral classifiers are fully productive in NOM-*ki*, but are restricted in GEN-*ki* and may have idiosyncratic meanings.[11]

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10 http://www.gne.go.kr/upload_data/board_data/BBS_0000003/154224948650103.pdf, 2018 Report on the Practical Case Study Contest for Reading Education, p.13, accessed Aug 6, 2022.

11 A reviewer points out a third difference between NOM-*ki* and GEN-*ki*. Namely, the complement in a GEN-*ki* construction is presupposed, while it is not so in NOM-*ki*. The reviewer likens this to the same phenomenon in English.

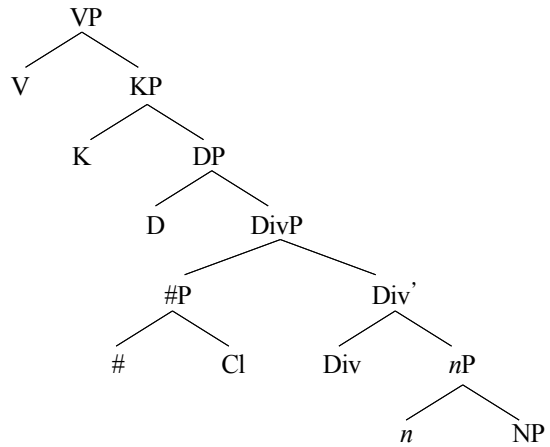
(i) a. I heard a false rumour about Bill getting fired.
b. I heard a false rumour about Bill's getting fired.

Only example (ib) presupposes that Bill was fired. Note, however, that the matrix verb in the Korean nominalizations is also different. Since it is well known that the matrix verb can affect presupposition (e.g., English think versus know), we are hesitant to conclude that it genitive case alone that gives rise to a presupposition akin to English POSS-*ing*. The issue the reviewer raises is an important one, but one that falls beyond the purview of the current discussion, we feel.

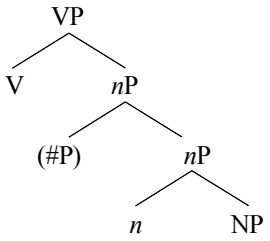
## 4. Proposal

We adopt the proposal in Barrie and Chung (2019) and Chung (2019) that the accusative marked object in a NOM-*ki* nominalization is a full KP while the caseless object in a GEN-*ki* nominalization is a bare *n*P. Furthermore, we adapt the DivP structures discussed above to give us the following structures, linear order notwithstanding.

(15) a. Object of NOM-*ki*




b. Object of GEN-*ki*




We propose that in a full KP the Div head merges as a head and hosts the #P (containing the numeral classifier) in its specifier, (15a). For the bare *n*P, however, we propose that #P optionally adjoins to *n*P as a modifier (shown in brackets), (15b). To adapt Wiltschko's proposal to the current discussion we have to reconsider what kind of category can adjoin. In her original proposal, a functional head either projects or adjoins.

Recall that in Blackfoot the Num head projects in a full nominal but adjoins in a pseudo incorporated nominal. In the current discussion, we consider the Div head. Recall that the Div head is null in Korean, but can optionally host the #P that contains the numeral and the classifier. In a full, case-marked nominal the Div head projects and the remainder of the functional projections form a complete KP. In a caseless nominal (the object in a GEN-*ki* construction) however, it is not the head of DivP that adjoins to *n*P but the specifier of DivP, namely, the #P, that does so. Thus, we propose a slight extension to her proposal in which either the head or its usual specifier can adjoin to the extended projection being formed.[12]

We begin with the straightforward case of NOM-*ki* nominalization. Given that the object in a NOM-*ki* nominalization is a full KP we expect the numeral classifier to merge into the extended nominal project in the same manner as with any full nominal, that is, in the specifier of DivP as in (15a). This gives rise to the same semantics as with ordinary full nominals, as observed.[13]

To be clear, the Div head takes the *n*P as a complement and introduces the numeral classifier in its specifier. It is the Div head that allows the numeral classifier to count the *n*P as atomic units. Although we leave an in depth formal semantic implementation of this to future work, we do offer the following remarks. Bale and Coon (2014) and Little *et al*. (To appear) propose that noun in languages in which the classifier and the numeral compose, as in (6a), and nouns in English have essentially the same denotation. The difference is in the numerals. Numerals in languages such as Korean require a classifier while numerals in languages such as English do not. However, English does require a Num head to make the noun countable (recall *three boys* versus **three boy* (9a),

12 There is precedent for the conflation of the notion of heads and specifiers (Starke 2004; Jayaseelan 2008), although we do not pursue the theoretical implications here.

13 A common question in discussing numeral classifiers in Korean is how to derive the order #-Cl-N-Case (Park 2008a; Choi 2011; An 2018; Simpson 2022).

(i) twu kwen-uy chayk-ul
two Cl-GEN book-ACC
'two books'

Although this question does not really concern the central point here, we make the following observations. Shin (2017) argues that such constructions have a different underlying structure. A full analysis of all the possible word orders in Korean numeral classifier constructions would take us too far afield. Ultimately, we are proposing that the structure of the numeral classifier construction for the object in NOM-*ki* constructions is no different from that of any other KP. Our proposal is that the caseless object in a GEN-*ki* construction has a substantially different structure, which crucially does not have the same variation as the full KP.

Borer 2005). We propose the Div head, while null in Korean, accomplishes the same task. Thus, we propose the following denotations adapting the discussion of Little *et al*. (2020, To appear). Crucially, both Korean and English nouns have the same denotations.

(16) a. ⟦[$_{nP}$ *n* chayk/book]⟧= λx. BOOK(x)
b. ⟦[$_{DivP}$ Div *n* chayk/book]⟧= λx. ATOM(x) & BOOK(x)

The bare *n*P represents a mass noun with the property of BOOK, and the DivP represents an atomic semi-join lattice with atomic (i.e., countable) entities with the property BOOK (Link 1983).

The case-marked object in Korean contains a DivP as shown in (16b). The numeral classifier appears in SpecDivP and composes with the expression in (16b). Following the discussion in Bale and Coon (2014) and Little *et al*. (2020, To appear), here are the denotions of the English numeral *two*, the Korean numeral *twul* 'two', and the Korean classifier.

(17) a. ⟦two⟧= λP λx.[P(x) & μ#(x) = 2]
b. ⟦twul⟧= λm λP λx.[P(x) & m(x) = 2]
c. ⟦Cl⟧= μ#

For Korean, the classifier composes with the numeral, and the numeral classifier composes with the DivP in (16b).

(18) ⟦[$_{DivP}$ [twul Cl] [$_{Div'}$ Div *n* chayk/book]⟧
= *λx*. ATOM(x) & BOOK(x) (*λ*m *λ*P *λx*.[P(x) & m(x) = 2] (μ#))
= *λx*. ATOM(x) & BOOK(x) (*λ*P *λx*.[P(x) & μ# (x) = 2])
= *λx*. ATOM(x) & BOOK(x) & μ# (x) = 2

The object is thus counted in the usual way as in any full KP. Since this structure does not present any complications we move next to numeral classifiers with caseless nouns in GEN-*ki* nominalizations.

Recall that the numeral classifier in GEN-*ki* nominalizations gives rise to restricted meanings. We take this to indicate that Div is not present to allow the numeral classifier to count atomic instances of *n*P in the usual way. Rather, since the numeral classifier

simply adjoins to *n*P, a non-compositional meaning must be constructed in the same way the meaning of a compound is constructed non-compositionally. Here, then, is the proposed structure for the object in (12), repeated below. Observe crucially that #P and *n*P cannot compose.

(19) a. $[_{nP}\ [_{nP}\ [_{NP}\ [_{N}$ sakwa]] *n*] $[_{\#P}\ [_{\#}$ twu] $[_{Cl}$ kay]]]
b. sakwa twu kay
apple two Cl
'two apples'
c. ⟦$[_{\#P}$ twu (two) kay (Cl)] $[_{nP}$ *n* sakwa (apple)]⟧
= λx. APPLE(x) (λm λP λx.[P(x) & m(x) = 2] (μ#))
= λx. APPLE(x) (λP λx.[P(x) & μ# (x) = 2])
= mismatch - no atomic set of apples to be counted

It is usual in compositional semantics to assume that a mismatch or failure to compose results in ungrammaticality. We suggest, however, that individual languages can choose to assign non-compositional meanings in compounds arise by the same kind of structure as in (19a).[14] We suggest a similar analysis might underlie English numeral compounds such as *two-egg omelette* and *three-hour tour*. Note the lack of number inflection on the noun that appears with the numeral. Again, we leave this for future research as it would lead us astray from the current discussion.

Before concluding it behooves us to discuss the status of the plural marker *-tul* in Korean. As is well known, this marker is optional. Kim and Melchin (2018) analyze this head as an adjoining head under Wiltschko's theory. We tentatively propose to dissociate the properties of Num from Div, such as in Dali and Mathieu (2021). We note that the plural marker in Korean is not associated with counting. Furthermore, it is found not only on nouns but on verbs (Park 2008b). These facts strongly suggest that *-tul* is dissociated from the functions of number and the numeral classifiers. We leave for future research, however, how to implement the plural marker into the analysis proposed here.

14 Harley (2009) discusses examples such as *nurse shoes* (shoes worn by nurses) and *alligator shoes* (shoes made out of alligator hide). In her analysis the root SHOE merges with the *n*P *nurse* or *alligator*. However, compounds such as *singer-songwriter* and the like indicate that both components of the compound can be internally complex as is the case proposed in (19). What our proposal shares with Harley's is that the two components of the compound are not mediated by any functional morphology and that a non-compositional meaning is assigned based on cultural or pragmatic considerations.

## 5. Conclusion

This paper has investigated numeral classifier constructions in Korean in two nominalization constructions: NOM-*ki* and GEN-*ki*. We observed that numeral classifiers are freely found on the object in NOM-*ki* nominalizations, but that with GEN-*ki* nominalizations, the numeral classifier was found only with specific, non-compositional meanings as is typical of compounds. Adopting the structures from Barrie and Chung (2019) and Chung (2019), we proposed an analysis of these facts along the lines of Wiltschko (2014). Specifically, we proposed that the numeral classifier is a constituent, #P, which appears in the specifier of DivP, a functional projection in the nominal hierarchy. The Div merges with *n*P and projects a DivP, which, as mentioned, hosts #P in its specifier. The full KP is found as an object in NOM-*ki* nominalizations. In GEN-*ki* nominalizations the object is caseless and is a bare *n*P. In this case the #P adjoins to *n*P as a modifier in the sense of Wiltschko. We proposed, following Harley, that the #P, lacking the Div head, cannot count units of the *n*P in the conventional way and that the #P-*n*P complex is interpreted non-compositionally as a compound.

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