



Number in (in)definite contexts: The case study of Korean*

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Kim, Kyumin and Seong Eun Park. 2024. Number in (in)definite contexts: The case study of Korean. *Linguistic Research* 41(1): 109-134. This paper investigates number in the nominal domain with a particular focus on Korean. English is well-known to show singular-plural number contrast unlike Korean that shows number neutral-plural contrast. Recent studies, however, have suggested that Korean has singular-plural number contrast in a certain context, namely definite context. This paper proposes that in Korean singular and plural nominals in definite contexts do not have the same structures as indefinite contexts. In a definite context, a plural nominal has a full DP structure with NumP similar to a singular nominal. In an indefinite context, on the other hand, a plural nominal has a modifying plural unlike a singular nominal with a bare nP. The proposed structures form a basis for the semantic account, i.e., the syntactic-complexity-based competition for number in Katzir (2007) adopted for Western Armenian. Assuming this syntax-based semantic account for Korean, it is shown that the different number contrasts in the two different contexts are natural consequences of the singular-plural competition. The proposed syntactic and semantic accounts for Korean suggest that a language like Korean may have two two-way number contrasts, not one two-way contrast (e.g., as in English) suggested in previous literature. This paper shows that the two two-way number contrasts are not a cross-linguistically rare phenomenon as originally suggested in the literature but possible in various languages such as Blackfoot (Algonquian), Western Armenian, and Mandarin, and so on. (Chungbuk National University)

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1. Introduction

In English, number in the nominal domain is known to have a clear contrast, namely

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singular vs. plural (cf. Corbett 2000; Borer 2005), as illustrated in (1). In (1a), the number of the noun *boy* is singular as indicated by the numeral *one*, and the plural morpheme *-s* cannot appear on the noun. In the presence of numeral such as *three* in (1b), which forces plural interpretation of the noun *boy*, the plural morpheme *-s* is obligatory. The obligatory absence and presence of the plural morpheme *-s* suggests that English has singular-plural number contrast.

- (1) a. one boy(*-s)
 b. three boy-s

By contrast, in a language such as Korean or Western Armenian, number in the nominal domain shows number neutral-plural contrast (Bale and Khanjian 2014; Kim and Melchin 2018a, b). Consider the Korean examples shown in (2).¹ In (2a), the bare singular noun *salam* ‘person’ denotes either singular or plural, i.e., being number neutral. In (2b), an example of a bare plural noun is shown: the plural morpheme *-tul* is suffixed to the noun *salam* ‘person’. The bare plural noun *salam-tul* has a plural meaning only, ‘persons’. Note that the plural morpheme *-tul* is optional as the data (2a) and (2b) together suggest: *-tul* is not necessary in indicating a plural meaning unlike English.

- (2) a. *salam*
 person
 ‘A person or persons’
 b. *salam-tul*
 person-PL
 ‘persons’/*A person (Kim and Melchin 2018a: 9)

Unlike an indefinite context such as in (2a), however, recent studies on Korean or Western Armenian have shown that in a definite context a bare singular noun has a strict singular interpretation, but no number neutral (or inclusive) interpretation is available (Bale and Khanjian 2014; Park 2020)². This is exemplified in (3) with Korean examples.

1 No parallel Korean examples to English (1) has been provided because of the differences between the two languages. For instance, Korean is a classifier language different from English and the plural morpheme *-tul* in the language has a different distribution from English plural *-s* (e.g., Kim and Melchin 2018a, b; Park 2020).

The example in (3a) provides a context for (3b) and (3c). In (3b), the bare singular noun *haksayng* ‘student’ is preceded by the demonstrative *ku* ‘that’ which indicates that the noun phrase is definite. In particular, the bare singular noun with *ku* refers to the nominal *haksayng han myeng* ‘one student’ mentioned in (3a). A plural marked noun preceded by *ku* cannot refer to the same nominal in (3a) as the ungrammaticality of (3c) suggests.

- (3) a. na-nun ecey haksayng han myeng-ul mannassta.
 I-TOP yesterday student one CL-ACC met
 ‘I met one student yesterday.’
- b. na-nun ku haksayng-ul chingchanhayssta.
 I-TOP DEM student-ACC praised
 ‘I praised that student.’
- c. *na-nun ku haksayng-tul-ul chingchanhayssta.
 I-TOP DEM student-PL-ACC praised
 ‘I praised those students.’ (Adapted from Park 2020: 180)

This phenomenon in which a bare singular noun in a definite context is interpreted as singular only is well observed across languages such as Turkish, Korean, Japanese, and Indonesian (see Kim 2005) including Western Armenian discussed in Section 2. This paper investigates syntax and semantics of number in the nominal domain in Korean with respect to two different contexts, namely indefinite and definite contexts. It is proposed that bare singular nouns have different structures in indefinite and definite contexts, and the differences in the structure play a crucial role in accounting for the observed different interpretations of bare singular nominals in indefinite and definite contexts. Specifically, building on the work on Western Armenian (Bale and Khanjian 2014), the different interpretations of bare singular nouns in the two different contexts in Korean are shown to be the consequence of syntactic-complexity-based competition in the sense of Katzir (2007) in accordance with Gricean scalar implicatures (Grice 1975; Krifka 1989; Sauerland 2003; Spector 2007; Bale and Khanjian 2014). Thus, the proposed analysis provides a novel view on the well-observed number interpretation in the nominal domain of Korean that has been under debate. In one camp (Kim and Melchin 2018a, b), it was proposed that Korean has number neutral-plural contrast, while in another camp (e.g.,

2 We use ‘number neutral’ or ‘inclusive’ interchangeably to indicate one or more interpretation of a noun without assuming any theoretical difference.

Park 2020, 2022) it was proposed that Korean has singular-plural number contrast. Under the proposed analysis in this paper, Korean has both contrasts that emerge in different structures, and each number contrast in a different context shows up as consequences of the syntactic-complexity-based competition.

The rest of the paper is organized as follows. Section 2 discusses number in (in)definite context in Western Armenian and how syntactic-complexity-based competition in Katzir (2007) along with Gricean scalar implicatures can capture the observed number contrasts in each of the contexts. Section 3 proposes the syntactic structures of nominals in Korean with respect to the observed number contrasts. The section also shows how the syntactic-complexity-based competition adopted for Western Armenian can play a role for the number contrasts in Korean: the proposed structures for Korean form a basis for the syntactic-complexity-based competition, and the observed number contrasts naturally follow from the competition. Section 4 discusses typological consequences of the current analysis. Section 5 concludes the paper.

2. Number in (in)definite contexts in Western Armenian

2.1 Number in indefinite contexts

Western Armenian, unlike English, has a bare singular noun that has number neutral meaning, as illustrated in (4):

- (4) *Dəgha vaze-ts.*
 boy(SG) run-PST
 ‘One or more boys ran.’ (Bale and Khanjian 2014: 2)

Further support for this comes from the data where a bare singular noun appears in the predicate position, as shown in (5). In (5), bare noun *dəgha* ‘boy’ can be a predicate of a singular individual ‘John’ as in (5a) and plural individuals ‘John and Brad’ as in (5b).

- (5) a. *John-ə dəgha e.*
 John-DEF boy(SG) is

‘John is a boy.’

b. John-ə yev Brad-ə dəgha en.

John-DEF and Brad-DEF boy(SG) are

‘John and Brad are boys.’ (Bale and Khanjian 2014: 3)

Western Armenian has the plural marker *-ner*. Unlike a bare singular noun discussed in (5), a noun with the plural marker indicates plural meaning only. This is illustrated in (6). The plural marked noun *dəgha-ner* ‘boys’ can be a predicate of plural individuals as in (6a), but it cannot be a predicate of a singular individual as in (6b). Note that the data (4) and (6a) together suggest that the plural marker *-ner* in Western Armenian is optional, similar to Korean discussed in Section 3.

(6) a. John-ə yev Brad-ə dəgha-ner en.

John-DEF and Brad-DEF boy-PL are

‘John and Brad are boys.’

b. *John-ə dəgha-ner e.

John-DEF boy-PL is (Bale and Khanjian 2014: 3)

The strict plural meaning of a bare plural noun is further supported by the following data in (7). In an indefinite existential sentence such as in (7), the bare plural noun *dəgha-ner* ‘boys’ has a plural meaning only.

(7) Dəgha-ner vaze-ts.

boy-PL run-PST

‘Two or more boys ran.’ (Bale and Khanjian 2014: 4)

2.2 Number in definite contexts

In a definite context, a bare noun in Western Armenian shows a strict singular meaning, as illustrated in (8a). In the presence of the definite suffix *-n* on the noun (realized as *-n* after a vowel but as *-ə* after a consonant, see (9b)), the available reading of the noun is strictly singular. This is different from a bare noun in an indefinite context which exhibits number neutral interpretation shown in the previous section. The example is

repeated as (8b) below.

- (8) a. Dəgha-n vaze-ts.
 boy-DEF run-PST
 ‘The single boy ran.’
 b. Dəgha vaze-ts.
 boy(SG) run-PST
 ‘One or more boys ran.’ (Bale and Khanjian 2014: 6)

The strict singular reading of a bare noun in a definite context is further evidenced by the numeral modification fact shown in (9). In (9a), the numeral modifier *yergu* ‘two’ modifies the definite singular noun *dəgha-n* ‘the boy’, but the sentence is ungrammatical. This suggests that the bare singular noun in a definite context denotes singular meaning only. In order to be grammatical, the noun must have the plural marker *-ner* as shown in (9b).

- (9) a. *Yergu dəgha-n vaze-ts.
 Two boy-DEF run-PST
 ‘The two single boy ran.’
 b. Yergu dəgha-ner-ə vaze-ts.
 Two boy-PL-DEF run-PST
 ‘The two single boy ran.’ (Bale and Khanjian 2014: 5)

Compare the data in a definite context in (9) with the following data in an indefinite context with the same numeral modifier in (10). The numeral *yergu* ‘two’ can modify either a bare singular (10a) or bare plural noun (10b).

- (10) a. Yergu dəgha vaze-ts.
 Two boy.SG run-PST
 ‘Two boys ran.’
 b. Yergu dəgha-ner vaze-ts.
 Two boy-PL run-PST
 ‘Two boys ran.’ (Bale and Khanjian 2014: 5)

The data in the previous section and this section suggest that in a definite context a bare singular noun in Western Armenian has a singular meaning only, in contrast to a bare singular noun in an indefinite context. Bale and Khanjian (2014) assumes the syntactic structures for bare singular and plural in an indefinite context as in (11) and definite contexts as in (12), building on the study on Turkish (Bliss 2004) which shows a similar number interpretation of nominals. Turkish is a number neutral language but a definite context forces a strict singular reading of a bare singular noun. For the purpose of this paper, we assume the structures in (11) and (12) without further argument. In the structure for plural in an indefinite context as in (11b), a phonologically null existential quantifier serves as the head D.³

- (11) a. [NP N]
 dəgha
 b. [DP D [NumP [NP N] Num]]
 \exists *dəgha -ner*
- (12) a. [DP [NumP [NP N] Num] D]]
 dəgha \emptyset *-n*
 b. [DP [NumP [NP N] Num] D]]
 dəgha -ner -ə

(Adopted from Bale and Khanjian 2014: 10)

2.3 Syntactic complexity and singular-plural competition

Unlike Western Armenian, plural nouns in English are underspecified for number. For example, as shown in (13), English plural nouns may be used to refer to a singular entity, unlike singular nouns that cannot have a plural interpretation. (13a) can be answered affirmatively if the hearer has only one child; (13b) shows that a woman who has only one child will still be able to get a tax break.

- (13) a. Do you have children?

3 In Bale and Khanjian (2014), a D head with a null existential quantifier such as in (11b) is presented in the head initial position, unlike overt Ds in the language presented in the head final position such as in (12). No discussion is provided for this difference in Bale and Khanjian (2014) and we do not further question this issue.

b. Every woman that has children will get a tax break.

(Bale and Khanjian 2014: 1)

It has been proposed that the mechanism which yields a plural interpretation for a plural noun, which is underspecified for number as shown above, is competition between the plural and the singular based on informativeness (Krifka 1989; Sauerland 2003; Spector 2007), among alternatives with pragmatically enriched meanings due to scalar reasoning (Grice 1975; Bale and Khanjian 2014)⁴. For example, *<a boy, boys>* is the scale with the singular and the plural nouns being an alternative to each other, and *boys* is more informative than *a boy* (Horn 1972). That is, *a boy* in (14a) indicates that there is at least one boy who ran and *boys* in (14b) indicates that there are at least two boys who ran. If there are at least two boys who ran, it is necessarily true that there is at least one boy who ran, but not vice versa. The hearer may calculate that the speaker would use the most informative form on the scale, following Grice's quantity maxim. If the speaker uses the singular form, then it will be implied that the speaker uses the less informative form at the expense of Grice's quantity maxim because the speaker believes that the more informative alternative, the plural, makes the proposition false. Therefore, a singular noun in English such as in (14a) has a strict singular interpretation.

(14) a. A boy ran.

b. Boys ran.

Such Gricean scalar implicatures, however, cannot explain the inclusive reading of indefinite singular nouns in Western Armenian discussed in Section 2.1 (see (3)). For instance, (15b) is an alternative to (15a), according to Grice. Grice's scalar reasoning predicts that (15a) has a strict singular interpretation, as we have seen above in English, which is erroneous.

4 Each sentence can be associated with its alternatives to calculate its relevant implicatures (Katzir 2007). In implicature analyses, it seems natural to employ alternatives, among which an appropriate implicature is chosen and communicated eventually. Semanticists often refer back to Grice (1975) discussing alternatives, but generating alternatives for an implicature does not seem specific to Grice. See Bott and Frisson (2022) for a definition of alternatives and their characteristics; see Dionne and Coppock (2022) for an overview of complexity-based alternatives.

- (15) a. *Dəgha vaze-ts.*
 boy(SG) run-PST
 ‘One or more boys ran.’
- b. *Dəgha-ner vaze-ts.*
 boy-PL run-PST
 ‘Two or more boys ran.’

Bale and Khanjian (2014) solves this problem by reinterpreting competition, adopting Katzir’s (2007) syntactic-complexity-based alternatives rather than Gricean informativeness-based alternatives. Syntactic complexity is rather an intuitive notion, which may be exhibited on a syntactic tree diagram. Katzir (2007) proposes that trees are simplified by “deletion (removing edges and nodes), [...] and substitution of one terminal element for another of the same category” (p. 678). For example, *John swims*, which may be derived from *John swims quickly* by deleting *quickly*, is less complex than *John swims quickly* because *John swims* has fewer syntactic nodes with less syntactic structure. Trees derived by such operations are less complex than, or as complex as the original structure, and such trees are entitled to be an alternative to the original structure, which leads to competition between the alternatives. What Katzir (2007) proposes is that among the alternatives, with all else being equal, as long as they are believed to be true and relevant, a structurally simpler one will be uttered.

Building on Katzir (2007) as discussed above, Bale and Khanjian (2014) accounts for the number neutrality of indefinite singular nouns in Western Armenian as follows. Recall the proposed structure (11) of the singular and plural nominals in an indefinite context, repeated as (16). The plural *dəgha-ner* in (16b) has a more complex structure than the singular *dəgha* in (16a). Under Katzir (2007)’s view, the singular in (16a) is a viable alternative to the plural in (16b), but not vice versa, since the structure of singular *dəgha* may be derived from the structure of plural *dəgha-ner* by deleting the plural marker *-ner*. Therefore, there is no competition for an indefinite singular noun form since the more complex plural form cannot be its alternative, which results in an inclusive interpretation of the singular. Competition is blocked by syntactic complexity.

- (16) a. [NP N]
dəgha
- b. [DP D [NumP [NP N] Num]]

∃ *dəgha -ner*

The strict singular interpretation of singular nouns in a definite context is also accounted for via syntactic-complexity-based competition and Gricean scalar reasoning. As we have seen above, a plural expression with *at-least-two* interpretation is more informative than a singular expression with *at-least-one* interpretation, and therefore, in accordance with Grice's quantity maxim, a more informative interpretation is communicated unless it violates the maxim of quality. Additionally, Maximize Presupposition, another criterion on which Gricean scalar reasoning is based, also predicts that an utterance with a weaker presupposition will imply that the stronger presupposition would not be satisfied (Heim 1991; Sauerland 2003; Singh 2011). In other words, when there are two expressions with the same truth conditions with both of their presuppositions satisfied, the expression with a stronger presupposition will be used.

Now, consider (17a) and (17b), the structures of (18a) and (19a).

(17) a. [DP [NumP [NP N] Num] D]]
 dəgha ∅ -n

b. [DP [NumP [NP N] Num] D]]
 dəgha -ner -ə

(18) a. Dəgha-n vaze-ts.
 Boy-DEF run-PST

b. RAN($\sigma(\{x: \text{BOY}(x) \ \& \ |x| \geq 1\})$)

(19) a. Dəgha-ner-ə vaze-ts.
 Boy-PL-DEF run-PST

b. RAN($\sigma(\{x: \text{BOY}(x) \ \& \ |x| \geq 2\})$)⁵ (Bale and Khanjian 2014: 8)

The plural structure in (17b) is a viable alternative to the singular structure (17a) since (17b) is derived by substituting the plural marker for the null head in (17a). This means that there is competition between the singular and the plural. Notice that the plural nominal in (19a) is more informative than the singular nominal in (18a) in that in cases where (19b) is true, (18b) is always true. Also, (19a) has a stronger presupposition than (18a) because (18a) presupposes that there is at least one boy and (19a) presupposes that

5 “ σ ” is a definite operator, which is a partial function that maps sets that have a unique largest member (“the generalized join of all other members”) to that member (Bale and Khanjian 2014).

there are at least two boys. According to Maximize Presupposition, with all else being equal, if there are at least two boys who ran, (18a) with a weaker presupposition will not be used, but only (19a) will be. Consequently, a plural definite will only have a plural interpretation, and a singular definite will only have a singular interpretation.

3. The analysis: Number in (in)definiteness in Korean

3.1 Number in indefinite contexts

Korean shows a similar number interpretation to Western Armenian. In an indefinite context, a bare singular noun is interpreted as either singular or plural, i.e., being number neutral (e.g., Kang 1994; Lee 2000; Kim and Melchin 2018a, b; Park 2020). As illustrated in (20a), for instance, the bare singular noun *salam* ‘person’ is interpreted as singular or plural. The same interpretation is observed with a non-human bare singular noun such as *sakwa* as in (20b).

- (20) a. *salam*
 person
 ‘a person or persons’
 b. *sakwa*
 apple
 ‘an apple or apples’ (Kim and Melchin 2018a: 9)

The number neutrality of a bare singular noun in Korean is supported by the fact that it can be modified by a numeral classifier phrase (e.g., Kang 1994; Kim and Melchin 2018a). For example, as in (21), a bare singular noun is compatible with a numeral classifier phrase denoting one or larger than one. Note that the fact in (21) is also true for a bare singular noun in Western Armenian discussed in the previous section (see (4)).

- (21) a. *sakwa han kay*
 apple one CL
 ‘one apple’
 b. *sakwa twu kay*

apple two CL
 ‘two apples’

A bare singular noun can appear with the plural marker *-tul* as shown in (22), and the available interpretation in this case is strictly plural. Importantly, the comparison between (21) and (22) suggests that the plural marker *-tul* is optional, as is well known in the literature (e.g., Kang 1994; Lee 2000; Kim and Melchin 2018a, b). As shown in example (20) above, the bare singular nouns can have a plural meaning without *-tul*, which suggests that presence of *-tul* is not necessary to indicate plural meaning: the plural *-tul* is optional in an indefinite context.

- (22) a. *salam-tul*
 person-PL
 people/*a person
 b. *sakwa-tul*
 apple-PL
 apples/*an apple

Building on this type of data on the plural *-tul* and other evidence not discussed here, Kim and Melchin (2018a, b) proposed that plural *-tul* is a modifier on a noun unlike an English type plural *-s*.⁶ The relevant structure is replicated in (23) which this paper assumes for a bare plural noun such as in (23a). Regarding the structure of a bare singular noun, the structure in (23b) is assumed by building on the previous literature (e.g., Kim 2005; Kim and Melchin 2018a, b; Park 2020, 2022).

- (23) a. [_{nP} *-tul* [plural] [_{nP} root *n*]]
 b. [_{nP} root *n*] (Adapted from Kim and Melchin 2018a: 15)

Note that the structure of a plural marked nominal in (23a) is different from Western Armenian discussed in Section 2. In Western Armenian, a plural marked noun has a full

6 Kim and Melchin (2018a) provide a range of detailed evidence for the plural *-tul* being a modifying plural not a head plural. For example, it is shown that a nominal with *-tul* cannot modify a DP or NumP but has to appear at the level of *nP*. We do not replicate relevant evidence for the purpose of the paper, and see Kim and Melchin (2018a) for detail.

DP structure as repeated as (24) below. In (24), the plural marker *-ner* realizes the Num head similar to an English plural *-s*. As this structure has the D head with a null existential quantifier, in the interaction with negation, it is predicted to show an ambiguity. This is true as illustrated in (25).

(24) [_{DP} D [_{NumP} [_{NP} N] Num]]
 \exists *dəgha -ner*

(25) a. *Dəgha-ner chi vaze-ts-in.*

boy-PL not run-PST-3PL.

‘No boys ran/Some boys didn’t run.’

b. Meaning 1: $\neg \exists x. \text{RAN}(x) \ \& \ \text{BOY}(x) \ \& \ |x| \geq 2$

Meaning 2: $\exists x. \text{BOY}(x) \ \& \ |x| \geq 2 \ \& \ \neg(\text{RAN}(x))$

(Bale and Khanjian 2014: 12)

However, as proposed in (23), a plural marked noun in Korean has a modifying plural *-tul*, which is not the same as the plural marker *-ner* that realizes the Num head in Western Armenian. This difference makes a different prediction regarding the scope with respect to negation: in Korean a plural marked noun in indefinite contexts will not show the same type of scope interaction with negation as observed in Western Armenian (25). This prediction is borne out by the data. In Korean, negation takes wide scope but not vice versa as shown in (26). Unlike Western Armenian in (25), a bare plural in Korean cannot take a wide scope over negation.

(26) *Chelswu-nun ecey haksayng-tul-ul ahn-manna-ass-ta*
 Chelswu-TOP yesterday student-PL-ACC NEG-meet-PST-DEC
 ‘Chelswu didn’t meet students yesterday.’
 (✓Not > Students, *students > Not) (Kim 2005: 55)

The lack of scope ambiguity supports the modifying plural structure in (23a). In (23a), no D head with an existential quantifier is projected, and thus the lack of scope ambiguity is accounted for. Moreover, a bare singular noun in Korean shows scope interaction with respect to negation similar to a bare plural noun. A bare singular noun takes a narrow scope with respect to negation as shown in (27). This is in contrast to English as in (28) where the noun phrase *a dog* takes a wide scope with respect to

negation.

- (27) #Kay-ka yeki iss-ko kay-ka yeki eps-ta
 dog-NOM here exist-and dog-NOM here not.exist-DEC
 ‘Dog is here and dog is not here. [literal]’
 $\exists x[\text{dog}(x) \wedge \text{here}(x)] \wedge \neg \exists x[\text{dog}(x) \wedge \text{here}(x)]$ (contradiction)
 (Kim 2005: 40)
- (28) A dog is here, and a dog is not here.
 $\exists x[\text{dog}(x) \wedge \text{here}(x)] \wedge \exists x[\text{dog}(x) \wedge \neg \text{here}(x)]$ (Krifka 2003: 3)

The similarity between a bare singular and bare plural noun in Korean with respect to the scope interaction with negation further supports the structures of both types of nouns as proposed in (23): they both lack a DP.

The structure of a bare singular noun in (23b) and a plural marked noun (23a) captures the number contrast observed in an indefinite context, namely number neutral-plural contrast. The structure of bare plural is more complex than the structure of a bare singular, as there is a plural modifier on the top of *nP*. It will be shown later in Section 3.3 that this structural difference between a bare singular and bare plural nominal plays an important role in accounting for the observed number interpretation.

3.2 Number in definite contexts

The number interpretation of nominals in definite contexts is different from indefinite contexts. Korean is an article-less language unlike English. In the language, however, definiteness can be indicated by means of the demonstrative *ku* (e.g., Park 2020; Kang 2021).⁷ To illustrate, consider the following examples in (29). In (29a), the object indicates a plural entity, *haksayng sey myeng* ‘three students’. The plural object is referred back in (29b) by the noun preceded by the demonstrative, i.e., *ku haksayng-tul*. Unlike in an indefinite context, in (29b), the plural marker *-tul* is obligatory to refer back to the plural object. Its absence results in ungrammaticality as shown in (29c).

⁷ Natural languages make distinction between unique or anaphoric definiteness (e.g., Roberts 2003; Schwarz 2009; Jenks 2018). In Kang (2021), for instance, the demonstrative *ku* in Korean is thoroughly shown to mark an anaphoric definiteness, which we assume without further discussion.

- (29) a. na-nun ecey haksayng sey myeng-ul mannassta.
 I-TOP yesterday student three CL-ACC met
 ‘I met three students yesterday.’
- b. na-nun ku haksayng-*(tul)-ul chingchanhayssta.
 I-TOP that student-PL-ACC praised
 ‘I praised those students.’
- c. *na-nun ku haksayng-ul chingchanhayssta.
 I-TOP that student-ACC praised
 ‘I praised that student.’ (Park 2020: 108)

In the ungrammatical example in (29c), the demonstrative *ku* appears with a bare singular noun. This example is grammatical when the noun with the demonstrative refers to a singular antecedent, as shown in (30a-b) below, which is a modified version of the data in (29). As shown in (30c), the plural marked noun cannot refer back to a singular antecedent. The example in (31) shows the same fact.

- (30) a. na-nun ecey haksayng han myeng-ul mannassta.
 I-TOP yesterday student one CL-ACC met
 ‘I met one student yesterday.’
- b. na-nun ku haksayng-ul chingchanhayssta.
 I-TOP that student-ACC praised
 ‘I praised that student.’
- c. *na-nun ku haksayng-tul-ul chingchanhayssta.
 I-TOP that student-PL-ACC praised
 ‘I praised those students.’
- (31) Chelswu-nun ku haksayng-ul po-ass-ta.
 Chelswu-TOP that student-ACC see-PAST-DEC
 ‘Chelswu saw that student (*those students). (Kim 2005: 89)

The data in (29) and (30-31) suggest that the demonstrative *ku* is compatible with both a plural marked noun and bare singular noun being able to refer to a plural or singular antecedent. Importantly, the number of the antecedent has to be visible on the noun via the marked plural *-tul* or unmarked form, respectively. The following data in (32) provides further supporting evidence for this conclusion. In (32a), *ku namca* ‘that

man' indicates a singular entity, and thus it has to be co-indexed with the singular pronoun *ku* 'he'. The presence of the plural *-tul* on the pronoun is ungrammatical. In (32b), the reciprocal *sero* 'each other' has to be co-indexed with the plural entity *ku namca-tul* 'those men'.

- (32) a. *ku namca_i-nun Younghee-ka ku_i(/*-tul)-lul*
 that man-TOP Y.-NOM he(-*PL)-ACC
cohaha-n-ta-ko sayngkak-ha-n-ta.
 like-PRES-DEC-COMP think-do-PRES-DEC
 'That man_i thinks that Youghee likes him_i.'
 b. *ku namca*(-tul)_i-nun sero_i-lul mywue-ha-n-ta.*
 that man(-PL)-TOP each.other-ACC hate-do-PRES-DEC
 'Those men_i hate each other_i.' (Kim 2005: 90)

The discussed data here suggests that in definite contexts number shows singular-plural contrast, which is not the same as indefinite contexts. Consequently, the previous studies proposed different structures of nominals in definite contexts indicated by the demonstrative *ku* (e.g., Kim 2005; Park 2020). Building on these studies, we propose the structure of singular and plural demonstrative nominals as follows.⁸

- (33) a. [_{DP} *ku* [_{D'} [_{NumP} [_{NP} [_{NP} N] n] Num [-plural]] D [_uNum: singular]]]
haksayng \emptyset
 b. [_{DP} *ku* [_{D'} [_{NumP} [_{NP} [_{NP} N] n] Num [+plural]] D [_uNum: plural]]]
haksayng *-tul*

8 Park (2020) proposed that a null Classifier Phrase (CLP) is projected only for a human noun and argued that it is absent in a non-human noun. We depart from Park (2020) in that the structures in (33) do not have a null CLP. Major evidence for a null CLP comes from the data where a classifier can be omitted when a human noun is counted such as in (i). However, it has been pointed out that the omission of a classifier cannot be extended to numerals that denote a large number (Kwon and Zribr-Hertz 2004; Kim 2005; Barrie et al. 2022), as shown by the data as in (ii). As with the previous studies, we treat the data such as in (i) is an exception, and an overt classifier is required in a counting context.

(i) *haksayng tases (myeng)*
 student five CL
 'five students'

(Park 2020: 183)

(ii) a. **yetelp haksayng* b. **yel haksayng* c. **selun haksayng*
 eight student ten student thirty student (Kim 2005: 45)

The demonstrative *ku* merges in the specifier of DP (e.g., Park 2020; Kang 2021). The Num head is the locus of number having a binary number feature. In the sense of Chomsky (1998), it Agrees with D in number by valuing the uninterpretable number feature on the head D. In (33a), Num with [-plural] feature values the uninterpretable number feature on D as singular. The Num head realizes with a null morpheme, \emptyset . In (33b), the Num head with [+plural] feature values the uninterpretable feature on D as plural. It is instantiated by the plural marker *-tul*.

Kim (2005) proposed similar structures to the proposed structures in (33); however, [-plural] feature on Num in Kim (2005) does not indicate a singular *per se*, but it indicates number neutral. As such, it is unclear how the Num head with feature [-plural] Agrees with the D head. At best, the D head would be valued as number neutral, which is different from the attested interpretation of a bare singular noun in a definite context (see the examples in (29) and (30)).

In order to capture the obligatory singular interpretation of a bare singular noun in a definite context, Kim (2005) proposed singular-plural competition at the level of NumP via the Semantic Polarization (34), referring to Ojeda (1998).

(34) Semantic Polarization (SP)

If a language L contains two forms α and β such that the denotation of α is a proper subset of the denotation of P, then L contains a third form P' which is homophonous with β but denotes the difference between the denotation of P and the denotation of α . (Ojeda 1998: 225)

Abstracting away from the detail, the denotation of NumP with [-plural] feature on Num is the set that consists of atomic and non-atomic entities as exemplified with the noun *haksayng* 'student' in (35a). On the other hand, the NumP with [+plural] feature for the plural noun 'students' denotes the set as indicated in (35b) (Link 1983; Schwarzschild 1996; Chierchia 1998). In this case, the plural noun 'students' (35b) is a proper subset of the number neutral noun in (35a). Thus, via the Semantic Polarization (34), the NumP with [-plural] feature denotes the set consisting of atomic entities only, i.e., {a, b, c}, which is the difference between the denotation of the singular in (35a) and the plural in (35b). Thus, the NumP projected in the bare singular noun *haksayng* 'student' has a singular interpretation.

- (35) a. [[*haksayng* ‘student’]] = {a, b, c, a+b, a+c, b+c, a+b+c}
 b. [[*haksayng-tul* ‘students’]] = {a+b, a+c, b+c, a+b+c}

The analysis of Kim (2005) may capture the strict singular interpretation of a bare singular noun in a definite context. However, it is not clear why the SP has to take place at the level of NumP, and whether the SP is a language specific process. Moreover, the SP does not clearly show that it is (in)definiteness that determines the strict interpretation of bare singulars in Korean. What is also less clear is how the proposed Agree relation between Num [-plural] and D should proceed with respect to the SP, for which no discussion has been provided. In the next section, we provide an account for the strict singular interpretation of a bare singular noun in a definite context building on syntactic-complexity-based competition in Katzir (2007).

3.3 Syntactic complexity and number interpretation in Korean

We propose that number interpretation of nouns in Korean can be analyzed in a similar fashion to Western Armenian. The syntactic structure of a bare singular in an indefinite context is a bare *nP* as repeated in (36a). A bare plural has a more complex structure with a modifier *-tul* according to Katzir (2007) as shown in (36b)—there is another *nP* in (36b), and (36a) may be derived from (36b) by deleting *-tul*. A more complex syntactic structure means it is not qualified to be an alternative to the original structure (i.e., the singular), which means there is no competition. Since there is no competition, an indefinite bare singular noun in Korean has an inclusive interpretation.

- (36) a. [_{nP} root *n*]
 b. [_{nP} *-tul* [plural] [_{nP} root *n*]]

Indefinite plurals, however, have a strict plural interpretation. Since the singular form can be derived by deleting *-tul* of the plural, it is a viable alternative to the singular, which leads to competition. (38b) is a more informative form than (37b), and therefore, the speaker would not assert (37a) if (38a) is true.

- (37) a. *haksayng-i tal-ess-ta*

- student-NOM run-PST-DEC
 ‘One or more students ran.’
 b. $\exists x.RAN(x) \ \& \ STUDENT(x) \ \& \ |x| \geq 1$
- (38) a. haksayng-tul-i tal-ess-ta
 student-PL-NOM run-PST-DEC
 ‘Two or more students ran.’
 b. $\exists x.RAN(x) \ \& \ STUDENT(x) \ \& \ |x| \geq 2$

Unlike an indefinite bare singular noun (37a), a definite bare singular noun has a strict singular interpretation as shown in (40) below in the context of (39):

- (39) na-nun ecey haksayng han myeng-ul mannassta.
 I-TOP yesterday student one CL-ACC met
 ‘I met one student yesterday.’
- (40) a. na-nun ku haksayng-ul chingchanhayssta.
 I-TOP that student-ACC praised
 ‘I praised that student.’
 b. PRAISE(speaker, ($\sigma(\{x: STUDENT(x) \ \& \ |x| \geq 1\})$))⁹

The strict singular interpretation in (40b) is also accounted for by syntactic-complexity-based competition and scalar reasoning. As proposed in the syntactic structure of definite singular (41a) and plural nominals (41b), a definite singular and a definite plural both have the same syntactic structure except that the null head in the NumP in the singular is replaced by *-tul* in the plural. According to Katzir (2007), the plural is a viable alternative to the singular in this context, and this means competition between the singular and the plural. If the singular form is asserted, it will be implied that there is a good reason that a more informative form with a stronger presupposition

9 The same definite operator “ σ ” as Bale and Khanjian (2014) is also used here for Korean data (see footnote 5). They treat the definite suffix *-n/ə* in Western Armenian as a modifier and a choice function that maps sets to the singleton set whose only member is the supremum of those sets. The null determiner is treated as a choice function that maps that singleton set to its member. This type of split interpretation of definiteness in Western Armenian is aligned with Kang (2021) in that *ku* in Korean in her analysis too is treated as a domain restrictor and then the null determiner picks out familiar individuals eventually. For the purpose of this paper, we do not further discuss semantic analyses of definites in Korean. For detail, we refer readers to Jenks (2018), Kang (2021), and Kim (2023), among others.

is not asserted, and a strict singular interpretation is communicated.

- (41) a. $[_{DP} \textit{ku} [_{D'} [_{NumP} [_{nP} [_{NP} \textit{N}] \textit{n}] \textit{Num} [-\textit{plural}]]] \textit{D} [_{iNum: \textit{singular}}]]]$
 haksayng \emptyset
- b. $[_{DP} \textit{ku} [_{D'} [_{NumP} [_{nP} [_{NP} \textit{N}] \textit{n}] \textit{Num} [+ \textit{plural}]]] \textit{D} [_{iNum: \textit{plural}}]]]$
 haksayng *-tul*

4. Consequences for typology of number contrast

The proposed account in this paper has interesting typological consequences. In Korean and Western Armenian, number in a definite context shows singular-plural contrast while number in an indefinite context shows number neutral-plural contrast. A singular-plural contrast is well attested across languages such as in English, and a number neutral-plural contrast is also well observed in the languages of the world such as Mandarin or Turkish. In fact, Korean and Western Armenian are also well known to show the latter contrast. What is cross-linguistically rare is the phenomenon in which one single language shows both contrasts of number, as discussed in Kim et al. (2017) who built their proposal on data from Blackfoot (Algonquian). Blackfoot is similar to Korean or West Armenian in that a bare singular noun denotes a number neutral interpretation and the language has a plural morpheme. Moreover, Kim et al. (2017) noted that in Blackfoot a three way number contrast – singular, number neutral, plural – appears to exist, as in Korean or West Armenian. However, they argue that this three way number contrast in Blackfoot can be “reduced to two two-way number contrasts” conditioned by the different verb types, as presented in (42). The two two-way number contrasts are unlike one two-way contrast such as in English (e.g., singular-plural contrast).

- (42) a. singular-plural contrast in the context of transitive verbs
 b. number neutral-plural contrast in the context of pseudo-transitive verbs

Singular-plural contrast is illustrated in (43), and the number neutral-plural contrast is in (44).¹⁰ In (43), the verb *oowat* ‘eat’ is a transitive verb which requires a full DP

¹⁰ Like other Algonquian languages, in Blackfoot, verbs are classified into four types in terms of transitivity and animacy (e.g., Frantz 2009; Kim et al. 2017). For the purpose of the paper, we are abstracting away

object. Blackfoot is an article-less language and the demonstrative such as *anni-* ‘that’ indicates definiteness (Frantz 2009). In (43a), the DP object of the verb indicates plural entities, i.e. *ann-iksi ni’tawaakii-iksi* ‘those chickens’. The plural marker *-iksi* on the demonstrative and the noun is obligatory. A corresponding singular object *ann-wa ni’tawaakii-wa* ‘that chicken’ is shown in (43b) and the singular suffix *-wa* has to appear on both the demonstrative and the noun.¹¹ The NP object consisting of a bare singular noun *ni’tawaakii* ‘chicken’ is not allowed with the transitive verb as shown in (43c). In the context of transitive verb, thus, relevant number contrast is singular-plural.

- (43) a. Nit-oowata-yi ann-iksi ni’tawaakii-iksi.
 1-eat.TR-3PL DEM-PL chicken-PL
 ‘I ate those chickens.’
- b. Nit-oowata-wa ann-wa ni’tawaakii-wa.
 1-eat.TR-3SG DEM-SG chicken-SG
 ‘I ate that chicken.’
- c. *Nit-oowata ni’tawaakii.
 1-eat.TR chicken
 Intended: ‘I ate one or more chickens.’

(Adapted from Kim et al. 2017: 4)

The following examples in (44) illustrate number neutral-plural contrast which is possible only in pseudo-transitive verb context. A pseudo-transitive verb in Blackfoot such as *ooyi* ‘eat’ as in (44) allows an NP object only but unlike a transitive verb (see (43)) it does not allow a full DP object. In (44a), the bare singular noun *ni’tawaakii* ‘chicken’ is marked with plural suffix *-iksi* thereby indicating plural meaning. In (44b), the same noun appears alone without a plural marker, namely being bare singular, and it indicates a number neutral interpretation, i.e., ‘one or more chickens’. In the pseudo-transitive verb context, a singular suffix *-wa* cannot appear as shown in (44c) suggesting that in this context singular-plural contrast is not possible.

- (44) a. Nit-ooyi (*anni-iksi) ni’tawaakii-iksi.

from this issue, and present data in a simplified way.

¹¹ The suffix *-wa* also marks proximity in the language, which we do not discuss for the purpose of the paper.

- 1-eat.PTR (*DEM-PL) chicken-PL
 ‘I ate chickens.’
- b. Nit-ooyi ni’tawaakii.
 1-eat.PTR chicken
 ‘I ate one or more chickens.’
- c. *Nit-ooyi ni’tawaakii-wa.
 1-eat.PTR chicken-SG
 ‘I ate a chicken.’ (Adapted from Kim et al. 2017: 4-5)

Blackfoot data such as (43)-(44) is striking: it shows similar types of number contrast to genetically unrelated languages such as Korean and Western Armenian. All of these languages show two two-way number contrasts restricted by a certain syntactic context.¹² Table 1. summarizes the number contrast pattern of these languages with respect to the contexts discussed in this paper.

Table 1. Two two-way number contrasts across languages

Contexts \ Number contrasts	Korean	Western Armenian	Blackfoot
singular-plural	Definite	Definite	Transitive
number neutral-plural	Indefinite	Indefinite	Pseudo-transitive

Importantly, the consequence of this paper suggests that two two-way number contrasts in one single language are not typologically rare unlike the first observation made in Kim et al. (2017). Rather, this paper suggests that it is a cross-linguistically well supported phenomenon particularly in languages with number neutral nouns. Not only Korean and Western Armenian discussed in this paper but also other languages such as Persian (Gomesi 2003), Laki (Northwestern Iranian) (Taghipour 2021), and Mandarin (Jenks 2018) are shown to have a strict singular interpretation of a bare singular noun in a definite context only. Otherwise, a bare singular noun in such languages shows a number neutral interpretation. What these studies have not shown is that these languages may have two two-way number contrasts conditioned by different syntactic contexts as

¹² Two two-way number contrasts may be conditioned by a different syntactic context across languages, one by the transitivity of verbs as in Blackfoot or by (in)definiteness of nominals as in Korean or West Armenian. This issue is interesting but we leave it for future research.

discussed in this paper. The proposed syntactic and semantic analysis in this paper suggests that such number contrast is highly feasible in those languages.¹³

5. Conclusion

This paper discusses the issues of number contrast in Korean. The language is known to show number neutral-plural contrast, but it is also observed that a singular-plural number contrast is possible only in definite contexts. We analyzed different number contrasts in indefinite and definite contexts by providing different structures of bare singular and plural nominals in the two contexts. In terms of semantics, it is also shown how the proposed structures participate in the syntactic-complexity-based competition and how this competition can account for the different number contrasts in the two contexts.

The proposed analysis suggests that both contrasts are relevant to number in the nominal domain of Korean, which has not been recognized in the previous studies. Interesting typological consequences are that this type of two two-way number contrasts in one language appears not to be rare as originally observed, but be available widely in languages with number neutral nouns. It remains to be seen whether this generalization is typologically possible, and, if so, what part of underlying grammar governs this type of two two-way number contrasts.

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13 Of course, it is questionable why some languages allow two two-way number contrasts but others do not. We speculate that such number contrasts are having to do with two types of plurals available in languages as also noted in Kim et al. (2017). However, this is beyond the scope of this paper, which we leave it for future research.

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