

Against Ambiguity Hypothesis on Number: Evidence from Reflexives*

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Kim, Chonghyuck. (2014). Against Ambiguity Hypothesis on Number: Evidence from Reflexives. *The Linguistic Association of Korea Journal*, 22(3), 65-85. This paper examines number marking patterns of Korean reflexives and their interpretations. Korean reflexives can be grouped into two categories based on whether they contain a pronoun; pronoun-containing reflexives and pronoun-lacking reflexives. Pronoun-containing reflexives such as *ku-casin* '3-self' and *ku-casin-tul* '3-self-PI' require their antecedents to match their number features, on a par with English reflexives, e.g., *himself/themselves*. Interestingly, however, the pronoun-lacking reflexive *caki(casin)* 'self(self)', which appears to be singular in its form, can have either singular or plural nominals as its antecedents. What is more, *caki(casin)* exceptionally induces distributivity on a plural antecedent, as noted by Huang (2001) for the Chinese reflexive *ziji* 'self'. Complicating the picture is another fact that plural marking on *caki(casin)*, i.e., *caki(casin)-tul* 'self(self)-PI', removes the exceptional distributivity inducing property of *caki(casin)*. I show that the peculiar number marking patterns of the Korean reflexives serve as a testing ground for two opposing views on optional plural marking suggested in the literature. I claim that the number marking patterns of the Korean reflexives argue against what is often called Ambiguity Hypothesis but follow from what can be called Optional NumP Hypothesis couched within the number marking system developed by Kim (2005).

Key Words: reflexives, Korean, number, ambiguity, optionality

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1. Introduction: A contrast between English and Korean

In languages such as English, a non-plural nominal can only refer to a singular individual:

(1) John met *my friend*.

My friend in (1) cannot be used to refer to a plural individual. To do so, the plural marker *s* is required, as shown in (2):

(2) John met ***my friends***.

In this type of language, plural marking is obligatory if one wants to talk about more than one entity.

Not all languages, however, behave like English. In many non-European languages such as Korean and Chinese, a non-plural nominal can be used to refer to a singular or plural individual depending on context, as shown in (3) and (4):

(3) Wuri emma-nun ***ney chinku***-lul shileha-n-ta. [Korean]
 my mother-Top my friend-Acc hate-Pres-Dc
 'My mother hates my friend/s.'

(4) Zuotian wo mai le ***shu***. [Chinese]
 Yesterday I buy Asp book
 'Yesterday, I bought one or more books.' (Rullmann and You 2003: 1)

As a result, the Korean plural marker *tul*, which removes the singular interpretation, is not required to refer to a plural entity, as shown in (5).

(5) Wuri emma-nun ***ney chinku-(tul) tuu myeong-ul*** shileha-n-ta.
 my mother-Top my friend-(Pl) two Cl_{human}-Acc hate-Pres-Dc
 'My mother hates two of my friend*(s).'

One plausible way to account for the ambiguous interpretation of non-plural

nominals in Korean-type languages is to attribute the ambiguity to the zero realization [NumP_{pl}∅] of the plural morpheme *tul*. Under this view, which I call *Ambiguity Hypothesis*, the ambiguous interpretation results from the ambiguous representations of *chinku* ‘friend’, as given in (6):

(6) [NumP_{sg} *chinku* ‘friend’] [NumP_{pl} *chinku*-∅ ‘friend’]

When the plural morpheme is realized as a zero morpheme, the noun it attaches to happens to look the same as its singular counterpart. Hence, the ambiguity follows. Crucially, under the ambiguity hypothesis, what appears to be optional is in fact not optional; plural marking appears to be optional because of the two different ways of realizing the plural feature [NumP_{pl}]. This view is essentially the position taken by Chung (2000) to account for the ambiguous interpretation of Indonesian non-plural-marked nominals. Consider the following excerpt from Chung (2000) (See Ueda and Haraguchi 2008 for a similar view):

Whereas a reduplicated noun is always construed as plural, the corresponding unreduplicated noun can be construed as singular or plural depending on context. This amounts to saying that semantically plural nouns can be realized morphologically in two ways. (Chung 2000: 165-166)

In another line of approach, however, researchers have attempted to locate the source of the ambiguity in the inherent meaning of nouns (e.g., Kim 2005). Under this view, which I call *Optional NumP Hypothesis*, NumP is only optionally projected and the ambiguous interpretation obtains when NumP is not projected as the denotation of a noun ranges over both singular and plural entities. In this approach, the ambiguity is only apparent; the ambiguous meaning is not attributed to the ambiguous representation but to the inherent meaning of a non-plural nominal. A non-plural nominal such as *chinku* ‘friend’ is simply an NP without NumP, as shown in (7):

(7) [NP *chinku* ‘friend’]

Since the denotation of *chinku* ‘friend’ ranges over both singular and plural entities, plural marking is not necessary to refer to a plural entity. Informally speaking, picking a singular entity from the denotation of the noun would lead to a singular reading, while picking a plural entity would lead to a plural reading. Under this approach, optional plural marking is due to the optional projection of NumP.

These two opposing views on number have emerged from the attempts to capture the ambiguous interpretation of non-plural-marked nominals of non-European languages, as shown above, and their attention has been exclusively restricted to the domain of contentful nouns. In this article, I show that the same debate on number can be carried over to another domain, i.e., *reflexives*, and that number marking patterns of reflexives provide a test ground for the two hypotheses on optional plural marking. I will argue that number marking patterns of reflexives pose a serious challenge to Ambiguity Hypothesis but follows from Optional-NumP Hypothesis couched within the number marking system developed by Kim (2005).

2. Reflexives and challenges to Ambiguity Hypothesis

Korean reflexives roughly fall into two classes depending on whether they contain pronouns inside them. Pronoun-containing reflexives, which I call *pronominal reflexives*, generally have the form of *pronoun+self*, e.g., *ku casin* ‘3 self’, whereas pronoun-lacking reflexives, which I call *bare reflexives*, simply have two *selves* or have only one of them, as in *caki(casin)* ‘self(self)’.

- | | | |
|---------------------------|---------------------------------|--|
| (8) | Non-plural | Plural |
| a. Pronominal reflexives: | <i>ku casin</i> ‘3 self | <i>ku casin-tul</i> ‘3 self-PI’ |
| b. Bare reflexives: | <i>caki(casin)</i> ‘self(self)’ | <i>caki(casin)-tul</i> ‘self(self)-PI’ |

As a reflexive, the bare reflexive *caki(casin)* cannot have its own referent just like English reflexives:

- (9) * **Caki(casin)**-i woa-ss-ta.
 self(self)-Nom come-Pst-Dc
 ‘*Himself came.’

It can only get its meaning from another linguistic expression, i.e., *antecedent*, as shown in (10).

- (10) **Chelswu**₁-nun **caki(casin)**_{1/*2}-(l)ul shileha-n-ta.
 Chelswu-Top self(self)-Acc hate-Pres-Dc
 ‘Chelswu hates himself.’

Interestingly, the bare reflexive *caki(casin)* ‘self(self)’ can take not just a singular antecedent, but also a plural antecedent, as shown in (11), in a manner quite similar to the way Korean non-plural-marked nominals are ambiguous. The same is true of Chinese bare reflexive *ziji*, as noted by Huang (2001):

- (11) a. **Chelswu**₁-nun **caki(casin)**₁-(l)ul calangsulewueyha-n-ta.
 Chelswu-Top self(self)-Acc be.proud.of-Pres-Dc
 ‘Chelswu is proud of himself.’
 b. **Ku ay-tul**₁-un **caki(casin)**₁-(l)ul calangsulewueyha-n-ta.
 That child-Pl-Top self(self)-Acc be.proud.of-Pres-Dc
 ‘Those children each are proud of themselves.’
- (12) a. **Zhangsan** zai kuajiang **ziji** le.
 Zhangsan at criticize self Asp
 ‘Zhangsan is praising himself.’
 b. **Tamen** you zai kuajiang **ziji** le.
 They again at praise self Asp
 ‘They are praising themselves again.’ (Huang 2001: 7)

Although the nature of ambiguity of *caki(casin)* may not be exactly the same as that of contentful bare nouns, the bare reflexive *caki(casin)* can be said to be ambiguous in number in that we need to account for how it can take a singular or plural antecedent, just as we need to explain how bare contentful nouns can refer to singular or plural entities.¹⁾

At first glance, it seems pretty straightforward for the ambiguity hypothesis to capture the fact that *caki(casin)* is compatible with both singular and plural antecedents. Assigning *caki(casin)* the [NumP_{sg}] or [NumP_{pl} ∅] feature that matches the number specification of its antecedent, as shown in (13), would easily account for the examples in (11) and (12), as illustrated in (13):

- (13) a. **Chelswu**₁-nun [NumP_{sg} **caki(casin)**₁]-(-l)ul calangsulewueyha-n-ta.
 Chelswu-Top self-Acc be.proud.of-Pres-Dc
 ‘Chelswu is proud of himself.’
- b. **Ku ay-tul**₁-un [NumP_{pl} **caki(casin)**-∅₁]-(-l)ul calangsulewueyha-n-ta.
 That child-Pl-Top self-Acc be.proud.of-Pres-Dc
 ‘Those children each *are* proud of themselves.’

Caki(casin) can take a plural antecedent due to the zero realization of the plural marker *tul*. One crucial prediction of the ambiguity hypothesis is that the overt plural morpheme *tul* should be able to appear in place of ∅, unless there is an independent morphological constraint that blocks its realization. This prediction appears to be borne out, as shown in (14).

1) One of the reviewers notes that Korean bare nouns are compatible with collective predicates, as shown below:

- (i) haksayng-i wudongcang-ey moyessta.
 student-Nom playground-Loc gathered
 ‘(The) students gathered in the playground.’

This fact, however, does not mean that *tul* can be realized as a null morpheme. According to Kim’s (2005) analysis (see also Kang (1994) for the same view), as noted in (7) in the text, Korean bare nouns denote both singular and plural entities and, as they denote plural entities, they can combine with collective predicates. The denotation of a non-plural-marked reflexive, of course, cannot be the same as that of a bare noun, as shown in (15) and (16). There are many conceivable ways to view the denotation of a non-plural marked reflexive. The assumption that I adopt here is that it is a lexical item that ranges over singular entities and turns a predicate containing it as a distributive predicate. I will not attempt to defend this assumption against its alternatives, as it goes beyond the scope of this paper.

- (14) **Ku** *ay-tul*₁-un [NumP_{pl} *caki(casin)-tul*₁]-lul calangsulewueyha-n-ta.
 That child-PI-Top self-Acc be.proud.of-Pres-Dc
 ‘Those children are proud of themselves.’

Although Ambiguity Hypothesis appears to provide a satisfactory account for the simple cases such as (11)-(14), things get grayer when we consider further data. Consider (15) and (16).

- (15) *Pwain-tul*₁-i *nampyen-tul*₂-ekey [*caki*(tul)*₁₊₂-i sangkum-ul thalkela-ko] malhayssta.
 wife-PI-Nom husband-PI-Dat self-PI-Nom prize.money-Acc win-Comp said
 ‘[Every wife]₁ told [her₁ husband]₂ that they₁₊₂ will win the prize money.’
- (16) **Ku** *ay-tul*₁-i [*caki*(tul)*₁-i wundongcang-ey moyessta-ko] malhayssta.
 That child-PI-Nom self-(PI)-Nom playground-Loc gathered-Comp said
 ‘Those children₁ said that they₁ gathered in the playground.’

When the antecedent is split, as shown in (15), *tul* must be marked overtly. Another case where *tul* is marked overtly is given in (16). When the predicate of the embedded clause is a plural seeking predicate, as illustrated in (17), *tul* is required.

- (17) * Chelswu-ka wundongcang-ey moyessta.
 Chelswu-Nom playground-Loc gathered
 ‘*Chelswu gathered in the playground.’

Under Ambiguity Hypothesis, *tul* is predicted to alternate freely with the zero plural marker \emptyset unless there is an independent morphological constraint blocking one or the other. The sentences in (13-14) and the sentences in (15-16) don’t seem to be different in such a way as to trigger a morphological constraint to block the zero realization of *tul* in (15-16) but to allow it in (13).

Another piece of evidence against Ambiguity Hypothesis comes from the comparison of the meanings of the sentences we already saw in (13b) and (14). Let us reconsider the two sentences, reproduced here as (18) and (19):

- (18) **Ku** *ay-tul*₁-un [NumP_{pl} *caki(casin)*-∅₁]-l)ul calangsulewueyha-n-ta.
 That child-PI-Top self-Acc be.proud.of-Pres-Dc
 ‘Those children *each* are proud of themselves.’
- (19) **Ku** *ay-tul*₁-un [NumP_{pl} *caki(casin)-tul*]₁-lul calangsulewueyha-n-ta.
 That child-PI-Top self-Acc be.proud.of-Pres-Dc
 ‘Those children are proud of themselves.’

Under Ambiguity Hypothesis, the meaning of the two sentences should be identical, because their sole difference lies in the morphological form of the plural marker. Surprisingly, however, the meaning of (18) is not identical to that of (19), as we can see from the translations. When the bare reflexive *caki(casin)* appears without the plural marker, as in (18), it invokes a distributive interpretation on a plural antecedent; *each of those children is proud of himself*. The sentence would not be appropriate for scenarios where the members of a group are each praising or criticizing the whole group or each other, which is known as collective reading. By contrast, when *caki(casin)* is overtly marked with *tul*, the collective reading is available as well as the distributive reading. This meaning contrast does not follow from Ambiguity Hypothesis in which the [NumP_{pl}] feature can be morphologically realized in two ways, i.e., [NumP_{pl} *tul*] or [NumP_{pl} ∅].

Given the obligatory distributive interpretation of *caki(casin)*, it is tempting to say that *caki(casin)* is always [NumP_{sg} *cakicasin*] and the distributive interpretation somehow results from the singular feature of *cakicasin*. There are, however, many reasons to reject this alternative. First of all, it is not clear why [NumP_{pl} *cakicasin*-∅] is not available in this case. That is, what blocks the zero realization of *tul*? There does not seem to be a principled answer to this question. Second, if [NumP_{sg} *cakicasin*] can take a plural antecedent, the opposite case, i.e., [NumP_{pl} *cakicasin-tul*] taking a singular antecedent, is predicted to be possible. Contrary to this prediction, the overt plural-marked reflexive cannot take a singular antecedent, as shown in (20).²⁾

2) If we assume, as one of the reviewers notes, that *caki(casin)* is bound by the inherently singular null operator ‘each’, my argument in (20) does not necessarily go through. However, if we assume, as I do in the text, that *caki(casin)* with singular feature can take a plural antecedent, this can be taken to mean that the Korean reflexive is not required to

- (20) * **Chelswu**₁-nun [NumP_{pl} **caki(casin)-tul**]₁-ul calangsulewuyha-n-ta.
 Chelswu-Top self(self)-Pl-Acc be.proud.of-Pres-Dc
 ‘Chelswu is proud of selves [literal].’

Furthermore, if the non-plural form *cakicasin* always has the singular feature [NumP_{sg} *cakicasin*] and somehow can take a plural antecedent, we predict that pronominal reflexives (pronoun-containing reflexives) should also be able to take plural antecedents in line with *cakicasin*. Contrary to this prediction, however, non-plural-marked pronominal reflexives can only have singular antecedents, as shown in (21a) and (21c). Note also that plural-marked pronominal reflexives can only take plural antecedents in line with (20).

- (21) a. **Chelswu**₁-nun [**ku-casin**]₁-ul cohaha-n-ta.
 Chelswu-Top he-self-Acc like-Pres-Dc
 ‘Chelswu likes himself.’
- b. ***Chelswu**₁-nun **ku-casin-tul**₁-ul cohaha-n-ta.
 Chelswu-Top he-self-Pl-Acc like-Pres-Dc
 ‘*Chelswu likes themselves.’
- c. ***Ku ai-tul**₁-un **ku-casin**₁-ul cohaha-n-ta.
 That child-Pl-Top he-self-Acc like-Pres-Dc
 ‘*Those children like himself.’
- d. **Ku ai-tul**₁-un **ku-casin-tul**₁-ul cohaha-n-ta.
 That child-Pl-Top he-self-Pl-Acc like-Pres-Dc
 ‘Those children like themselves.’

The examples in (21) strongly suggests that invoking the [NumP_{sg}] feature for *caki(casin)* is not tenable.

To sum up, the number marking patterns of Korean reflexives strongly argue against Ambiguity Hypothesis. Assigning the null plural marker [NumP_{pl} ∅] to *caki(casin)* brings up a serious question as to when the null form can alternate with the overt *tul*, as there are cases where only overt forms are allowed, as shown in (15) and (16). No principled answer seems to be available; there are

match its antecedent in number, which in turn logically predicts that *caki(casin)-tul* can take a singular antecedent.

apparently no morphological reasons to block the zero realization of the plural feature in (15) and (16) but allow it in (13b). Furthermore, the fact that a sentence with *caki(casin)* is different from its counterpart with *caki(casin)-tul* in their meaning constitutes another strong argument against Ambiguity Hypothesis. Even if one claims that the non-plural-marked *caki(casin)* is always singular, as in [NumP_{sg} *caki(casin)*], it does not fare any better, as we explored above. Thus, I conclude that assigning any number feature to *caki(casin)* lead to a problem one way or another.

3. Optional NumP Hypothesis

We have seen that assigning either the [NumP_{sg}] or [NumP_{pl} ∅] feature to *caki(casin)* leads to a problem. This suggests that the source of the problem is the projection of NumP. Unlike Ambiguity Hypothesis in which one of the number features is assigned to *caki(casin)*, NumP is considered to be projected optionally in Optional NumP Hypothesis. Hence, Optional NumP Hypothesis does not face the same problems that Ambiguity Hypothesis faces. However, without a tightly constrained system which predicts when to project NumP, Optional NumP Hypothesis would suffer from problems of other sort. Kim (2005) proposes such a tightly constrained number marking system which predicts when NumP is projected in Korean. A brief introduction of his theory is therefore in order before we delve into the observed data.

3.1. Kim (2005)

As mentioned at the beginning, Korean non-plural nominals are generally interpreted as singular or plural:

- (22) Chelswu-nun ecey ***chinku***-lul manna-ss-ta.
 Chelswu-Top yesterday friend-Acc meet-Pst-Dc
 ‘Chelswu met a friend/friends yesterday.’

However, it is not the case that Korean non-plurals are always ambiguous

between singular and plural. As noted by Kang (1994) and Kim (2005), they are unambiguously interpreted as singular in a demonstrative context, as shown in (23).

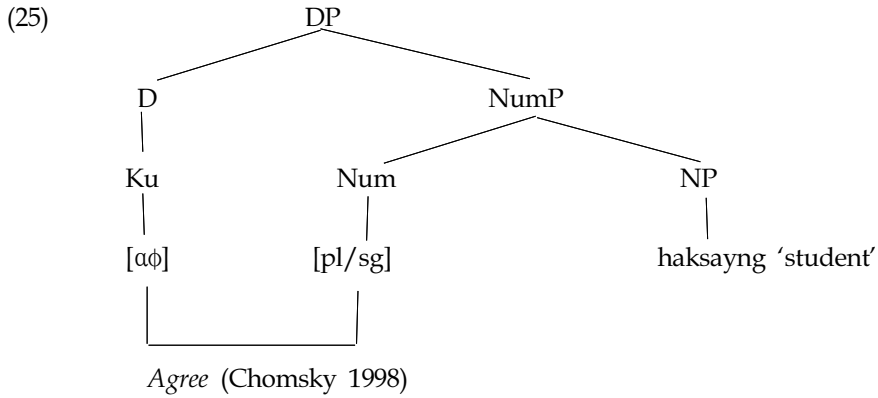
- (23) Chelswu-nun *ku/i/ce* *haksayng-ul* po-ass-ta.
 Chelswu-Top that/this/that student-Acc see-Pst-Dc
 ‘Chelswu saw that/this student (*these students).’

The non-plural noun *ku haksayng* ‘that student’ can only refer to a singular student, as the translation in (23) shows. Consequently, plural marking is required in order to refer to a plural individual. This is illustrated in (24).

- (24) Chelswu-nun *ku/i/ce* *haksayng-tul-ul* po-ass-ta.
 Chelswu-Top that/this/that student-Pl-Acc see-Pst-Dc
 ‘Chelswu saw these students.’

When the subject *Chelswu* saw more than one student, we cannot drop the plural marker *tul* in (24).

In Kim’s theory, NumP is not projected unless it is forced to. In non-demonstrative contexts, nothing forces NumP to be projected except the overt plural marker *tul*. Hence, non-plural-marked nominals are always NPs, and they are interpreted ambiguously since their denotations range over both singular and plural entities. In demonstrative context, however, demonstratives, which occupy the D position, force D to be projected. The projection of D, in turn, means the projection of NumP, as D comes with an uninterpretable number feature that needs to be checked off by *agreeing* with an interpretable number feature in NumP. Since NumP is always projected whenever there is an overt D element, number marking is obligatory in demonstrative contexts. This accounts for (23) and (24), as shown in (25):



Ku in (25) comes with an uninterpretable/unvalued number feature that needs to be checked off/valued by *agreeing* with an interpretable/valued number feature in NumP, which means that NumP is projected whenever there is an overt D. When NumP comes with singular feature, we get (23), which receives singular interpretation. When it comes with plural feature, we get the opposite case in (24), which receives plural interpretation.

3.2 Ambiguity of Bare Reflexives and Non-ambiguity of Pronominal Reflexives

Given the number marking system, we can now turn to discuss the data that were shown to be problematic for Ambiguity Hypothesis. Let us first consider the ambiguity of the bare reflexive *caki(casin)* 'self(self)'. Under Optional NumP Hypothesis, *caki(casin)* is simply a noun phrase without the higher projection NumP, as shown in (26).

(26) [NP *caki(casin)*]

Since there is no NumP projected, it can take a singular or plural antecedent as its antecedent without a mismatch in number.

(27) a. ***Chelswu***₁-nun ***caki(casin)***₁-(l)ul calangsulewueyha-n-ta. [Korean]
 Chelswu-Top self(self)-Acc be.proud.of-Pres-Dc
 'Chelswu is proud of himself.'

- b. **Ku** *ay-tul*₁-un **caki(casin)**₁-(l)ul calangsulewueyha-n-ta.
 That child-PI-Top self(self)-Acc be.proud.of-Pres-Dc
 ‘Those children each are proud of themselves.’
- (28) a. **Zhangsan** zai kuajiang **ziji** le. [Chinese]
 Zhangsan at criticize self Asp
 ‘Zhangsan is praising himself.’
- b. **Tamen** you zai kuajiang **ziji** le.
 They again at praise self Asp
 ‘They are praising themselves again.’ (Huang 2001: 7)

This explains why Korean *caki(casin)* and Chinese *ziji* are compatible with antecedents of either number. The hypothesis that the bare reflexive *caki(casin)* is an NP leaves open the possibility that a pronominal element which occupies D can co-occur with *caki(casin)*, though this possibility is not something that must exist. For a reason which I don’t quite understand, speakers rarely use the pronouns *ku* ‘3 masc’ and *kunye* ‘3 fem.’ with *cakicasin* without dropping *caki*. However, it is possible to use the pronouns without dropping *caki*, as shown in (29).

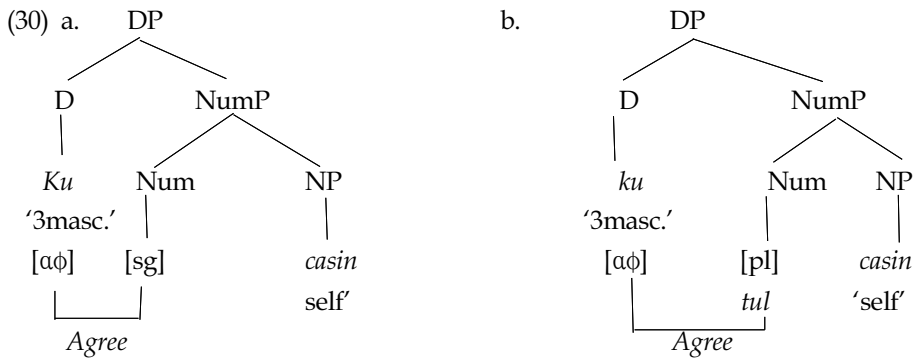
- (29) a. *ku cakicasin* ‘3masc.-self.self’
 b. *kunye cakicasin* ‘3fem.-self.self’

This supports the claim that *caki(casin)* is an NP, not a DP.³⁾

The number marking pattern that pronominal reflexives such as *ku casin* ‘3masc. self’ exhibits also falls out straightforwardly from Kim’s number marking system. The pronominal reflexive contains pronoun *ku* inside it. Under

3) A reviewer notes that *caki*, unlike *casin*, is often analyzed in the literature as a pronominal and *cakicasin* as a combination of pronominal *caki* and pure anaphor *casin*, which appears to argue against my present analysis of *cakicasin*. It may be plausible to analyze *caki* as a pronominal, as it does not conform to my test of NP-status above, i.e., **ku-caki*. The fact that *caki* may be a pronominal, however, does not necessarily mean that *caki-casin* is a DP, for it is compatible with *ku*, as was shown in (29) in the text. Even the claim that *caki* is a pronominal has been challenged in the literature. For instance, Han and Storoshenko (2009) argue against Cole et al’s (1990) pronominal analysis of *caki* and analyze it as a plural bound variable, (= an anaphor).

the standard assumption in the literature, since at least Abney (1987), that a pronoun projects DP, the pronoun *ku* ‘he’, occupies D position. Given that the projection of D entails the projection of NumP in Kim’s theory, since an uninterpretable number feature in D must be checked off by an interpretable number feature under Num in order for the derivation to converge, we would have a structure like the ones in (30) for the pronominal reflexives *ku casin* ‘3masc. Self’ *ku casin-tul* ‘3masc. Self-Pl’.



Since NumP is always projected in pronominal reflexives due to the presence of pronoun, a non-plural-marked *ku casin* always has the singular [NumP_{sg} *kucasin*] feature, whereas its plural counterpart must be marked by *tul*, which is the realization of [NumP_{pl}] feature.⁴⁾ Given the obligatory projection of NumP in pronominal reflexives, we expect number features of pronominal reflexives to agree in number with those of their antecedents. This is precisely what happens as we have already seen in the examples in (21), reproduced here as (31):

- (31) a. **Chelswu**₁-nun [ku-casin]₁-ul cohaha-n-ta.
 Chelswu-Top he-self-Acc like-Pres-Dc
 ‘Chelswu likes himself.’

4) There are two possible analyses of how *casin* combines with *tul*. We can assume that *casin* attaches to *tul*, presumably in PF, as *tul* is a bound morpheme. Alternatively, we can assume that *casin-tul* comes out of the lexicon as a unit and checks off number feature later on in the syntax. It appears that my analysis of reflexives does not hinge on the choice between these two analyses.

- b. **Chelswu*₁-nun *ku-casin-tul*₁-ul cohaha-n-ta.
 Chelswu-Top he-self-Pl-Acc like-Pres-Dc
 ‘*Chelswu likes themselves.’
- c. **Ku ai-tul*₁-un *ku-casin*₁-ul cohaha-n-ta.
 That child-Pl-Top he-self-Acc like-Pres-Dc
 ‘*Those children like himself.’
- d. *Ku ai-tul*₁-un *ku-casin-tul*₁-ul cohaha-n-ta.
 That child-Pl-Top he-self-Pl-Acc like-Pres-Dc
 ‘Those children like themselves.’

Take (31c) for example. Unlike the bare reflexive *cakicasin*, the pronominal reflexive *kucasin* has the [sg] feature. This singular feature must be in agreement with that of its antecedent *ku aitul*. Since the antecedent is plural which conflicts with the pronominal’s singular number feature, they cannot co-refer (or be bound). Without an antecedent to get its meaning from, the reflexive fails to receive interpretation, leading to the ungrammaticality. (31b) can be explained in the same way.

In sum, the number marking patterns exhibited by pronominal and bare reflexives, which were shown to be problematic for Ambiguity Hypothesis, follows from Optional NumP Hypothesis couched within Kim’s (2005) theory of number.

Now that we have explained the contrast between bare reflexives and pronominal reflexives with respect to number marking, let us move on to the remaining important issue concerning the interpretation of bare reflexives.

3.3 Distributivity and Bare Reflexives

Recall that the non-plural-marked bare reflexive *caki(casin)* induces a distributive reading on a plural antecedent. Reconsider (32) and (33).

- (32) *Ku namca-tul*₁-un [NumP_{pl} *caki(casin)*]-(-l)ul calangsulewueyha-n-ta.
 That man-Pl-Top self-Acc be.proud.of-Pres-Dc
 ‘Each of those men is proud of himself’

- (33) **Ku namca-tul**_i-un [NumP_{pl} **caki(casin)-tul**]_i-lul calangsulewueyha-n-ta.
 That man-Pl-Top self-Acc be.proud.of-Pres-Dc
 ‘Those men are proud of themselves.’

Caki(casin) is possible only when each of those men is proud of himself; John is proud of John, Tom is proud of Tom, etc. It cannot be used when John is proud of Tom, John is proud of the group, or the group is proud of the group, etc. which can be called collective readings. To obtain the collective readings as well as the distributive reading, plural marking is required as shown in (33).

Huang (2001) observes the same distributivity with respect to Chinese *ziji*.

- (35) **Tamen** you zai kuajiang **ziji** le.
 They again at praise self ASP
 ‘Each of them is praising himself/herself.’ [Huang 2001: 7]

Ziji only allows the distributive reading in (35) on a par with Korean *caki(casin)*. In order to explain the distributivity inducing property of *ziji*, Huang argues that *ziji* undergoes a head-movement at LF and adjoins to a c-commanding predicate to form a reflexive predicate, as shown below.


- (36) **Tamen** you zai *ziji*_i-kuajiang *t*_i le.
 They again at self-praise ASP
 ‘Each of them is praising himself/herself.’

Just as English lexical reflexive predicates (self-predicates) induce distributivity on a plural antecedent, as shown in (37), the sentence with *ziji* only has distributive interpretation.

- (37) a. By *self-inflicting* these wounds, they tried to win our sympathy.
 b. Their *self-appraisals* were rather self-serving.
 c. They are overly *self-criticizing*. [Huang 2001: 13]

Adopting Huang’s theory for *ziji*, I propose that Korean *caki(casin)* undergoes a head-movement at LF and adjoins to a predicate *t* to form a reflexive predicate, as

shown in (38):

- (38) **Ku** **namca-tul**₁-un t_i cakicain_i-calangsulewueyha-n-ta.
 That man-Pl-Top selfself-be.proud.of-Pres-Dc
 'Each of those men is proud of himself.'
- 

In line with the Chinese and English self-examples in (36) and (37), Korean *caki(casin)* induce distributivity on its plural antecedent.

As for the question why *tamen-ziji* 'themselves' does not force distributivity on a plural antecedent, Huang suggests that a compound reflexive such as *ta-ziji* or *tamen-ziji* cannot undergo head-movement to adjoin to a predicate. Notice that distributivity is not an issue with singular *ta-ziji* since it cannot take a plural antecedent in the first place. However, being a compound does not seem to prevent a reflexive from moving. Notice that Korean *caki(casin)* itself is a compound consisting of two *selfs*. Therefore, if the hypothesis that *caki(casin)* moves at LF to form a reflexive predicate is correct, it cannot be the status of being a compound that prevents *tamen-ziji* from moving. In this connection, recall the fact that the Korean plural-marked *caki(casin)-tul* does not force distributivity on a plural antecedent. The minimal difference between *caki(casin)* and *caki(casin)-tul* is the projection of NumP. So, I propose that functional categories projected above [NP *cakicasin*] blocks the movement of the reflexive *caki(casin)*, probably for the same reason plural marked *selves* cannot make a reflexive predicate in English.⁵⁾

- (39) a. *By *selves-inflicting* these wounds, they tried to win our sympathy.
 b. *There *selves-appraisals* were rather self-serving.
 c. *They are overly *selves-criticizing*.

Of course, *ziji* cannot move out of *tamen-ziji* since it has many functional

5) As a reviewer notes, it is an important matter to understand why a functional projection above NP blocks the movement of self. Although I do not have a good explanation for this issue, if Huang's theory of self is correct and (39) is due to the plural marker *s*, it must be the case that a functional category blocks the movement of self.

projections projected above *ziji*, at least D for *ta* NumP for *men*.⁶⁾ Moving the whole expression is not an option since it is a phrasal movement.

The movement hypothesis also account for why the non-plural *caki(casin)* is excluded in certain cases. Let us reconsider (15), reproduced here as (40).

- (40) **Pwain-tul*_{1-i} *nampyen-tul*_{2-ekey} [*caki*_{1+2-ka} sangkum-ul thalkela-ko] malhayssta.
 wife-PI-Nom husband-PI-Dat self-Nomprize.money-Acc win-Comp said
 '[Every wife]₁ told [her₁ husband]₂ that they₁₊₂ will win the prize money. [intended]'

As usual, *caki(casin)* would move to adjoin to the matrix verb *malhayssta* 'said', as shown below.

- (41) **Pwain-tul*_{1-i} *nampyen-tul*_{2-ekey} [*t*_i sangkum-ul thalkela-ko] *cakicasin*_i-malhayssta.
 wife-PI-Nom husband-PI-Dat prize.money-Acc win-Comp self-said
 '[Every wife]₁ told [her₁ husband]₂ that they₁₊₂ will win the prize money.'

Since one of the split antecedents, the PP, is hierarchically lower than the moved *cakicasin* (Larson 1988), it is not c-commanded by one of its antecedents thereby leading to ungrammaticality; besides, *namyentul* 'husbands' is embedded inside PP and thus cannot c-command outside the PP. Its plural counterpart *cakicasin-tul*, which does not undergo movement, does not suffer from the same problem. Hence (42) is fine.

- (42) *Pwain-tul*_{1-i} *nampyen-tul*_{2-ekey} [*caki-tul*_{1+2-i} sangkum-ultalkela-ko] malhayssta.
 wife-PI-Nom husband-PI-Dat self-PI-Nom prize.money-Acc win-Comp said
 '[Every wife]₁told[her₁husband]₂thatthey₁₊₂willwintheprizemoney.'

Another case that the non-plural-marked form is not allowed was illustrated in (16), repeated here as (43).

6) It is not immediately clear what the exact structure of the Chinese reflexive *tamen-ziji* is. I assume, for clarity, that it has the same structure as the Korean *ku-casin-tul* and that the different ordering of the plural marker and *self* is due to their language-specific morphological requirements.

- (43) * **Ku ay-tul₁-i** [caki₁-ka wundongcang-ey moyessta-ko] malhayssta.
 That child-PI-Nom self-(PI)-Nom playground-Loc gathered-Comp said
 ‘Those children₁ said that they₁ gathered in the playground [intended meaning].’

Caki(casin) moves to adjoin to the matrix verb, yielding the LF structure in (44).

- (44) * **Ku ay-tul₁-i** [t_i wundongcang-ey moyessta-ko] cakicasin₁-malhayssta.
 That child-PI-Nom playground-Loc gathered-Comp self-self-said
 ‘Those children₁ said that they₁ gathered in the play ground [intended meaning].’

Since the moved *cakicasin* turns the matrix predicate into a distributive predicate, (43) would have the following semantic representation in (45), which is paraphrased in (46) in English.

- (45) * $\forall x$ [those children (x) & |x| = 1 \rightarrow x said x gathered in the playground]
 (46) *Each of those children₁ said that [he/she]₁ gathered in the playground.

Since a single person cannot *gather in the playground*, (43) sounds odd. Just as (46) cannot receive proper interpretation, the representation in (45) cannot receive proper interpretation. Hence, *cakicasin* is excluded. In contrast to the non-plural form, *cakicasin-tul* does not move but remains in its place. Thus, the plural counterpart of (43) in (47) would have the semantic representation in (48), which is equivalent to (49).

- (47) **Ku ay-tul₁-i** [caki(casin)tul₁-i wundongcang-ey moyessta-ko] malhayssta.
 That child-PI-Nom self-(PI)-Nom playground-Loc gathered-Comp said
 ‘Those children₁ said that they₁ gathered in the playground [intended meaning].’
 (48) λx [x said x gathered in the playground] (those children)
 (49) *Those children₁* said that *they₁* gathered in the playground.

Since those children who gathered in the playground is a plural entity, (47) receives a proper interpretation.

In this section, we analyzed the number marking patterns of Korean reflexives. The non-plural bare reflexive *cakicasin* is compatible with antecedents of either number, because it is just an NP without NumP. Other reflexives

which project NumP, however, have to match their antecedents in number. *Caki(cain)*, unlike all the other reflexives, moves and adjoins to a main predicate to form a reflexive predicate. This movement induces distributivity on a plural antecedent. The movement analysis also accounts for why *caki(casin)* is not allowed when the meaning of a sentence in which *caki(casin)* appears is incompatible with distributive interpretation. All the other reflexives do not undergo movement. Hence, these expressions do not impose distributivity on their plural antecedents.

4. Conclusion

In this paper, we examined the number marking patterns of Korean reflexives. Ambiguity Hypothesis which claims that the plural morpheme *tul* can be realized in two ways was shown to have numerous problems. All the problematic cases for Ambiguity Hypothesis were shown to follow from Optional NumP Hypothesis which claims that NumP is projected only when forced, coupled with Huang's (2001) movement analysis of *ziji*.

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