Interpretation of Korean Common Nouns

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1. Introduction

In this paper, I will try to give a semantics of Korean common nouns in light of Link's (1983) semantic theory on denotations of plurals and mass terms. First, I will show that the count/mass distinction of common nouns is as important in Korean as in English, although the distinction is blurred in some constructions. Then, the semantic domains of Korean count nouns are shown to be much like those of English count nouns except that the denotation of a syntactically singular count noun in Korean may include a semantically plural domain. Further, it will be shown that the semantic domains of common nouns are much more flexible than may be thought, in Korean and even in English in some cases. In this connection, a possible semantic treatment of Korean classifiers as domain shifters will be provided. The problems of distributivity is also closely related with the interpretation of common nouns. I will show how it is to be handled in the theory which allows flexible interpretive domains of common nouns.

2. Count and Mass Nouns

In English, as in other European languages, the count/mass distinction of common nouns is a very prominent syntactic feature. Semantically, the distinction was captured by Link (1983) as a difference in the algebraic structures claimed to be denotations of common nouns. Namely, the semantic domains of count nouns are atomic join-semilattices, but those of mass nouns are (possibly non-atomic) join-semilattices.[1] The count/mass distinction is sometimes arbitrary and language-dependent, and there seem to be languages that do not distinguish these domains but treat all nouns as mass nouns. Frequently, languages that adopt classifiers have been regarded as such by some semantic typologists (e.g., Gil 1989). Korean also adopts classifiers and, as the following examples shows, does not seem to distinguish count and mass nouns syntactically.[2]

(1) a. sakwa twu kay
         apple two Cl   'two apples'
     b. mwul twu can
         water two Cl(glass)   'two glasses of water'

(2) a. twu kay-uy sakwa
          two Cl-Gen apple   'two apples'
     b. twu can-uy mwul
          two Cl-Gen water   'two glasses of water'

Notice the parallel structures for NPs with the semantically count noun *sakwa*, and NPs with the semantically mass noun *mwul*. The structure shown in the first set of examples, namely the "CN(Nominal)-Numeral-Classifier" structure,[3] has been claimed or assumed to be the most unmarked quantificational structure in Korean (Lee 1989, Choe 1987, Kim 1984, and Im 1991, among others).

     Also, there are many quantifiers (determiners or adjectives) that can go with any common noun, irrespective of semantic countability. For example,

(3) a. manhun sakwa   ('many apples')
     b. manhun mwul   ('much water')
(4) a. cekun sakwa   ('few apples')
     b. cekun mwul   ('little water')
(5) a. motun sakwa   ('all apples')
     b. motun mwul   ('all water')

     Above considerations seem to show the lack of distinction of count and mass nouns in Korean; however, there is more evidence that the distinction is maintained in Korean as in English. First, the plural marker *-tul* can be attached only to count nouns.

(6) a. sakwa-tul   ('apples')
     b.*mwul-tul   ('waters')

     Second, there are quantifiers (determiners, adjectives) that are sensitive to the count/mass distinction.

(7) a. kak sakwa   ('each apple')
     b.*kak mwul   ('each water')
(8) a. yele sakwa(-tul) ('several apples')
     b.*yele mwul(-tul) ('several water(s)')

As a special case of quantifiers, numerals cannot precede mass nouns but can precede some (human) count nouns.

(9) a. sey   haksayng(-tul) (cf. *sey sakwa(-tul))
        three student(-Plural)
     b.* sey   mwul(-tul)
        three water(-Pl)

     Third, some suffix particles denoting distributivity can be attached only to count nouns.

(10) a. sakwa−mata   ('each apple')
      b.*mwul−mata   ('each water')

Fourth, numerals behaving as floated quantifiers are allowed only for (human) count nouns.

(11) a. haksayng(−tul)−i seys tochakhayssta.
         student(−Pl)−Nom three arrived
         'Three students arrived.'
      b.* mwul−i   seys nemchyessta.
         water−Nom   three overflowed
         'Three waters overflowed.'

Therefore, there is no denying the distinction of count/mass nouns in Korean. That this distinction is still language−dependent can be shown with some Korean count nouns that may be translated as mass nouns in other languages. For example, Korean *cengpo* for English *information:*

(12) a. cengpo−tul / kak cengpo / cengpo−mata
            Pl   each   each
      b.*informations / *each information / *every information

3. Semantics of Count Nouns

Now that we have distinguished count and mass nouns in Korean, we may expect that semantic domains of count nouns are atomic join−semilattices and those of mass nouns are (possibly) non−atomic join−semilattices, as claimed by Link (1983) for English cases. Yet, since some constructions do not differentiate the two kinds of nouns, exactly what is the semantic domain of a count noun, say *sakwa* or *sakwa−tul?* In English, as exemplified by Link (1983, 1986), Landman (1989), Bach (1989) and others, the singular *apple* denotes a set of singular individuals (apples) and the plural *apples* denotes an atomic join−semilattice based on the set of individual apples, minus that set of apples. In Link's LPM(logic for plurals and mass terms), *apple* denotes ‖ apple' ‖ and *apples* denotes ‖ *apple' ‖ − ‖ apple' ‖ , the latter being actually a set of plural individuals. Then, do we assume the Korean *sakwa* to denote ‖ apple' ‖ and the Korean *sakwa−tul* to denote ‖ *apple' ‖ − ‖ apple' ‖ ?
The following examples seem to suggest that the answer should be in the affirmative.

(13) a. i / ce / ku   sakwa
        this/that/the apple–Pl
    b. i / ce / ku   sakwa–tul
(14) a. enu / etten   sakwa
    b. enu / etten   sakwa–tul
        which   apple–Pl

When the head noun of an NP is singular and it is combined with a demonstrative (or the definite determiner *ku* derived from a demonstrative *ku)*, the NP usually denotes a singular individual, and when the head noun is plural, the NP should denote a group of individuals (a plural individual). The simplest semantics to achieve this semantic effect is to assume that a singular noun denote a set of singular individuals and a plural noun, a set of plural individuals.

However, we need to consider more. Unlike English ones, Korean singular nouns can be used in some plural contexts.

(15) a. sakwa hana / sakwa han kay / *sakwa–tul han kay
      apple one   apple one Cl   apple–Pl one Cl
    b. sakwa twul / sakwa twu kay / sakwa–tul twu kay
      apple two   apple two Cl   apple–Pl two Cl
(16) a. han haksayng / *han haksayng–tul ('one student')
    b. twu haksayng / twu haksayng–tul   ('two students')

As can be seen, the syntactically singular *sakwa* and *haksayng* are used in both semantically singular and plural contexts. This suggests that, unlike the English counterpart, the semantic domain of a Korean singular noun should not be restricted to a set of singular individuals. It seems that the semantic domain should include both singular and plural individuals. As for plural nouns, the semantic domain seems to be the same as the English counterpart, as evident from the ungrammatical expressions shown above. All told, the singular *sakwa* denotes ‖ *apple'* ‖ and the plural *sakwa-tul* denotes ‖ *apple'* ‖ − ‖ apple' ‖ , namely a set of plural individuals. Further evidence for this semantic treatment may be provided by some sentences with indefinite NP's.

(17) a. sakwa–ka chayksang wui–ey issta.
      apple–Nom desk   top–at exist
      'There is/are apple(s) on the desk.'
    b. sakwa–tul–i chayksang wui–ey issta.
      apple–Pl–Nom desk   top–at exist
      'There are apples on the desk.'

While the plural form *sakwa-tul* means more than two apples, the singular form *sakwa* means one or more apples.

Then, we are back to the problem of demonstratives and definites. If *sakwa* denotes ‖ *apple'* ‖, namely a set including both singular and plural individuals, why does *i/ce/ku sakwa* denote only a singular individual (object), not

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a group of individuals? The solution might be to assume that demonstratives look into the domain of CN denotations, which clearly discern singular objects from plural objects. Although *sakwa* denote ‖ *apple' ‖ , when it is used with the demonstrative *i/ce/ku,* only ‖ apple' ‖ , which is included in ‖ *apple' ‖ , is relevant. As for the plural, *i/ce/ku sakwa-tul,* it only denotes a group of apples, so *i/ce/ku* in this case is different from those with singular CNs. In other words, one kind of *i/ce/ku* is singular in that it is used with a singular CN and concerns only a singular domain within the general (singular/plural) domain provided by the CN; and the other is plural in that it is used with a plural CN and concerns the plural domain that is provided by the plural CN.[4]

The point of this analysis is that a Korean singular CN provides a general semantic domain including both singular and plural individuals, and that many constructions such as that of [CN-Numeral-Classifier] exploit this general semantic domain in a simple way, but other constructions such as demonstrative ones use this domain to get the needed singular (or plural) domain contained in the general domain. We have seen a case where a singular domain is selectively used, and possibly we may have a case in which only a plural domain is used. For example,

(18) a. ?i-tul/ce-tul/ku-tul   sakwa
          this-Pl/that-Pl/the-Pl apple
    b. ?i-tul/ce-tul/ku-tul   haksayng
          this-Pl/that-Pl/the-Pl student

These expressions seem rather marked but can be used as follows.

(19) a. i-tul   sakwa-ka cham masisse   pointa.
          this-Pl apple-Nom very delicious look
          'These apples look very delicious.'
    b. ce-tul haksayng-ul com   poseyyo.
          that-Pl student-Acc please look-at
          'Please look at those students.'

Before leaving this section, I would like to outline a semantic analysis with a general semantic domain given above for singular CNs with numerals.

(20) a. han haksayng-i / haksayng hana-ka oassta.
          one student-Nom   student   one-Nom came
          'One student came.'
    b. twu haksayng-i / haksayng twul-i   oassta.
          two student-Nom   student   two-Nom came
          'Two students came.'

If we adopt Link's (1987) analysis of plurality based on Generalized Quantifier theory (Barwise and Cooper 1981), the NPs in the above sentences are indefinites with the following translations.

(21) a. $\lambda P \exists x[P(x) \wedge *student'(x) \wedge Card_i(x) = 1]$
      b. $\lambda P \exists x[P(x) \wedge *student'(x) \wedge Card_i(x) = 2]$

Here, x ranges over both singular and plural individuals, and $Card_i(x)$ means the number of atomic individual parts (singular individuals) which a singular or plural individual x is composed of. Notice that since *haksayng* is assumed to denote $\|$ *student' $\|$, not $\|$ student' $\|$, these syntactically identical sentences can be analyzed in a parallel fashion with exactly the same mechanism: any "Num + CN(singular)" or "CN(singular) + Num" constructions are translated as follows.

(22) $\lambda P \exists x[P(x) \wedge *CN'(x) \wedge Card_i(x) = Num']$

In a theory where indefinites have no quantificational force, such as Kamp's (1981) and Heim's (1982) Discourse Representation Theory, the discourse representation structure (DRS) would be as follows.

(23) Num + CN(sg) or CN(sg) + Num

$$\boxed{\begin{array}{l} .\ x \\ *CN'(x) \\ Card_i(x) = N \end{array}}$$
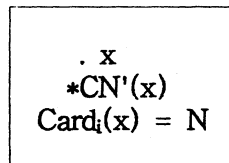
I have not given the semantics for constructions with classifiers such as *haksayng han myeng*, which ultimately should have a similar semantic treatment as *han haksayng*. This general construction for numerical quantification, which include mass nouns, will be handled later. Before that, in the next section, let us consider more about the point made earlier: a general semantic domain can be exploited selectively in certain constructions. In fact, we will see that natural language allows more than this. In certain constructions, a semantic domain can be manipulated in a more active way. This point can be made with respect to Partee's (1988) discussion of the English quantifier *many*.

4. *Many*: Flexible Domains

Partee (1988) semantically distinguishes two meanings of *many* in English, one proportional and the other cardinal. For example,

(24) Many students arrived.

This sentence has two readings: 1) Among (the) students, many of them, i.e. a large percentage of them, arrived (proportional reading); 2) The number of students who arrived is large enough, above some standard (cardinal reading). In
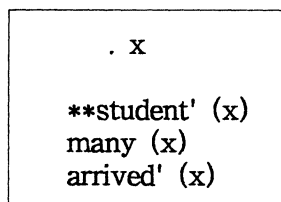
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the former reading, that many students arrived does not imply that many people arrived, while in the latter the implication holds. The latter is a fact of persistency of determiner meanings (Barwise and Cooper 1981). Partee also points out the differences between the two *many*'s in terms of "positive strong", "weak", and "intersective" properties.

All told, the two *many*'s should be differentiated and be given different logical forms. Partee's proposal in the framework of Kamp–Heim style discourse representation theory is given below for the above sentence.

(25)   DRS for proportional(quantificational) reading (notation adjusted)

OPERATOR   RESTRICTOR   MATRIX SCOPE

many   . x
              student'(x)   arrived'(x)
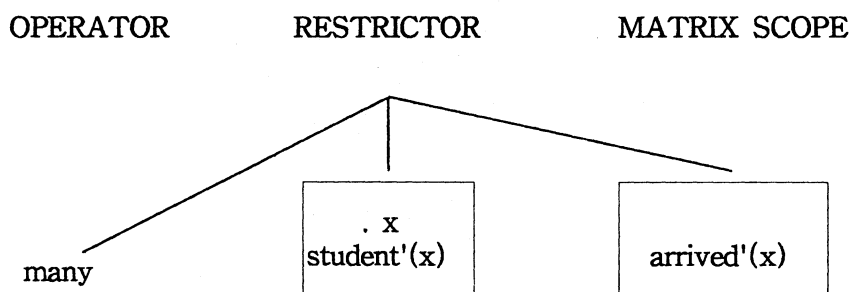
(26)   DRS for cardinal reading: existential quantifier implicit

. x

**student' (x)
many (x)
arrived' (x)

(Above, $\| **student' \| = \| *student' \| - \| student' \|$.) There are several things to be noticed. 1) The DRS for proportional reading is essentially the tripartite structure which is assumed for any quantificational structure in Kamp–Heim style discourse representation theory. Its interpretation is as follows: many instances (of individuals) satisfying the restrictor also make the matrix true, hence the proportional reading. 2) This is as good as treating *many* on a par with other quantificational determiners such as *every,* and *each.* 3) The DRS for cardinal reading assumes some semantic theory allowing plural individuals, such as Link's, which is assumed in this paper. The interpretation is: there is some plural individual (a group) of students whose cardinality is many and which arrived.

But the most remarkable thing I notice is that for the proportional

reading, even though the plural *students* provides only a plural domain ‖ *student ‖ − ‖ student' ‖ , the singular domain ‖ student' ‖ is crucially used. This is as much as to say that the proportional *many* looks into the domain of plural individuals and get the singular domain from this. This is more than selecting the singular domain from the general domain as with Korean singular CNs. Certainly, a singular domain can be recoverable from a plural domain because the latter is a join−semilattice based on the former.

Now, I notice some possible problems with Partee's specific proposal and expect some objections to it. Then, does the point just mentioned have no meaning? I will consider the problems, and make some revisions so that I can show that the above point still holds.

The major problem I notice is that she gives no attention to an important property of plurality, namely collectivity (conversely, distributivity). Many students can arrive individually (distributive) or together (collective). For the sentence *Many students arrived,* we have both proportional and cardinal readings for both distributive and collective readings. For distributive readings, proportional and cardinal readings can be captured by Partee's DRS's; however, the proportional collective reading cannot be captured by any of Partee's DRS. (The DRS for cardinal reading may be served for both distributive and collective readings.) Similarly, the proportional/cardinal ambiguity holds of the following sentences which have (non−distributive) collective predicates.

(27) a. Many students arrived together.
b. Many students gathered.
c. Many students are helping each other.

Simply, proportional readings of these sentences cannot be represented with Partee's DRS for the proportional reading, since it makes no sense that one individual arrived together, gathered, or helped each other.

These sentences contrast with the following sentences containing singular (distributional) quantifiers *every* and *each.*
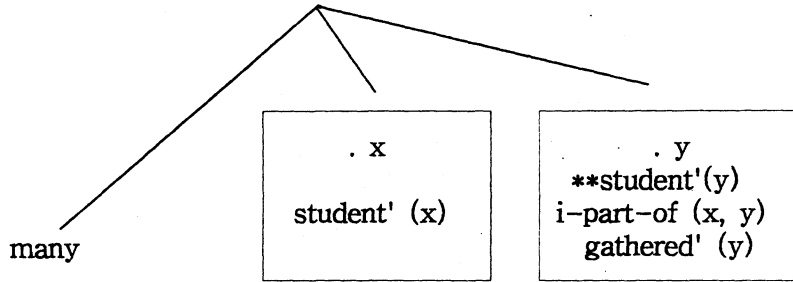
(28) a. *Every student arrived together.
b. *Each student gathered.

Certainly, the DRS for the proportional reading captures the ungrammaticality of the above sentences.

These considerations suggest that the DRS's for *every* and *each* should be different from those for the proportional *many,* other plural (proportional) quantifiers like *most,* and the mass (proportional) quantifier *much.*
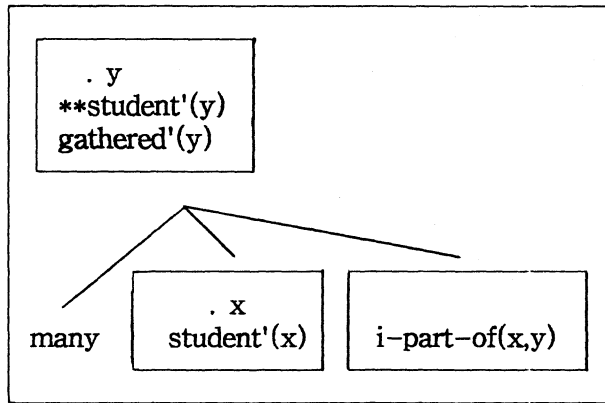
One way to accommodate the proportional collective reading while preserving Partee's DRS as intact as possible might be revising the matrix as follows.

(29) Many students gathered. (collective proportional reading)

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                        /\
                       /  \  \
                      /    \    \
                     /      \      \
                    /    ┌────────┐  ┌──────────────────┐
                   /     │  . x   │  │       . y        │
                  /      │        │  │ **student'(y)    │
                 /       │student'(x)│ i-part-of (x, y) │
              many       │        │  │   gathered' (y)  │
                         └────────┘  └──────────────────┘
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The interpretation is as follows. In many cases, an individual satisfying the restrictor is also an individual part of a plural individual, i.e. a member of a group of students, who gathered. This interpretation makes the sentence true in a situation where students gathered in several groups. We certainly have this reading.[5] It seems that there is another reading that there is one group gathering and the reading is still proportional. We may think of the following DRS for this reading.

(30) Many students gathered. (proportional, one group)

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┌─────────────────────────────────────────────┐
│  ┌──────────────────┐                        │
│  │   . y            │                        │
│  │ **student'(y)    │                        │
│  │ gathered'(y)     │                        │
│  └──────────────────┘                        │
│              /\                               │
│             /  \    \                         │
│            /    \      \                      │
│         many  ┌────────┐ ┌──────────────┐     │
│               │  . x   │ │              │     │
│               │student'(x)│ i-part-of(x,y) │  │
│               └────────┘ └──────────────┘     │
└─────────────────────────────────────────────┘
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In both of the (revised) DRS's, the singular domain ‖ student' ‖ is crucially used, as in Partee's original suggestion. I claim that the proportional *many* and other plural proportional quantifiers (*few, most,* etc) trigger this semantic domain shift.

Similar facts can be observed in Korean, too.

(31) a. manhun haksayng-i oassta.
     b. manhun haksayng-tul-i oassta.

Both of these sentences have two readings, proportional and cardinal. As in the case of English *many, manhun* triggers semantic domain shift no matter what semantic domain the CN provides.

In this section, I have argued mostly with representations of DRS that Partee used. We may not want to adopt the theory and proceed more in line with the classical Generalized Quantifier Theory as Link (1987) pursued. But the point is that no matter what framework we adopt, the two readings Partee observed should be recognized both for collective and distributive readings, in Korean as well as in English. Moreover, to give a successful semantics, we need some kind of mechanism allowing semantic domain selection or shift. Broadly speaking, this seems to be an instance of type shifting frequently occurring in natural language semantics (Partee 1987). This kind of flexibility of the CN denotations may be more graphically represented in the semantics of classifiers in Korean.

5. Classifiers as Domain Shifters

As mentioned in the first part of this paper, the canonical quantificational construction in Korean is: "CN(Nominal) + Numeral + Classifier". This structure is for both count and mass nouns. In an earlier section, I gave an outline of the semantics for count nouns with numerals, but not for those with classifiers. Here, I will try to give a semantics for classifiers both for count and mass nouns.[6] For example,

(32) a. mwul twu can
         water two Cl(glass)
     b. chayk twu kwen
         book two Cl(volume)

Basically, I treat classifiers as the semantic domain shifters in the following sense. The semantic domain ‖ water' ‖ is a (possibly) non-atomic join-semilattice composed of bits of water. The classifier *can* ('glass') shifts this domain to a new one composed of glasses of water (or bits of water measured by glasses), the latter being an atomic join-semilattice. This shift is a major one from a mass domain to a count domain. Compared with this, *kwen* shifts an already count domain (atomic join-semilattice) to the same domain, i.e. an identity mapping, where the effect of the classifier is minimal. A count domain may be mapped to another count domain as follows.

(33) a. chayk twu mukkum
         book two Cl(bundle)   'two bundles of books'
     b. sakwa twu sangca
         apple two Cl(box)   'two boxes of apples'

When an inappropriate classifier is used we have an awkward expression

with respect to both mass and count nouns.

(34)   a.   *mwul   twu   kwen
            water   two   Cl(volume)
       b.   *chayk   twu   can
            book   two   Cl(glass)

Therefore, we can regard the denotation of a classifier as a function from an "appropriate" domain to another (count) domain. For example, the meaning of *can* is a function from some semantic domain of liquid such as water, wine, or milk to a count domain of glasses of liquid. The domain of books is not an appropriate argument for this function. Similarly, the meaning of *kwen* is a function whose domain includes the domains of books, notebooks, and journals but does not include the domain of water.

To use a logical notation, *mwul twu can* and *chayk twu kwen* may be translated as follows.

(35)   a. $\lambda x[f_{can}(water')(x) \wedge Card_i(x) = 2]$
       b. $\lambda x[f_{kwen}(*book')(x) \wedge Card_i(x) = 2]$

Then, Numeral–Classifier parts (*twu can, twu kwen*) can be translated as follows.

(36)   a. $\lambda P\lambda x[f_{can}(P)(x) \wedge Card_i(x) = 2]$
       b. $\lambda P\lambda x[f_{kwen}(P)(x) \wedge Card_i(x) = 2]$

Notice the functions f_{can}, and f_{kwen}, which the classifiers provide as semantic domain shifters.

The semantic treatment of classifiers as essentially domain shifters makes possible an appropriate handling of our semantic intuitions on classifier mismatches. The mismatch of a classifier and a common noun is not a matter of truth condition, because, for instance, when there are three books, the following sentence is not judged false even though it is not judged to be true either.

(37)   [??]chayk   sey   can–i   issta.
            book   three   Cl(glass)–Nom   exist
            'There are three books.'

Nor does it seem to be a matter of pure grammaticality. Is the above sentence judged wrong as much as, or in the same way as, the following clearly ungrammatical sentence?

(38)   *sey   chayk   kwen–i   issta
        three   book   Cl(volume)–Nom   exist

I feel that the mismatch between a common noun and a classifier is neither a

matter of truth condition nor a matter of grammaticality. It is more like semantic anomaly of sentences like [??]*Sincerity admires John* as has been noticed by generative linguists, or even seven centuries earlier, by medieval speculative grammarians citing such examples as [??]*lapis amat filium* 'the stone loves the boy'(Robins 1990: 91). Namely, it is not so much a matter of grammaticality as a matter of selectional restriction. This intuition is well captured by my analysis because in this analysis appropriateness of the semantic domain for a function (domain shifter) is relevant, as with other cases of selectional restriction. For example, [??]*The stone loves John* is anomalous because stones are not in the domain of an appropriate argument for *loves John*.[7]

In this connection, it would be interesting to note that Fukushima's (1991) recent analysis of floated quantifiers of Japanese wrongly predicts that the classifier mismatch results in a false sentence. For example, for the Japanese sentence given below (Fukushiama 1991: 617), the provided semantic translation dictates that the denotation of a common noun should be included in the denotation of the classifier. Notice that classifers are assumed to denote sets of entities, just like common nouns. When a common noun and a classifier mismatch, that is, when the denotation of a common noun is not included in the denotation of a classifier, the translation turns out to be false.

(39) Hanako-ga hon-o san-satu katta.
Hanako-Nom book-Acc three-Cl bought
'Hanako bought three books.'

Translation (notation adjusted):
$| \text{ hon' } \cap \lambda x[\text{katta'}(x)(\text{hanako'})] | \geq 3 \ \& \ \text{hon' } \subseteq \text{satu'}$

6. Distributivity

One problem which is closely related with the semantics of CN or NP but which has not been dealt with until now is the problem of distributivity. Here, I do not intend to give the full analysis and theory of distributivity, but I will mention some problems which should ultimately be given appropriate analysis and sketch directions for possible solutions.

As discussed in Roberts (1987), the phenomena of distributivity arise due to many factors. Some determiners like English *each* force distributive interpretation but other determiners like *some* do not. In Korean, determiners may be classified according as they prefer distributive interpretation (e.g. *kak* 'each') or not (e.g. *etten* 'some'). The distributivity/collectivity distinction is sometimes intrinsic to the common nouns or other predicates. For example,

(40) John-kwa Mary-ka tathwuessta.
John-and Mary-Nom fought-with-each-other
'John and Mary fought with each other.'

(41) John-kwa Mary-ka   kichimhayssta.
     John-and Mary-Nom coughed
     'John and Mary coughed.'

Due to the semantic property of the meaning of *tathwu-* ('fight each other') and *kichimhay-* ('cough'), the former allows only the collective reading. In Link's theory of plurality adopted here, this is explained as follows. The collective predicate denotes a set of only plural individuals and there is no mechanism applied, such as a Meaning Postulate, that allows each individual part of the plural individuals in the domain (denotation) of the predicate to be also in the domain of the predicate. Common nouns can be treated in the same way. Collective common nouns denote sets of only plural individuals. Here are some of those in Korean.

(42) pwupwu('husband and wife'), kacok('family'), hyengcey('brothers')

One of the difficult problems in dealing with plurality in Korean is to define the role of *-tul* in the plural constructions. Of course, it is very much like the English *-s* when attached to common nouns, and the semantics of plural nouns was discussed earlier. The difficulty arises when *-tul* is attached to non-nominal elements as follows.

(43) ai(-tul)-i   yeyppukey-tul chwumchwunta.
     child-Pl-Nom prettily-Pl   dance
     '(The) Children are dancing prettily.'

Basically, the *-tul* attached to an adverbial indicates that the subject is a plural one. The plurality here is not syntactic but semantic since singular NPs, when semantically plural, can be a subject. In the theory of plurality adopted here the semantic analysis will go as follows. *Chwumchwu-* ('dance') is a predicate whose denotation includes both singular and plural individuals.
An adverbial usually narrows down the denotation of a predicate, and if the predicate denotes a domain including both singular and plural individuals, the newly formed adverbial + predicate denotes a domain that includes both singular and plural individuals. The adverbial with *-tul* further limits the denotation of the derived predicate. The adverbial (with *-tul)* + predicate should denote a domain composed of only plural individuals. Therefore, the following grammaticality pattern holds.

(44) a. *John-i   yeyppukey-tul chwumchwunta.
        John-Nom prettily-Pl   dance
        'John is dancing prettily.'
     b. John-kwa Mary-ka   yeyppukey-tul chwumchwunta.
        John-and Mary-Nom prettily-Pl   dance
        'John and Mary are dancing prettily.'

c. ku pupu-ka   yeppukey-tul chwumchwunta.
   the husband-and-wife-Nom prettily-Pl   dance
   'The husband and wife are dancing prettily.'

In sum, the semantic function of an adverbial with -*tul* is, when combined with a predicate, to make a new predicate that denotes a set of only plural individuals.
    Another difficult question is related with the Korean particle -*ssik*, which is comparable to the function of shifted *each* in English. According to Choe (1987)'s observation, the semantic function of -*ssik* is to indicate that the bearer of this expression is to be interpreted as a distributed element to some other elements. For example,

(45) ai-tul-i   sakwa hana-ssik-ul   mekessta.
     child-Pl-Nom apple one-SSIK-Acc ate
     'The children ate one apple each.'

This cannot mean that the children ate one apple altogether. Granting that Choe's observation is basically correct, the next step is to show how to make precise analysis within the theory of plurality adopted here. It seems that the distributive operator D, which Link (1987) assumes for shifted *each*, is not exactly relevant. The predicate with the D operator should be predicated of a plural individual to get the correct interpretation, but the Korean -*ssik* does not seem to behave in that way.

(46) kak-sonyen-i / sonyen-mata sakwa hana-ssik-ul   mekessta.
     each-boy-Nom   boy-each   apple one-SSIK-Acc ate
     '(literally) Each child ate one apple each.'

    It seems quite hard to give a compositionally adequate analysis, and I have to postpone the satisfactory analysis for another occasion.[8] One thing I would like to add at this moment is that we need to consider the stage-level and individual-level predicate distinction discussed by Kratzer (1989). For stage-level predicates, as Choe (1987) observed, the -*ssik* expression can appear with the subject of an intransitive verb.

(47) han salam-ssik-i   chwumchwuessta.
     one person-SSIK-Nom danced
     '(For each occasion/event) one person danced.'

But for individual level predicates such as stative verbs, similar constructions are not possible.

(48) ??han haksayng-ssik-i   yeyppessta.
     one student-SSIK-Nom   pretty
     '(For each occasion/even) one student was pretty.'

This may be interpreted in such a way that, as Kratzer claimed, only the stage-level predicates have the e (event) position in the meaning of the predicate. But again, I will reserve the definite word for another occasion.

7. Conclusions

The major point of this paper is that the semantic domain of common nouns in Korean (and English) is flexible. I started with the necessity of distinguishing count and mass domains for common nouns in Korean. As for the count domain, I analyzed the semantic domain of a singular noun in such a way that it includes not only singular individuals but also plural ones. That allowed us to give a simple semantic analysis for "Numeral + CN(sg/pl)" or "CN(sg/pl) + Numeral" constructions. Some determiners, e.g., *kak* ('each'), seem to look into the general semantic domain and select a (singular) subdomain for its quantificational domain. This notion of domain selection had to be extended to a more general notion of domain shifting when we considered proportional readings of English *many* and Korean *manhun* ('many'). In the join-semilattice domain of individuals envisaged by Link, this kind of domain shift is just natural. In this connection, the semantic contribution of a classifier could be appropriately handled: the classifiers function as domain shifters. This conceptualization enables us to capture the semantic anomaly occurring from the mismatch of a common noun and a classifier.

The problem of distributivity (Choe 1987, etc.) was touched upon but has not been discussed enough. Since the problem of distributivity is an important issue as far as plurality is concerned, some reasonable analysis of distributivity, not provided but hinted here, should be available later.

There are other relevent important issues which I have not talked about. One such problem is "genericity" (Carlson 1977) exemplified in the following sentence.

(49) sakwa-nun   masissta.
      apple-Topic   delicious
      'Apples are delicious.'

As many, including Lee (1989), have pointed out, *sakwa* here seems to mean the kind of apple, not an individual apple or apples. Then, is the singular *sakwa* ambiguous, kind denoting and count domain denoting? The attempt to answere this and othe questions should be postponed for another occasion.

NOTES

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[1] For expository presentation of the algebraic notion of lattice, see Partee, et al. (1990: Part C), Bach (1989: Chapter 5), and Landman (1991: Chapters 6, 7).

[2] The Yale Romanization system is used for transcriptions of Korean expressions.

[3] CN(Nominal) may not be lexical but phrasal, such as:

        ppalkan sakwa] twu kay
        red   apple   two CL   'two red apples'

[4] Jae-woong Choe (p.c.) notes that sometimes *i/ku/ce sakwa* may denote a group of apples. For example,

        i   sakwa-ka (motwu) myech-kay   ipnikka?
        this apple-Nom all   how-many-CL is
        'How many is this group of apples?
        = How many apples are these?'

I rather regard this as supportive evidence for treating *sakwa* as denoting the general domain including singular and plural individuals. In this case, I am not sure whether we want to regard *i/ku/ce* still more ambiguous.

[5] We may have a reading that the gathering groups are composed of not only students but also people of other statuses (professors, children, policemen, etc.). If this reading is real, we may want to delete the condition [**student'(y)] from the matrix scope of the DRS.

[6] For more extensive studies on the syntactic characteristics of classifier constructions, see Lee (1989) and Im (1991). Here, I concentrate on the semantic analysis.

[7] Lee (1989) posits an Agreement Phrase for a classifier construction, so it seems that a common noun – classifier mismatch is treated as a violation of syntactic agreement, although he mentions that some kind of semantic relation holds between them: "there is some property congruence between the noun and the classifier and there is also a subset relation between the noun and the Nr-Cl".

[8] Probably, we need to consider the conventional implicature conveyed by *-ssik*.

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