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PLURALITY AND OTHER SEMANTIC ASPECTS OF COMMON NOUNS IN KOREAN*

In this paper, I try to present the semantics of Korean common nouns in light of Link's (1983) semantic theory on denotations of plurals and mass terms. First, I show that the semantic count/mass distinction of common nouns is as important in Korean as in English, despite the fact that the distinction is blurred in some constructions such as the canonical quantification structure of [CN(Nominal) + Numeral + Classifier]. 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 as well as a singular domain. For instance, using Link's Logic of Plurals and Mass Terms, *sakwa* in Korean denotes |*apple'|, rather than |apple'|, the latter being the denotation of English *apple*. It is also shown that the semantic domains of common nouns, in Korean and even in English in some cases, are much more flexible than may be thought. This claim is made with respect to the proportional reading of English *many* (discussed by Partee (1988)) and Korean *manhun*. In this connection, a possible semantic treatment of Korean classifiers as domain shifters is provided. This enables us to capture our semantic intuition about anomalous expressions such as *chayk* 'book', *han* 'one', and the classifier *can* 'glass'. Finally, some problems closely related to the interpretation of common nouns, namely the problems of kinds, genericity, and topicality, are discussed. It is shown how these notions are related in the theory which allows flexible interpretive domains of common nouns.

1. INTRODUCTION

This paper aims to give the semantics of Korean common nouns in light of Link's (1983) algebraic semantic theory on denotations of plurals and mass terms. First, I will show that the semantic domains of Korean count nouns are 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. I will also show that the semantic domains of common nouns are much more flexible than may be thought, and will provide a possible semantic treatment of Korean classifiers as domain shifters. The problems of kinds, genericity, and topicality are closely related to the interpretation of common nouns. Most of the latter part of this paper will be dedicated to a discussion of how these notions are related in a theory which allows flexible interpretive domains of common nouns.

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2. Count and Mass Nouns in Korean

In English, as in other European languages, the count/mass distinction of common nouns is a very prominent syntactic and semantic 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 adopts classifiers and, as the following examples show, does not seem to distinguish count and mass nouns syntactically.[2]

(1) a. sakwa twu kay
apple two Cl(item) [Cl = Classifier]
'two apples'

b. mwul twu can
water two Cl(glass)
'two glasses of water'

Notice the parallel structures of NPs with the semantically count noun *sakwa*, and NPs with the semantically mass noun *mwul*. The structure shown in the 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, *manhun* 'many/much' and *cekun* 'a few/a little' can be used with both kinds of nouns.

(2) a. manhun sakwa 'many apples'
b. manhun mwul 'much water'

(3) a. cekun sakwa 'a few apples'[4]
b. cekun mwul 'a little water'

The above considerations seem to indicate a complete lack of distinction between count and mass nouns in Korean. However, there are many

constructions which show that the distinction is in part maintained in Korean as it is in English. Most of the following observations are not new (Choe (1971), Kim (1984), Choe (1987), Lee (1989), among others). Here, I put these scattered observations together in order to set the stage for the semantic analysis to be given in later sections.

First, as commonly observed by traditional Korean linguists, including Choe (1971), the plural marker *-tul* can be attached only to count nouns.

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

Second, there are quantifiers (determiners and adjectives) that are sensitive to the count/mass distinction, such as *kak* 'each' and *yele* 'several'.

(5) a. kak / yele sakwa 'each apple / several apples'
b. *kak / yele mwul 'each water / several waters'

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

(6) 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.

(7) a. sakwa-mata 'each apple'
b. *mwul-mata 'each water'[5]

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

(8) 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. / Water overflowed three times.'

The above observations may not indicate the strong syntactic distinction between count and mass nouns attested by such pairs as *shoes* and *footwear* in English, as pointed out by a *JEAL* reviewer. However, the Korean data show clearly (but to a lesser degree than in English) the syntactic manifestation of the semantic distinction between the count and mass domains. If Korean common nouns were completely indifferent to this distinction, there should exist no syntactic constructions which would show the differences of grammaticality judgments shown above. In this connection, one might claim that the syntactic distinction follows directly from and solely dependent on the ontological (semantic, non-linguistic) distinction of the count and mass domains. However, that this distinction is still to some extent language-dependent can be demonstrated with certain Korean count nouns that may be translated as mass nouns in other languages, for example, Korean *cengpo* 'information' and *chwunggo* 'advice'.

(9) cengpo-tul / kak cengpo / cengpo-mata
Pl each each

Cf. *informations / *each information / *every information

(10) chwunggo-hana mos tulessta
advice-one not receive

'I have received no piece of advice.'
Cf. *I have not received an advice.

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 discussed by Link (1983, 1987), 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 $|\text{apple}'|$ and *apples* denotes $|\text{*apple}'| - |\text{apple}'|$, $|.|$ being the denotation (valuation) function. Here, $|\text{apple}'|$ is the set of (singular) individual apples and $|\text{*apple}'|$ is the atomic join-semilattice

based on those individual apples. In Link's LPM, for any predicate P, |P| being a set of atomic (i.e., singular) individuals (entities), *P denotes an atomic join-semilattice based on the set |P|. Therefore, |*P| consists of singular individuals (i.e., |P|) and plural individuals, and |*P| − |P| consists of only plural individuals (see Link (1983)).

Thus are we to consider 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.

(11) a. i / ce / ku sakwa

b. i / ce / ku sakwa-tul
this/that/the apple-Pl

When a demonstrative (or the definite determiner *ku* derived from a demonstrative *ku*) is used with a singular noun, the NP should denote a singular individual,[6] and when it is used with a plural noun, 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 denotes a set of singular individuals and that a plural noun denotes a set of plural individuals.

However, consider the following. Unlike the English counterparts, Korean singular nouns can be used in some plural contexts.

(12) 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

(13) 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 Koran singular noun should not be restricted to a set of singular individuals. It seems, rather, that the semantic domain should include both singular and plural individuals. On the other hand, the semantic domain of a plural noun (with *-tul*) seems to be the same as the English counterpart, as is evident from the ungrammatical expressions shown above. One can say **han haksayng-tul* 'one students' in Korean no better than one can say **one boys* in English. 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 NPs.

(14) 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 *sakwa-tul* implies more than two apples, the singular *sakwa* implies one or more apples.

Demonstratives and definites may cause a problem. 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), and not 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* denotes |*apple′|, when it is used with the demonstrative *i/ce/ku*, only |apple′|, which is included in |*apple′|, is relevant. As for the syntactically (morphologically) plural *i/ce/ku sakwa-tul*, it denotes only 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 (syntactically) singular CN and concerns only a (semantically) singular domain within the general (singular/plural) domain provided by the CN; and the other is syntactically plural in that it is used with a syntactically plural CN and concerns the semantically plural domain that is provided by the plural CN.

The point of this analysis is that a Korean singular CN (without *-tul*) provides a general semantic domain including both singular and plural individuals and that many constructions such as the [CN-Numeral-Classifier] construction 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,

(15) 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:

(16) 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.'

Here, when *i-tul / ce-tul / ku-tul* is used with a syntactically singular CN,[7] which denotes the general domain including singular and plural individuals, it selects only the domain of plural individuals for interpretation.

Before leaving this section, I wish to outline a semantic analysis for singular CNs with numerals, in terms of a general semantic domain given above.

(17) 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, respectively.

(18) a. $\lambda P\, \exists x[P(x) \,\&\, {}^*\text{student}'(x) \,\&\, \text{Card}_i(x) = 1]$

b. $\lambda P\, \exists x[P(x) \,\&\, {}^*\text{student}'(x) \,\&\, \text{Card}_i(x) = 2]$

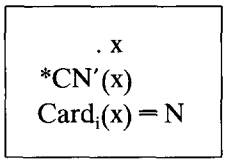
Here, x ranges over both singular and plural individuals, P ranges over predicate denotations composed of both singular and plural individuals, and $\text{Card}_i(x)$ means the number of atomic individual parts (singular individuals) which a singular or plural individual x is composed of. Notice that since *haksayng* is assumed to denote $|{}^*\text{student}'|$, not $|\text{student}'|$, 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.

(19) $\lambda P\, \exists x[P(x) \,\&\, {}^*\text{CN}'(x) \,\&\, \text{Card}_i(x) = \text{Num}']$

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. (I present the notation of the DRT now in anticipation of relating my analysis to the discussions in the next section (section 4) and section 6.)

(20) Num + CN(sg) or CN(sg) + Num



I have not given the semantics for constructions with classifiers such as *haksayng han myeng* 'student-one-Cl', which ultimately should have a semantic treatment similar to that of *han haksayng*. This general construction for numerical quantification, which include mass nouns, will be handled later. But first, let us consider, in the next section, 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* IN ENGLISH AND FLEXIBLE INTERPRETIVE DOMAINS

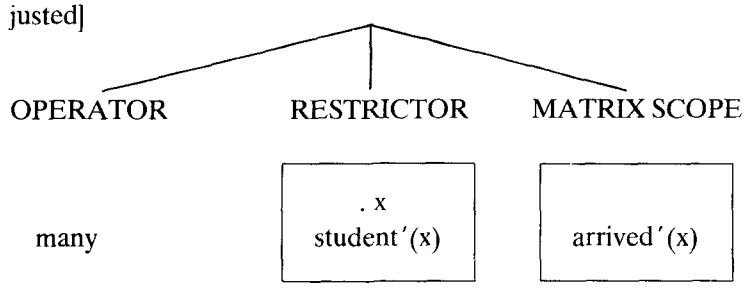
Partee (1988) semantically distinguishes two meanings of *many* in English, one proportional and the other cardinal. For example,

(21) Many students arrived.

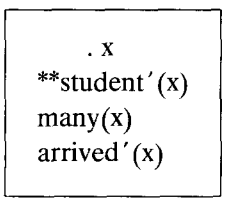
This sentence has two readings: 1) Among (the) students, many of them, i.e., a large percentage of them, arrived (proportional reading); 2) The number of students who arrived is large enough, above some standard (cardinal reading). In the former reading, that many students arrived does not imply that 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.

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.

(22) DRS for proportional (quantificational) reading [notation adjusted]



(23) DRS For cardinal reading: existential quantifier implicit



(Above, |**student'| = |*student'| − |student'|.) There are several things to note. 1) The DRS for proportional reading is essentialy the tripartite structure which is assumed for any quantificational structure in a 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 this: there is some plural individual (a group) of students whose cardinality is many and which arrived.

But the most remarkable thing to notice here 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 good as to say that the proportional *many* looks into the domain of plural individuals and gets the singular domain from this. This goes beyond 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.[8]

Similar facts can be observed in Korean as well.

(24) a. manhun haksayng-i oassta
many student-Nom came
'Many students came.'

b. manhun haksayng-tul-i oassta
many student-Pl-Nom came
'Many students came.'

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 directly.

In this section, I have argued mostly on the basis of the representation of the DRS that Partee used. We may not want to adopt the theory and proceed in the line of classical Generalized Quantifier Theory, which Link (1987) pursued. But no matter what framework we adopt, the two readings Partee observed should be recognized, in Korean as well as in English. Moreover, for a successful semantics, we need some kind of mechanism that allows 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 revealed in the semantics of classifiers in Korean, as will be discussed in the next section.

5. Semantics of Classifiers

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 outlined the semantics for count nouns with numerals, but not for those with classifiers. Here, I will present a semantics for classifiers both for count and mass nouns.[9] For example,

(25) a. mwul twu can
water two Cl(glass)

b. chayk twu kwen
book two Cl(volume)

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 the glass), the latter being an atomic join-semilattice. This is a major shift,

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. But even a count domain may be mapped to a different count domain as follows.

(26) 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.

(27) 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.

mwul twu can and *chayk twu kwen* may be expressed in logical notation as follows.

(28) a. $\lambda x[f_{can}(water')(x) \& Card_i(x) = 2]$

a. $\lambda x[f_{kwen}(*book')(x) \& Card_i(x) = 2]$

The Numeral-Classifier parts (*twu can, twu kwen*) can be expressed as follows.[10]

(29) a. $\lambda P\, \lambda x[f_{can}(P)(x) \& Card_i(x) = 2]$

a. $\lambda *P\, \lambda x[f_{kwen}(*P)(x) \& Card_i(x) = 2]$

Here, the functions f_{can} and f_{kwen} are what the classifiers provide as semantic domain shifters. (f_{kwen} here happens to be an identity mapping.)

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.[11]

(30) *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. The above sentence does not seem to be judged wrong as much as, or in the same way as, the following clearly ungrammatical sentence.

(31) *sey chayk kwen-i issta
three book Cl(volume)-Nom exist

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 such as **Sincerity admires John.* That is, 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*.[12]

6. Common Nouns, Kinds, and Genericity

Until now, we have seen examples where common nouns denote (sets of) individuals, singular and/or plural. Sometimes, common nouns seem to denote kinds rather than individuals (entities).

(32) sakwa-nun kwail-ui ilcong-ita
apple-Topic fruit-Gen one-kind-be
'Apples are a kind of fruits.'

(33) sakwa-nun mas-issta / ppalkahta
apple-Topic delicious / red
'apples are delicious / red.'

(34) kay-nun cicnunta
dog-Topic bark
'Dogs bark.'

The first sentence means that the kind apple is a subkind of the kind fruit, and here *sakwa* seems to denote the kind apple. The next examples are a little different. These are related to genericity: generally, apples are delicious/red and generally, dogs bark. Although Carlson (1977) treated these cases (of English bare plurals) as kind-denoting, this may not be necessray in light of the semantic mechanisms that we are using. In addition, notice that in all the above examples, the subjects are marked with the topic marker *-nun.*[13] So, in discussing these examples, we need to consider topicality, too.

Carlson's (1989) recent "relational" theory of genericity seems to shed light on this issue. His former theory (Carlson (1977)) was a "subject-predicate" analysis: generic sentences arise out of a predicate to be predicated of an individual-denoting subject. The individual-denoting subject can be a kind-denoting one such as English bare plurals. In this case, the subject is interpreted (pseudo-)universally, and genericity and (pseudo-)universality go together. However, Carlson notices many examples which cannot be explained by this theory of genericity. Simply, there are many generic sentences with non-universal subjects. For example,

(35) Hurricanes arise in this part of the Pacific.
[Carlson (1989, p. 170) ascribes this example to Milsark]

Here, there is a reading in which *hurricanes* is interpreted existentially, as well as the improbable reading that all (or most of) the hurricanes arise at a specific spot of the ocean. To take another example,

(36) Robots build the new cars.

Here we have a reading that most new cars are built by (some) robots. (Robots are used in other parts of the industry.) Moreover, there are generic sentences without an individual-denoting subject.

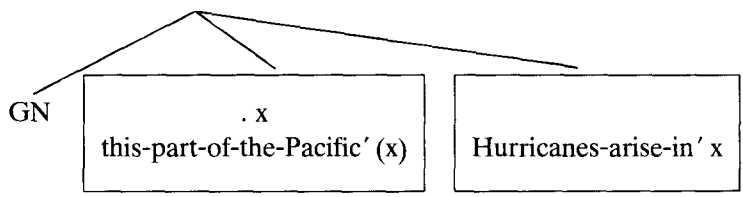
(37) It rains 50″ a year here.

Carlson's conclusion is that generic sentences arise out of two elements: 1) a nongenerically interpreted sentence or predicate containing the sentence main verb, and 2) "something else". The latter can be a locative adverbial, an object, or the subject (in the most unmarked case). Even a discourse topic can be this "something else", as the following example shows.

(38) (TOPIC: What happens in the event of a fire?)
An alarm sounds.

Carlson's relational theory of genericity can be directly incorporated into the tripartite structure of quantification in Discourse Representation Theory that we mentioned earlier. In the tripartite structure of quantification, we always need a restrictive clause and a nucleus scope besides the quantifier. In other words, the quantifier "relates" the restrictive clause and the scope. If we translate Carlson's idea into this theory, the nongenerically interpreted sentence or predicate containing the sentence main verb constitutes the nucleus scope part, and "something else" constitutes the restrictive clause part. We can assume that the quantifier in this case is a generic quantifier GN. For example, we may have the following semantic structures for Carlson's examples given above.

(39)



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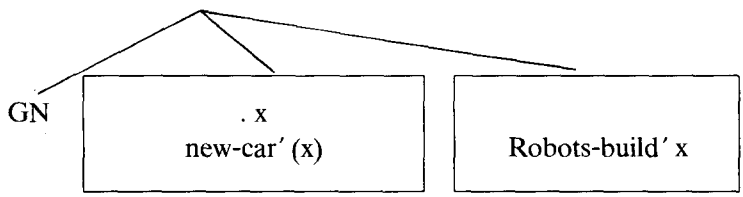

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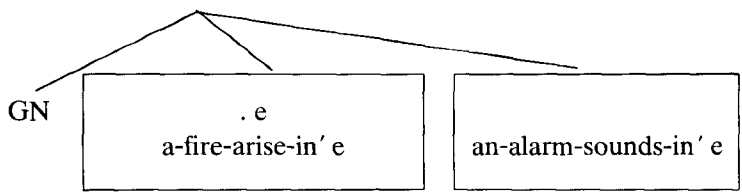
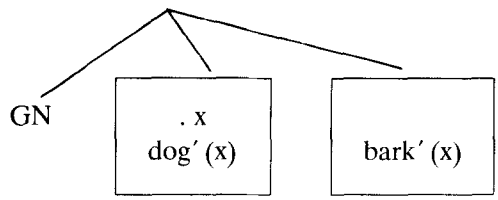


The interpretation of the generic operator GN is not so simple and may require some complex interpretation rule (cf. Schubert and Pelletier (1987), Lee (1992)), but here let us just note that for the generic sentences we do not need a kind-denoting NP. Furthermore, a kind-denoting NP can be dispensed with even in the case of the subject since we can have the following structure for *Dogs bark.*

(42)



The above analysis implies that for Korean, we ultimately need a set, rather than the kind, of dogs for interpretation. Namely, a Korean generic sentence like (34) may be represented with the DRS (42), and in this DRS we have dog′, which denotes the set of individual dogs, not the kind dog. In Korean, the part most relevant for the generic interpretation is the topic marker used with bare plural NPs. This topic marker indicates the restrictive clause in the generic tripartite structure. Compare the following sentences.

(43) a. lopotu-nun catongcha-lul mantunta
robot-Topic car-Acc make
'Robots build cars.'

b. catongcha-nun lopotu-ka mantunta
car-Topic robot-Nom make
'Robots build cars. / Cars are built by robots.'

The first sentence means roughly that the general function of robots is to make cars, and the second means that most cars are made by robots.

The topic-restrictor mapping may be further illustrated with the following examples:

(44) a. Thayphwung-un i ciyek-eyse palsaynghanta
typhoon-Topic this area-in arise
'Most typhoons arise in this area.'

b. i ciyek-eyse-nun thayphwung-i palsaynghanta
this area-in-Topic typhoon-Nom arise
'In most part of this area, typhoons arise.'

These sentences are not ambiguous, as the English counterpart is (*Typhoons arise in this area*). The topic is unambiguously mapped to the restrictor in the tripartite structure of quantification.

An implicit topic is relevant in Korean, too.

(45) (TOPIC: What happens in case of fire?)

cong-i wullinta
alarm-Nom sound

'An alarm sounds.'

Here the discourse topic "in case of fire" constitutes the restrictor.[14]

Of course, the topic marker is neither a sufficient nor a necessary condition for the generic interpretation.[15] When the NP is not a bare NP, even when the topic marker is used, the quantificational force is determined by the determiner, as in (46). In embedded sentences, when the stative verb is used, the topic marker is not necessary for genericity, as shown in (47).[16]

(46) etten sakwa-nun masissta
some apple-Topic delicious

'Some apples are delicious'

(47) a. ku-nun sakwa-ka masissta-ko malhayssta
he-Topic apple-Nom delicious-Comp said

'He said that apples are delicious.'

b. ku-nun kay-ka cicnunta-ko malhayssta
he-Topic dog-Nom bark-Comp said

'He said that dogs were barking.'

When a stative verb such as *masiss-* 'be delicious' is predicated to an NP with the subject marker, we certainly have a generic reading as well as the non-generic reading. But it is not clear whether we have the generic reading when an action verb such as *cic-* 'bark' is concerned. The fact that the topic marker is a strong indicator of genericity can be noticed if we replace the subject marker with the topic marker in the latter case.

(48) ku-ka kay-nun cicnunta-ko malhayssta
he-Nom dog-Topic bark-Comp said

'He said that dogs bark.'

In summary, the topic marker used with bare NPs in Korean is a strong indicator of genericity, and it is natural in light of the relational theory of genericity proposed by Carlson, for topic usually supplies the restrictive clause of the tripartite structure of quantification. But does it imply that Korean common nouns do not need to refer to kinds at all?

From a theoretical point of view we may want bare NPs in Korean to refer to kinds rather than sets because NPs generally denote individuals (e.g., *John*) or generalized quantifiers (e.g., *every man*), not sets which are usual denotations of CNs. In this case, what we need is a means to get the set of dogs from the kind dog. This is provided by the property theory of Chierchia (1982), who identified kinds with nominalized properties. To use his notation, the kind dog denotes $|^{\cap}dog'|$, the individual correlate of the property $|dog'|$. So we can claim that *dogs* in *dogs bark* denotes $|^{\cap}dog'|$, and it will not be difficult to get $|dog'|$ from it. The same treatment is possible in Korean (cf. Kang (1988)).

As a matter of fact, we have cases where bare NPs should denote kinds and cannot be related to genericity.

(49) a. sakwa-nun i ciyek-ey nelli phecie issta
apple-Topic this area-in widely spread be
'Apples are widespread in this area.'

b. sakwa-nun i ciyek-ui thuksanmwul-ita
apple-Topic this area-Gen special product-be
'Apples are the special product of this area.'

The kind apple can be widespread, but it cannot be the case that generally an (individual) apple is widespread. So bare NPs of this constructions really denote kinds. But this does not lead to the conclusion that common nouns in these constructions should denote kinds rather than sets, since sets can be related to kinds if the latter are considered to be nominalized properties. In short, there is no evidence yet that Korean common nouns should denote kinds or that they are ambiguous (i.e., both kind-denoting and set-denoting).

Let us direct our attention to another reading. N. Lee (1982) observed some examples which seem to cause us to consider subkinds of kinds.

(50) i sakwa-ka masissta
this apple-Nom delicious
'This apple is delicious.'

(51) i chayk-un 5000 won-ita
This book-Topic 5000 won-be
'This book is 5000 won.'

Apparently these sentences are ambiguous. Either this particular apple is delicious or the apples of this kind are delicious.[17] Either this particular

book I am pointing at is 5000 won or books of this kind, say any book entitled *Scarlett*, written by Ripley, is 5000 won per copy.

Additional similar examples are as follows:

(52) motun sakwa-ka masissta
all apple-Nom delicious
'All apples (individual, subkind) are delicious'

(53) hankwuk-ey-nun sakwa-ka manhta
Korea-in-Topic apple-Nom many
'In Korea, there are many apples (individual, subkind).'

We have similar different readings in other languages. Repeating all the translated English sentences given above, we have similar cases of ambiguity.

(54) a. This apple is delicious.
b. This book is 5000 won.
c. All apples are delicious.
d. In Korea, there are many apples.

However, in Korean and in English, there are some constructions where this ambiguity disappears. For example,

(55) There are three apples.

(56) sakwa-ka seys issta
apple-Nom three exist
'There exist three apples'

(57) ku-nun sakwa seys-lul mekessta
he-Topic apple three-Acc ate
'He ate three apples.'

With *three apples*, we do not mean three kinds of apples, and the situation is the same in Korean. Also, we can get rid of this ambiguity by means of different classifiers.

(58) a. na-nun sakwa yele kaci/conglyu-lul mekessta
I-Topic apple several Cl(sort)/Cl(kind)-Nom ate
'I ate several sorts/kinds of apples.'

b. na-nun sakwa yele kay/sangca-lul mekessta
I-Topic apple several Cl(item)/Cl(box)-Nom ate

'I ate several apples. / I ate several boxes of apples.'

The different readings of CNs are permitted according to various syntactic constructions. These different readings are not random, but constitute a case of type flexibility (cf. Partee (1987)) in the following sense. Each common noun is related to several types: set of entities, set of kinds, set of subkinds, etc. In unmarked cases, the set-of-entities reading is readily available, and in some constructions, it is the only reading available; the set-of-kinds reading is available in some other constructins. In other words, the basic denotation of a common noun is a set of entities (singular or plural) and a derived reading is invoked by a sort of domain shifting. This is comparable to the domain shifting caused by classifiers discussed earlier. For example, in the domain of dogs, we can group individual dogs according to the subspecies of dogs, and this constitute a new shifted domain of dogs. What is important is that the domain is flexible, and domain shifting is made possible because of the algebraic structure of the domain.

To sum up, we have examined three seemingly different readings of a common noun in Korean: kind, set of entities, and set of subkinds. All three readings are required for some constructions but not for others. I have proposed that all three readings are related to each other by means of domain shifting or type shifting operations operative on the algebraic structures of the denotations. This applies not only to Korean but also to other languages such as English, and it is comparable to the domain shifting by means of Korean classifiers discussed earlier.

7. CONCLUSIONS

The major point of this paper is that the semantic domains of common nouns in Korean (and English) are flexible. I started with the necessity of distinguishing count and mass domains for common nouns in Korean. Regarding the count domain, I analyzed the semantic domain of a singular noun in such a way that it included 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 needed 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 shifting is simply natural. In this conection, the semantic contribution of classifiers could be appropriately handled: the classifiers function as domain shifters. This conceptualization enabled us to capture the semantic anomaly occurring from the mismatch of a common noun and a classifier.

I also discussed some important related problems. One such problem is "genericity" (Carlson (1977, 1989)) exemplified by the following sentence.

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

As many, including Lee (1989), point out, *sakwa* here seems to mean the kind of apple, not an indivdiual apple or apples. Then, is the singular *sakwa* ambiguous, i.e., both kind denoting and count domain denoting? It may be handled as ambiguous or not. The important point is that in some quantificational constructions, and in the tripartite structure analysis of Carlson's (1989) relational theory of genericity, the count domain is needed anyway, and this count domain should be available even if we decide to make *sakwa* basically denote the kind of apple. The kind apple and the count domain of apples can be realted to each other with the help of the nominalization operator of Property Theory in semantics (Chierchia and Turner (1988)). The domain shifting analysis is further evidenced by another reading of common nouns, the subkind reading, as in the following example.

(60) i sakwa-ka masissta
this apple-Nom delicious
'This apple / this kind of apple is delicious.'

The shifting is possible since the domain of subkinds of apples is available from the algebraic structure of individual apples.

NOTES

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colleagues here at Korea University, Kiyong Lee and Jae-woong Choe, and members of Seoul Workshop for Formal Grammar Theory, including Chungmin Lee and Ik-Hwan Lee, for fruitful discussions on the issues related to the subject of this paper. I also thank two anonymous *JEAL* reviewers for raising questions, providing comments, and even supplying relevant example sentences. Last, but not least, I am most grateful to Hyun-sook, Shinae, and Hyunmin for their support.

[1] For expository presentation of the algebraic notion of lattice, see Partee et al. (1990), Bach (1989), and Landman (1989, 1991).

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

[3] CN(Nominal) may be phrasal rather than lexical:

i. [ppalkan sakwa] twu kay
red apple two CL
'two red apples'

[4] As in:

i. yele salam-i cekun sakwa-lul nanwue mekessta
several person-Nom a few apple-Acc share ate
'Several people shared and ate a few apples.'

[5] As pointed out by a *JEAL* reviewer, a 'kind' reading is possible with this expression:

i. mwul-mata mas-i taluta
water-each taste-Nom different
'Each kind of water tastes different.'

The 'kind' readings will be addressed in section 6. Here, I concentrate on the primary, immediate readings.

[6] A *JEAL* reviewer allows *i / ce / ku sakwa* to denote a group of individuals when used as follows:

i. i / ce / ku sakwa-nun ssekun kes-tul-iya
this/that/the apple-Top rotten thing-Pl-be
'These/Those apples are rotten ones.'

Like Lee (1982), I judge such sentences as unnatural. I, for myself, wish I welcomed the *JEAL* reviewer's judgment, since if these sentences were to be acceptable, the semantic analysis would become all the simpler for it.

[7] Of course, *i-tul / ce-tul / ku-tul* may be used with a syntactically plural CN, as in *i-tul / ce-tul / ku-tul sakwa-tul* ('these / those / the apples'), although this kind of expression seems redundant and somewhat awkward.

[8] Partee's (1988) specific proposal may not be adequate in the following sense. She gives no attention to an important property of plurality, namely collectivity (conversely, distributivity). Many students can arrive individually (distributive) or together (in a bus) (collective). For the sentence *Many students arrived*, we have both proportional and cardinal readings for each of the distributive and collective readings. The proportional distributive and the cardinal distributive readings are simple and need no further comments. The proportional collective reading is that a large portion of the students arrived together; and the cardinal collective reading is that the number of students who arrived together is large enough. 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's. (The DRS for the cardinal reading may serve for both distributive and collective readings.) Similarly, the proportional/cardinal ambiguity holds of the following sentences which have (non-distributive) collective predicates.

i. Many students gathered.

ii. Many students are helping each other.

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

I imagine that the problem of representing proportional collective readings in a DRS may not be so difficult, but I will not pursue the issue further. One relevant thing to note is that even in the case of proportional collective readings, the tripartite representation will need a term denoting a set of singular individuals (|student'|) although the plural noun, e.g., *students*, directly provides only a term denoting a plural domain (|*student'| — |student'|). This is the same situation as the proportinal distributive reading.

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

[10] I use P and *P as variable of different sorts: P for a (certain) mass domain and *P for a (certain) count domain. In fact, there should be numerous sorts of variables to distinguish many different domains that are appropriate for different classifiers.

[11] I might have used ?? instead of * to make it clear that it is more a matter of selectional restriction than grammaticality.

[12] As a *JEAL* reviewer points out, the above argument, which are based on intuition, are only indicative. We need to find more evidence in further research. In this connection, it would be interesting to note that 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), but that he states 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". See also Fukushima (1993), who regards the CN-classifier mismatch as "pragmatically odd", for a model-theoretic analysis of similar constructions in Japanese.

[13] These kinds of sentences are most natural with the topic marker although we may have equivalent sentences with the subject marker *-ka/i*. See later discussion.

[14] Presupposition may be considered as a part of the restrictor. For an interesting discussion about the crucial role of the topic marker *-nun* in presupposition accommodation in Korean, see Ahn et al. (1993).

[15] Lee (1992) also emphasizes the importance of the marker *-nun* in the generic sentences. He further treats this *-nun* as the Generic Marker, which is different from the Topic Marker *-nun*. I think that the two *-nun*'s are one and the same because genericity is closely realted to topicality, as shown earlier. Also, he seems to regard the presence of *-nun* as a necessary condition for the generic interpretation. But I do not assume so because topicality is neither a necessary nor a sufficient condition for genericity. In contrast to I. Lee (1992), C. Lee expressed a view similar to mine with respect to the close relationship between topicality and genericity, in an informal session of the Seoul Workshop for Formal Grammar Theory (Lee (1993)).

[16] For (46) and (47), some additional readings seem possible. (46) may have a kind reading ('Some subkinds of apples are delicious') and (47) may give rise to contrastive readings. I am not concerned with these additional readings right now, but see later discussion with respect to subkind readings.

[17] As pointed out by a *JEAL* reviewer, there may be additional contrastive implication that this apple, particular or kind, not that apple, is delicious.

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