An Analysis of Generic Expressions in Situation Semantics

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0. Introduction.

This paper aims to provide a proper analysis of generic expressions within the framework of Situation Semantics. The analysis suggests a computational model for the appropriate semantic processing of the sentences with generic expressions. The theory in this paper is motivated on the basis of the data from Korean and English, and it is assumed to be generalized to other languages. For this purpose the generic expressions are divided into two categories: namely, Noun Phrase (NP) generics and Verb Phrase (VP) generics.

1. NP(Noun Phrases) Generics

(1) a. kay-nun cic- nun- ta.[1]
dog GnP bark-PrsP-DecP
'The dog barks; Dogs bark'
b. kay-tul-un cic-nun-ta.
dog-PlP-GnP bark
'Dogs bark.'
c. kay-nun cecmeki-tongmwul-i- ta.
dog GnP mammal be-DecP
'The dog is a mammal; Dogs are mammals'
d. kay-tul-un cecmeki-tongmwul-i- ta.
dog-PlP-GnP mammal be DecP
'Dogs are mammals.'

As shown in (1), in Korean the generic NPs are characteristically marked by a particle *nun*, which I call a Generic Particle (GnP, henceforth). A sentence with a plural NP as a subject as in (1.b) is a little bit unnatural, but it is accepted as a generic expression. Deletion of articles and plural particle is very common in Korean. Thus, (1.a) can be interpreted to be synonymous with (1.b). This means that the Korean sentence of type (1.a) may function both as (2.a) and (2.b) in English.

(2) a. The dog barks.
b. Dogs bark.

On the other hand, sentences in (1.c) and (1.d), though generic, are different from (1.a) and (1.b). The difference between (1.a-b) and (1.c-d) can be attributed to the predicates of the sentences. In the present paper the difference will be represented in terms of different logical forms.

There is another fact to be taken into consideration. Depending upon what kind of NPs/predicates are used in a sentence, the particle *nun* may function as a topic particle, as shown in (3).

(3) mica-nun kho- ka yeppu-ta.
Mica TopP nose-NomP pretty-DecP
'As for Mica, (her) nose is pretty.'

This fact accounts for the ambiguity of the sentence in (4).

(4) Ku kay- nun cic-nun-ta.
the dog- GnP bark

The ambiguity of the sentence in (4) can be paraphrased as in (5).

(5) a. The dog (i.e., that particular kind of dog) barks.
b. As for the particular dog, it barks.

That is, sentence (4) is ambiguous between a generic reading and an episodic reading (i.e., topic reading). Here we are interested in the generic reading. Considering this generic reading, we can regard sentences in (1), particularly (1.a), and (4) as generic sentences in Korean. Again, the crucial factor is the presence of the GnP *nun*. Definite NPs without the GnP do not have the generic meaning. As in English, indefinite NPs do not seem to denote the meaning of genericity in Korean. Let us examine the following sentences:

(6) a. Ku kay-ka cic-nun-ta
the dog-NomP bark
'The dog barks = (I haven't expected it, but) the (particular) dog barks/ It's strange that the (particular) dog barks.'

b. Kay han mali-ka cic-nun-ta.
dog a/one AnCT-NomP bark
'A dog barks = One dog barks.'

As the English version in (6.a) shows, a definite NP without the GnP *nun* does not give rise to the reading of genericity. In addition, the nominative marker *ka* (or *i*, depending upon the final sound of the preceding word) deserves a remark. In contrast to the Topic/Generic particle *nun*, the nominative particle *ka/i* marks Contrast or Focus. Sentence (6.b) shows that an indefinite NP in Korean may not trigger the generic meaning.

With some predicates, this is also true in English as the sentences in (7) show as noted by many English linguists such as Lawler[12,13] and Lyons[15].

(7) a. *A lion is extinct.

b. *A lion is no longer to be seen roaming the hills of Scotland.

This may suggest that indefinite NPs do not trigger genericity in many languages.(For a special case, cf. Krifka et al[10].)

As the sentences in (1), (4) and (6) indicate, the GnP *nun* is crucial in delivering genericity in Korean. (6.a) does not have the generic reading because of the nominative particle *ka*. regardless of the presence of the definite article. When the nominative particle is present we cannot get the generic reading as the following sentences show.

(8) a. kay-ka cic- nun- ta.
dog NomP bark-PrsP-DecP
'(Now) A certain dog barks/ is barking = It's strange to see a dog barking.'

b. kay-tul-i cic-nun-ta.
dog-PlP-SP bark
'(Now) Some dogs bark/are barking = It's strange to see dogs barking.'

Sentences in (8) are different from those in (1) in that they have episodic readings, namely they denote situations limited to the present time. I attribute this semantic difference to the nominative particle *ka/i* in (8).

It is true that the sentences in (1) are ambiguous in that they can have episodic readings. That is, in addition to the ascribed generic reading, (1.b), for example, may have a descriptive meaning that can be paraphrased as in (9).

(9) [It is dark outside. No one is around the house. And] Dogs bark/are barking.

If the sentence is in the past tense, it is likely to have this episodic reading. Examine the sentence in (10).

(10) a. kay-nun cic- ess- ta.
dog GnP bark-PstP-DecP
'The dog barked; Dogs barked'

b. kay-tul-un cic- ess- ta.
dog-PlP-GnP bark PstP DecP
'Dogs barked.'

Suppose that we live in a world where no dogs bark. But we know that dogs barked before, say for a certain period of time in the past. Then, the notion of genericity can be defined within that specific past time period. Under such a condition, sentences in (10) can be used to denote generic meaning. Carlson[3] observes a similar phenomenon in English. In addition to this generic reading, both of the sentences can have an episodic reading. My concern in this paper is the generic readings of the sentences exemplified by (1a,b) and (4).

Considering these facts, we can take the examples in (1a,b) and (4) as typical generic sentences in Korean. The type of sentences given in (1.c,d) will be discussed in Section 4.

2. Quantificational Analysis

In the previous two sections I discussed the general characteristics of generic sentences in Korean. An attempt was made in Lee[14] to provide a formal analysis of these types of sentences.

Generic sentences are often discussed in connection with a sentence of the universal quantificational force [8,11,12,13,5,15]. I will briefly review some of the interesting observations. Then I will suggest a reasonable treatment.

In the literature it is noted that a semantic interpretation of the generic operator may be obtained in terms of the universal quantification. The generic operator for (1a-b: repeated here for convenience) may be represented as in (11).

(1) a. kay-nun cic- nun- ta.
dog GnP bark-PrsP-DecP
'The dog barks; Dogs bark'
b. kay-tul-un cic-nun-ta.
dog-PlP-GnP bark
'Dogs bark.'

(11) GEN[x](x is a dog & x barks)

This is different from the semantic representation in (13) of a sentence like (12).

(12) motun kay-ka cic-nun-ta.
all dog NomP bark
'All dogs bark/ Every dog barks'

(13) $\forall(x)\ [D(x) \rightarrow B(x)]$

The formula in (13) means that "for all values of x, if x is a dog, then x barks". However, this formula is too strong in that it can be falsified by discovering only a single non-barking dog. This is not intended by uttering the sentences in (1) and (4). At the same time, the formula in (13) is too weak in that it can be true if it just happens to be the case, as a matter of contingent fact, that all the extant dogs bark. The sentences in (1) are not intended to mean this, either [15,10]. As observed by Lyons[15], we may take the proposition expressed by (12) to be true, while refusing to subscribe to the truth of the proposition expressed by (1) or by (4). Thus, universal quantification does not seem to be satisfactory in formalizing the generic meaning of the sentences in (1) and (4).

A slightly different formulation is suggested by Dahl[5]. He notes that the generic sentence in (14) can be paraphrased either as (15.a) or as (15.b).

(14) A dog barks.

(15) a. In all alternative worlds, all dogs bark sometimes.
b. In all alternative worlds, all dogs are such that in all alternative worlds,
they bark sometimes.

Dahl formalizes (15.a) as (16.a), and (15.b) as (16.b).

(16) a. $\Box \forall x\ F(x)$
b. $\Box \forall x\ \Box F(x)$

He provides several arguments which speak in favor of choosing (15.b) rather than (15.a). Concerning the logical formula, he suggests that there be no significant difference between (16.a) and (16.b).

In his analysis, however, it is not clear how the quantificational adverb 'sometimes' in (15) is interpreted. The formulas in (16) does not specify the semantics of this adverb. It seems that the adverb is introduced to weaken the strong universal reading of the NP 'all alternative worlds'. However, unless the semantics of this adverb is more clearly represented, his analysis will face a similar criticism as in the case of (13). That is, Dahl's formulas in (16) can be regarded as a similar form of any regular formula of universal quantification.

3. Generic Quantifier

It is true that some generic sentence denotes a proposition of the universal quantificational force, as the sentences in (1.c) and (1.d) show, which are repeated here in (17).

(17) a. kay-nun cecmeki-tongmwul-i- ta. (=1.c)
        dog GnP mammal   be-DecP
        'The dog is a mammal: Dogs are mammals'
     b. kay-tul-un cecmeki-tongmwul-i- ta.(=1.d)
        dog-PlP-GnP mammal   be DecP
        'Dogs are mammals.'

The sentences in (17) are different from those in (1.a-b). The generic sentences in (1.a-b), as noted above, allow exceptions. For the sentences in (17), however, there can be no exception under the present biological knowledge. Lawler[12,13] suggests that we postulate two generic quantifiers: namely, a universal generic quantifier ($\forall_g$) for the types of sentences in (17) and an existential generic quantifier ($\exists_g$) for those in (1.a-b).

He analyzes generic sentences in terms of presupposition and assertion. Accordingly, the two different quantifiers are actually represented as two expressions each. According to his analysis, the logical form of a universal generic sentence can be represented in the following general form of (18). Please note that I use the situation variable *s* instead of Lawler's event variable *e*.

(18) a. P: $(\exists s)(\exists x)(\Diamond F(x,s))$
     b. A: $(\forall s)(\exists x)(\Diamond F(x,s) \rightarrow F(x,s))$
        where, P = Presupposition; A = Assertion; *x* = Individual variable;
               s = Situation variable; F = Predicate variable;

It should be noted that the logical operator $\Diamond$ is not an ordinary modal operator. It "can be read as an epistemic" operator (Lawler[13]). That is, it denotes the inherent possibility or ability. Furthermore, the conditional in the assertion in (18.b) is equivalent to saying "if possible". This is necessary in any generic.

On the other hand, an existential generic sentence is represented in the following form:

(19) a. P: $(\exists s)(\exists x)(\Diamond F(x,s))$ (same as (18.a))
     b. A: $(\exists s)(\exists x)(\Diamond F(x,s) \rightarrow F(x,s))$
     (Here, [$\Diamond F(x,s)$ indicates a normal situation.)

In the formula in (19.b), the existential quantifier binding the event variable *e* cannot be treated as an ordinary existential quantifier. If it can, the assertion in (19.b) would have an unfavorable consequence. That is, the proposition in (19.b) will be true even if there is only one situation in which dog barks. This does not correctly capture the genericity denoted by sentences such as (1) and (4). To avoid this confusion, we may devise a new generic quantifier which, allowing exceptions, has the force of a universal quantifier. For this purpose I use the symbol A. Now (19.b) is rewritten as in (20.b), with the presupposition part unchanged.

(20) a. P: $(\exists s)(\exists x)(\Diamond F(x,s))$ (same as (18.a = 19.a))
     b. A: $(\mathbf{A}s)(\exists x)(\Diamond F(x,s) \rightarrow F(x,s))$

Now, the so-called universal generic sentence is represented as (18), and the so-called existential generic one as (20), which I will call a pseudo-universal generic representation. The presupposition part and the assertion part may be conjoined as in (21).

(21) a. Universal generics: (17.a-b = 1.c-d): Logical form: (18)
        $[(\exists s)(\exists x)(\Diamond F(x,s))] \wedge [(\forall s)(\exists x)(\Diamond F(x,s) \rightarrow F(x,s))]$
     b. Pseudo-universal generics: (1.a-b) : Logical form: (20)

$[(\exists s)(\exists x)(\Diamond F(x,s))] \wedge [(\mathrm{A}s)(\exists x)(\Diamond F(x,s) \rightarrow F(x,s))]$

For the interpretation of the quantified formulas, the following truth-conditions are postulated.

(22) a. $[(\forall s)(\exists x)\ F(x,s)] = 1$(TRUE) iff for every value assignment g' to the variable s, for some value assignment h' to the variable x, and for every index i, $[F(x,s)]^{M,g',h',i} = 1$.

b. $[(\mathrm{A}s(\exists x)\ \Diamond F(x,s)] = 1$(TRUE) iff for more than 70% of all value assignments g's to the variable s, for some value assignment h' to the variable x, and for some index i, $[F(x,e)]^{M,g',h',i} = 1$.

The truth condition in (22.b) is a tentative one, which is open to a further refinement. But there is one point to be noted. What is important in the truth-conditions in (22) is the presence of the event variable s. The distinction between the universal and the pseudo-universal generics crucially relies on this variable. In (22.b) the expression '70%' might sound arbitrary. Nonetheless, this seems to be the best formulation I can think of.

The pseudo-universal generic sentence in (1.a) is represented as in (23).

(1) a. kay-nun cic- nun- ta.
dog GnP bark-PrsP-DecP
'The dog barks; Dogs bark'

(23) $[(\exists s)(\exists x)\ [D(x,s) \wedge \Diamond B(x,s)]] \wedge$
$[(\mathrm{A}s)(\exists x)\ [[D(x,s) \wedge \Diamond B(x,s)] \rightarrow B(x,s)]]]$

The universal generic sentence in (1.c = 17.a) is represented as in (24).

(1.c = 17.a). kay-nun cecmeki-tongmwul-i- ta.
dog GnP mammal be-DecP
'The dog is a mammal; Dogs are mammals'

(24) $[(\exists s)(\exists x)\ [D(x,s) \wedge M(x,s)]] \wedge [(\forall s)(\exists x)\ [D(x,s) \rightarrow M(x,s)]]$

4. VP(Verb Phrases) Generics

So far I have discussed the generic NPs. In the examples (3)-(4), however, we can see that the generic reading of a sentence is not uniquely concerned with the so-called generic NPs in the sentence. In this case, the generic meaning is directly related to the semantic characteristics of predicates. In this section I will discuss the generic reading arising from VPs. In particular, habitual sentenced will be discussed in terms of generic reading. Let us examine the sentences in (25)-(26).

(25) mica-nun cha-llu molko hakkyo-ey tani-n- ta.
Mica GnP car AcP drive school to go PrstP DecP
'Mica drives a car to school.'

(26) mica-nun cha-llu molko hakkyo-ey tani-ko- iss- ta.
Mica GnP car AcP drive school to go PrstProg DecP
'Mica is driving a car to school.'

The sentence in (25) denotes a habitual situation (or event), while (26) denotes an event under progress in an interval including the present point of time. Generally, the time period of the event in (25) is determined by some pragmatic factor. The time period in (26), however, is expressed by the progressive aspect.

If a time adverb is used the situation is different. Look at the sentences in (27)-(28).

(27) mica-nun ol yelum-ey cha-llu molko hakkyo-ey tani-n- ta.
Mica GnP this summer-in car AcP drive school to go PrstP DecP
'Mica drives a car to school this summer.'

(28) mica-nun ol yelum ey cha-llu molko hakkyo-ey tani-ko- iss- ta.
Mica GnP this summer-in car AcP drive school to go PrstProg DecP
'Mica is driving a car to school this summer.'

The sentence in (27) can be interpreted either as the future meaning or as the report of the present habit. On the other hand, (28) is interpreted only as the present habit. The simple present in (27) limits the time period to 'this summer'. The present progressive in (28), however, gives rise to the reading of 'at least this summer'. Thus in (28) it is denoted that the time period may be extended over the period 'this summer'. Here I am concerned with the present habitual reading of the sentence. I analyze this habitual meaning in terms of the method suggested for generic sentences in Lee[14].

Specifically, the sentences are analyzed by adopting the methods suggested in Dowty[6], Parsons[17], Kearns[9], Lee[14]. That is, in interpreting the tense and aspect of the sentences I adopt Dowty's time interval. Furthermore, I adopt the event variable from [17,9]. To represent the habitual event I use the semantics of generics elaborated in Carlson[3,4] and Lee[14].

According to Kearns[9], the sentences in (25) and (28) are represented as (29) and (30), respectively.

(25) mica-nun cha-llu molko hakkyo-ey tani-n- ta.
Mica GnP car AcP drive school to go PrstP DecP
'Mica drives a car to school.'

(28) mica-nun ol yelum ey cha-llu molko hakkyo-ey tani-ko- iss- ta.
Mica GnP this summer-in car AcP drive school to go PrstProg DecP
'Mica is driving a car to school this summer.'

(29) Es(driving-a-car-to-school(s) $\wedge$ Agent(m,s)) [s=situation]

(30) [Qt: t = this summer] (Es[[at(s, t) $\vee$ [Et'[(t is a proper subset of t') & at(s, t')]] $\wedge$ driving-a-car-to-school(s) $\wedge$ Agent(m, s)]]
(s menas situation)

Here the logical form in (30) indicates that the time period may be extended over the expressed period 'this summer'. Kearns[9] notes that a situation denoted by a habitual sentence implies the sporadic situations within the time period. This fact can be represented by the logical form given in (31). I replace Kearns' variable e by s.

(31) EIEs[(at(s, I) $\wedge$ P(s))] +> EtEs[(t is a subset of I) $\wedge$ at(s, t) $\wedge$ P(s)]

As shown in (31) a situation which is true within I satisfies the predicate P. If this situation is satisfied, it will be the case that there is a time t (t is a subset of I) and a specific situation s is true of this time t. This event is designated by the predicate P.

Now, I represent the analyzed meanings, namely (29), (30), and (31) in terms of the formalism introduced in Lee[14]. That is, I represent the situation s in I as a part of the presupposed meaning, while I represent the fact that there are specific events in I in the form of assertion. I introduce a general interval in the representation given in (29). In (30) I rewrite t and t' as I and I', respectively. I take t in (31) as an existential generic expression and introduce a quantifier A which binds the time t. Accordingly, (25) and (26) are represented as (32) and (33), respectively.

(25) mica-nun cha-llu molko hakkyo-ey tani-n- ta.
Mica GnP car AcP drive school to go PrstP DecP
'Mica drives a car to school.'

(32) EIEs[[(at(s, I) $\wedge$ driving-a-car-to-school(s)) $\wedge$ Agent(m, s)] $\wedge$
$\forall I$Es[[(at(s, I) $\wedge$ driving-a-car-to-school(s))] $\rightarrow$[A tEs'[(t is a subset of I) $\wedge$ at(s', t) $\wedge$
$\Diamond$ [(driving-a-car-to-school(s') $\wedge$ Agent(m, s')]]
$\rightarrow$ [(driving-a-car-to-school(s') $\wedge$ Agent(m, s')))]]]]
(s' is a specific situation(or event) of the type of s)
(Here, $\Diamond$ [(driving-a-car-to-school(s') $\wedge$ Agent(m, s')] indicates a normal situation.)

(26) mica-nun cha-lul molko hakkyo-ey tani-ko- iss- ta.
Mica GnP car AcP drive school to go PrstProg DecP
'Mica is driving a car to school.'

(33) EIEs[[[at(s, I) $\vee$ EI'[(I is a proper subset of I') $\wedge$ at(s, I')]] $\wedge$
driving-a-car-to-school(s) $\wedge$ Agent(m, s)] $\wedge$
[$\forall I$Es[[(at(s, I) $\wedge$ driving-a-car-to-school(s))] $\rightarrow$ [A tEs'[(t is a subset of I) $\wedge$ at(s', t)] $\wedge$

$\Diamond$ [(driving-a-car-to-school(s') $\wedge$ Agent(m,s')]]
$\rightarrow$ [(driving-a-car-to-school(s') $\wedge$ Agent(m,s')]]]
(s' is a specific situation(or event) of the type of s. That is, s' has a part-of relation to s(Cooper 1991).)

For the semantic interpretation of (32) and (33) I introduce the following truth condition for the pseudo-universal quantifier (i.e., generic quantifier).

(34) [AtEs'[[(t is a subset of I) $\wedge$ at(s',t)] $\wedge$
$\Diamond$ [driving-a-car-to-school(s') $\wedge$ Agent(m,s')]]
$\rightarrow$ [driving-a-car-to-school(s') $\wedge$ Agent(m,s')]] = 1(TRUE) iff for more than 70% of all value assignments h's to the variable t, for some value assignment g' to the variable s', and for some index i,
[(driving-a-car-to-school(s') $\wedge$ Agent(m,s'))]$M^{g',h',i}$ = 1.

As shown in (32), (33), and (34), we can represent the habitual reading of the simple present sentence and the present progressive sentence in terms of the semantic representation of generic expressions. In the truth condition given in (34) the phrase 'more than 70%' and the expression '70%' in (22.b) need to be further investigated. On this point there may be difference depending upon culture and individual.

5. Situational Analysis

So far we have discussed the generic sentences within the traditional quantificational logic. In particular, the logical forms were formulated in terms of presupposition and assertion. I conjoined the logical forms of presupposition and assertion in order to simplify the representations of the two types of generics: namely, Universal and Pseudo-universal generics. It was noted that question of truth condition still remained as a problem. The problem was the interpretation of the the generic quantifier. Now we would like to reconsider this problem.

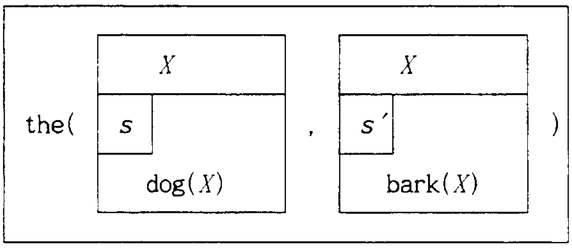
The problem can be resolved if we use the notion of 'resource situation'. That is, we will interpret the generic quantifier(A) in (23) by the notion of default value on the basis of the data base constructed in the model theory. This is motivated on various suggestions made in several works such as Krifka et al.[10], Barwise & Cooper; Cooper [1,2], Woods [20], Sowa[18], Wilensky [19], Eijck & Alshawi [7]. The idea is substantiated in the theory of situation semantics.

In (22-23) above we tried to account for the number of individuals that do not satisfy the property postulated for the generic expressions, namely the remaining 30%. Now we would like to turn our attention to the number of individuals that satisfy the requirements, i.e., 70% of the individual set.We account for this portion of the set by the notion of the default value. In some case there may be specifically unusual property mentioned in the resource situation. This case explains the remaining portion of the set that do not satisfy the required property. The possibility operator($\Diamond$) in (23) is represented in the form of situation type. As shown in (36), this is shown in the second argument of the situational representation. This is to explicate that even a normal dog is not always barking. Resource situations are understood in terms of a partial function, which is different from the absolute notion of the traditional possible worlds. That is, an example of resource situation is simply a partial representation of a situation. Within this theory, the default values concerning a generic sentence are accepted as they are unless specifically unusual properties are postulated in the resource situation(Cf.[20]). Let us now represent the idea within the framework of situation semantics

As suggested by Cooper[2] the logical form of generalized quantifiers is represented in terms of the relationship between types. For example, the sentence in (35), ignoring the question of tense, has the situational representation of (36).

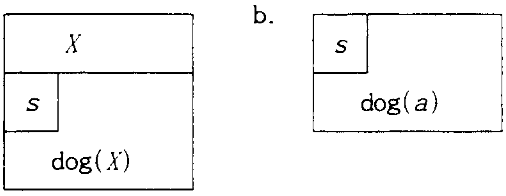
(35) The dog barked.

(36)



Here, the first argument, the type shown in (37a) below, makes the second argument in (37b) true by requiring the uniqueness of the individuals. In this way, the argument in (37a) functions as the resource situation which guarantees the proper use of the expression 'the dog'.

(37) a. b.

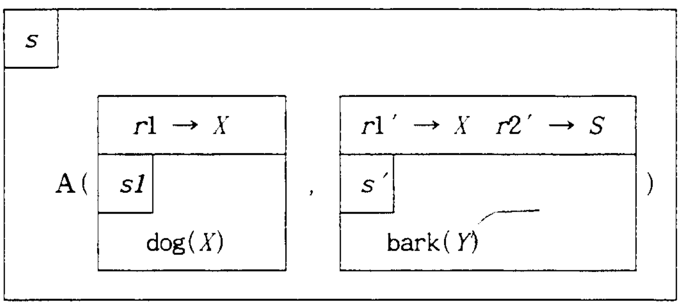


We now use this method in providing a proper representation of generic sentences. For convenience, let us reconsider the example we discussed above.

(1) a. kay-nun cic- nun- ta.
dog GnP bark-PrsP-DecP
'The dog barks; Dogs bark'

In the representation of (1.a) in the form of (36), we make the second argument a generic type. That is, the second argument becomes a situation type which has the possibility of realization.

(38)



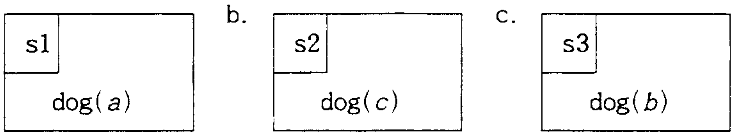
This situation is true
iff the formula Ax[s1 ⊨ dog(X/x) ⇒ ∃s′ ≤ s ∧ s′ ⊨ bark(Y/x)] is satisfied.
(Condition: *s* is a consistent situation, and both *s*1, *s*′ are close (or equal) to *s*. (i.e., s1, *s*′ ≤ *s*; *s*′ is a realization of *S*; *r*1, *r*2 are role indexes). The logical form Ax[p ⇒ q] is different from a traditional one. Here, if p does not hold, q does not hold, either. The emphasis is given on the description of the situation rather than on the truth conditions.

Let us now turn to the resource situation. Suppose the domain of discourse (U) is defined as in (39).

(39) U = {a, b, c}

Then the possible resource situations may be defined as in (40).

(40) a. b. c.



Here, we understand dog(*a*), dog(*c*), dog(*b*) each shows that each of the individuals *a,c,b* possesses the most natural set of properties any normal dog may possess. That is, in this case the individuals possess the set of properties which a standard dog may possess. Thus, when this type of resource situations are provided in the data base, the situation shown in (38) holds true. In the evaluation process the second argument in (38) is also taken into consideration.

In addition, the following is also one of possible resource situations.

(41)

s3
dog(*b*) mute(*b*)

This is a resource situation about the individual b in the domain of discourse. In other words, this is a revised version of (40c). The difference lies in that (41) has an extra unusual property (i.e., mute(b)). If we take (41) into consideration, in accordance with the interpretation method of default values, (38) is to be judged to be inappropriate for the situation.

Considering (40)and (41), we may postulate a model situation for (38) as in (42). That is, (38) represents a partial situation something like (42). On the basis of the model situation in (42), we can say (38) holds.

(42) a. $[s1 \models \langle dog,\ a,\ 1\rangle] \Rightarrow [s'1 \models \langle bark,\ a,\ 0\rangle]$
$[s'2 \models \langle bark,\ a,\ 1\rangle]$
$[s'3 \models \langle bark,\ a,\ 1\rangle]$

b. $[s2 \models \langle dog,\ c,\ 1\rangle] \Rightarrow [s'1 \models \langle bark,\ c,\ 0\rangle]$
$[s'2 \models \langle bark,\ c,\ 1\rangle]$
$[s'3 \models \langle bark,\ c,\ 1\rangle]$

c. $[s3 \models [\langle dog,\ b,\ 1\rangle;\ \langle mute,\ b,\ 1]\ ] \Rightarrow [s'1 \models \langle bark,\ b,\ 0\rangle]$
$[s'2 \models \langle bark,\ b,\ 0\rangle]$
$[s'3 \models \langle bark,\ b,\ 0\rangle]$

In the previous analysis[14] I considered the case in (42c) to be a serious problem. The problem has been solved by postulating the new principle of an appropriate interpretation of default values. This method can naturally explain that the situation (38) has a positive prediction in the cases of (42a,b), and that it has a negative prediction in the case of (42c). This is an automatic consequence of the principle of the default value interpretation method. This model devised within the situation theory can be implemented with a proper computer programming. On this further project I plan to collaborate with a computer scientist.

5. Summary

In this paper Korean generic sentences are divided into two major categories. They are NP generics and VP generics. NP generics are further subdivided into universal generics and pseudo-universal generics.

The the universal NP generics (1.a-b) are formalized as in (23), while the pseudo-universal NP generics in (1.c-d) are logically represented as in (24). In providing the formal representation I took into consideration the formal representations suggested by Lawler[11,12], Carlson[3], and Krifka et al.[10]. Nonetheless, the representations in (23) and (24) are different from these analyses in some way or other. VP-generic sentences were discussed on the basis of habitual sentences.

Finally, I reinterpreted the problem of the semantic s of generics within the theory of Situation Semantics. By devising the interpretation principle of default values, taking the resource situation into consideration, it was possible to provide a proper analysis of generic sentences.

NOTES

1. In describing Korean data, the following abbreviations are used:
AccP = Accusative Particle; AnCT = Animal Counter; DecP = Decl Particle
ExcP = Exclamatory Particle;GnP = Generic Particle;NomP = Nom Particle
PossP = Possessive Particle;PostP = Postposition;PlP = Plural Particle
PrstP = Present Tense Particle; PrstProg = Present Progressive Aspect
PstP = Past Tense Particle; TopP = Topic Particle

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