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ABSTRACT

This paper argues that the Korean particles "-to" and "-na" can be analyzed as having one core meaning with their own accompanying meanings due to illocutionary forces or to people's world-knowledge on orderings among the elements of alternative sets. It also maintains that both the incompatibility of "amwu" ('any') plus "-to" and the concurrence of "amwu" plus "-na" with upward entailing property predicates are due to informativity and some other pragmatic felicity conditions. The quantificational forces of polarity items are then examined. Finally, since negative polarity items are accompanied by strong stress, arguably related to focus, it is possible to show how focus participates in the compositional derivations and contributes to the entire meaning of the sentence in which it occurs. Contains 28 references. (MDM)

NEGATIVE POLARITY ITEMS AND THE SEMANTICS OF THE PARTICLES *-TO* AND *-NA* IN KOREAN*

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Abstract: The quantificational forces of polarity items are revisited and accounted for in terms of pragmatic principles and lattice theoretic semantics (cf. Krifka 1990). Particularly in Korean, the particles *-to* and *-na* are used to form polarity sensitive-*any* and free choice-*any* respectively. They are notorious for their various meanings. A unified analysis of them is pursued. Further I discuss what contribution they make to the semantics of polarity items. The paper also includes a brief discussion of the involvement of focus in polarity items.

1. Introduction

In this paper, I will treat four aspects of negative polarity items[1](henceforth NPI) and the particles *-to* and *-na* in Korean. First, we are going to show what the particles *-to* , and *- na* mean. I will argue against previous analyses, which have assumed a variety of different meanings, and show that a unified analysis is possible. Second, based on the core meaning of *-to* and *-na*, which we are going to capture, I will provide an explanation for the reason that NPI's only go with the particle *-to*, and Free-Choice *amwu* ('any') with the particle *-na* . Third, I will briefly discuss the quantificational forces of polarity items, especially that of FC-*any*. Lastly, NPI's are accompanied by strong stress, arguably closely related to focus. Following Krifka (1992) we will try to show how the focus participates in the compositional derivations, and contributes to the entire meaning of the sentence in which it occurs.

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2. The semantics of the particles *-to* and *-na*

Previous analyses: As mentioned above, most of the previous analyses of the semantics of *-to* and *-na* have argued or observed that they differ with the context in which they occur. We can classify the previous analyses into two groups: The first group are purely descriptive analyses and do not rely on any theoretical framework, and present intuitive meanings of *-to* and *-na* by taking into account the contexts in which the particles can occur. The second group are formal analyses. As representatives of the first and the second group of analyses, let's take Hong (1982 &1992), and Lee (1979), respectively. We will take his analysis of *-to* as representative because his analysis has been most influential, and is frequently referred to in the literature. Hong (1982) observes the following meanings of *-to* .

(1) Hong (1982:4)

a. Picking-up an extreme case
Chomsky-*to* ku tongsa-lon-lul ihayhal-swu-ep-ta.
that syntactic-theory-Acc understand-can- not-Dec
'Not even Chomsky can understand the syntactic theory.'

b. Expressing the flavor of concession
Samtung cha-*to* coh-ta.
third-class train likable-Dec.
'The third class train is also OK'

c. Emphasizing negative assertion
.Mal ha-l him-*to* ep-ta.
talk do-Comp strength not have-Dec.
'(I) do not even have the strength to talk.'

d. Adding emphatic flavor
Eysang-*to* mos hay-ss-ta.
expectation cannot do-pst-Dec.
'(I) was not able to expect (what will happen.)'

e. Emphasizing the meaning of an adverb
Ppali-*to* talli-n-ta
fast run-prst-Dec
'Someone runs fast.'

Even though Hong (1982 & 1992) faithfully enumerates the meanings the particles *-to* and *-na* can convey, he doesn't try to explain why *-to* and *-na* change their meanings from context to context. If his observation were right, in other words, a word (or morpheme) could have so many unrelated meanings, we would have to treat them as different lexical items, which happen to be phonologically identical. It is an implausible assumption that the particles *-to* and *-na* have more than one different meanings. Instead any theory that derives the contextually different meanings from a single core meaning and the influence of the context should be preferred.

Lee (1979), following Karttunen and Peters (1979), analyzes the meaning of an expression at two-levels, the meaning proper and the conventional implicature (or presupposition) of the expression, given as a pair < E, I >. He tries in particular to capture the meaning of implicature which seems to be triggered by the particles *-to* and *-na* Thus he observes that the particles *-to* and *-na* would have the following meanings, which are given here in informal paraphrases:

(2) Lee (1979:38)

a) Mica-to Chelswu-lul coahan-ta.
  -too -Acc likes-Dec.

E: Mica likes Chelswu.

I: There is some x (x ≠Mica) such that x likes Chelswu.

b) Mica-ka Chelswu-na manass-ta.
  -Nom ?? met-Dec.

E: Mica met Chelswu.

I: i) There is some x (x≠Chelswu) such that Mica did not meet x.

ii) Either Chelswu or x can equally be chosen for Mica to meet.

iii) Neither Chelswu nor x is the best choice.

iv) The best choice is not available (for Chelswu to choose)

I think that his analysis of the meaning of *-to* and *-na* leaves many things to be desired. First, even though 2)-a) represents the implicature or presupposed meaning of the expression in which the particle *-to* appears, it alone cannot capture the meanings mentioned in (1) fully. In other words, Lee (1979) does not mention anything about the various meanings or how we can get such meanings relative to a given context. Second, he takes as the meaning of *-na* the meanings which seem to be mostly attributable to illocutionary operators. In short, he fails to take into account the fact that if the particle *-na* attaches to elements other than the subject, the sentences where it appears almost always are propositive but not declarative, as the following example shows.

(3)

a)*Mary-ka yenghwa-na po-ass-ta.
-Nom movie see-pst-Dec.
'Mary saw a movie'

b) Yenghwa-na po-ca
movie see-PRPS
'Let's see a movie'

In this paper, it will be argued that most of the implicature parts of *-na* in (2) are due to the propositive illocutionary operator.Third, Lee's framework inherits certain problems from Karttunen and Peters (1979), for example, the impossibility of variable binding across E and I, and the treatment of presupposition projection (cf. Beaver 1992 for a discussion). To avoid these problems and to allow for a compositional treatment of the derivations of expressions, we will introduce an operator for presupposition, '∂', following Beaver (1992). (See Beaver 1992 for the semantics of this operator given in a framework of dynamic interpretation.)

An alternative analysis of the meaning of *-to* and *-na* : Following Bolinger (1977), we assume as the null hypothesis that an expression has only one (core) meaning. Other meanings are explained as being triggered by some pragmatic factors and our world knowledge or as arising through the interaction of the meaning of the particle with the meaning of its context in a compositional way. Keeping this in mind, let's turn first to the meaning of the particle *-to* . We can raise the question about how many meanings the particle *-to* could have. Hong's observations show that the meaning of *-to* varies with the context. However, a careful review of the examples in (1) tells us that all the uses of *-to* have something in common. This can be shown preliminarily as follows: Let us represent the meaning of a sentence minus the subject containing the particle *-to* by a predicate 'R' whose type is <e,t>. Every sentence asserts that R(x), where x is the denotation of the subject, and it is presupposed that there are other elements y that are comparable with x, for which R(y) holds. We see that by applying a standard test for assertion and presupposition, as mentioned in Van der Sandt (1988), the following hold: First, the presuppositions of a sentence F, but not its assertion, are entailed by a sentence like 'It is possible that F'. For example, the following shows the behaviors of presuppositions and assertions:

Test: It is possible that the king of France is bald.
$\Rightarrow$ There is a king of France. (Presupposition)
$\not\Rightarrow$ The king of France is bald.(Assertion)

The second test to identify the presuppositional meaning of a certain sentence, is to make use of the following construction:

Test:
a) There is a king of France, and Mary regrets that the king of France is bald.
b) *Mary regrets that the king of France is bald, and there is a king of France.

The first part of a), 'There is a king of France.' is the presupposition of 'The king of France is bald.' If we utter b), it is infelicitous because the first part of b), 'Mary regrets that the king of France is bald.' has already presupposed the rest, 'There is a king of France.'. That is, this way of speaking violates the Cooperative Principle of Grice (1967) because the second conjunct is no longer informative to the hearer, having been assumed already by the first conjunct. The third test is to negate a sentence F that carries a presupposition, in which case the presupposition is entailed by the negation of F .

Test:
A: The king of France is not bald.
B: There is a king of France.

The third test is not so convincing in every case because with a negation the hearer can also reject and correct the speaker's presupposition. Thus the correction of the speaker's presupposition can look like a negation of the presupposition. By employing the first test[2], we can identify the presupposition of the speaker's utterances in (1) . I will do the test for (1)-a), b) and e)

(4) Tests:

a): Chomsky-to ku tongsalon-lul ihayhal swu epu-l swuiss-ta.
that syntactic theory-Acc understand can not-Rel can -Dec
'It is possible that even Chomsky cannot understand the Syntax.'

⇒ Chomsky-oy ihayhal swu-ep-nun salam-tul-i iss-ta.
-except understand can-not-Rel people-PL-Nom be-Dec.
'There are other persons than Chomsky, who can not understand it.'

≠> Chomsky-ka ihayhal-swu-ep ta.
-Nom understand-can-not Dec
'Chomsky can not understand it.

b). Samtung cha-to coaha-l swuiss-ta
third class train likable-Rel can -Dec..
' It is possible that the third class train is also OK'

⇒ Samtung cha-oy coaha-l cha-ka iss-ta.
third class train-except like-Rel train-Nom be-Dec.
'There are other trains than the third class train, which (I) like.

≠> Samtung cha-lul coaha-n-ta.
third class train-Acc like-prs-Dec.
'(I) like the third class train.'

e) Ppali-to tali-l swuiss-ta.
fast run-Rel can-Dec
'It is possible that (s)he runs also fast.'

=> Talun-pangsik-ulo-to tali-ess-ta
other-manner-in run-pst-Dec
'(S)he ran in other manners.'

≠> ppali tali-ess ta
fast run-pst Dec
'(S)he ran fast.'

These data suggest that we tentatively take the assertional meaning of *-to* to be a subject suffix; $\lambda X \lambda Y[Y(X)]$, that is, it simply says that the sentence without *-to* is true. As presuppositional meaning, we have $\lambda X \lambda Y \exists X' [X' \in ALT_{\neq}(X) \ \& \ Y(X')]$. Here X and Y are employed as variables over the element to which the particle *-to* attaches and the rest of the sentence in question, respectively. The notation 'ALT' is used to denote a function, which takes an object and yields a set of objects (of the same type as its argument) that may be regarded as being under consideration in an on-going discourse. '$ALT_{\neq}(X)$' stands for a set of alternatives to X which are not equal to X itself (cf. Rooth 1985 and Krifka 1991 for more on the use of the notation). That is, *-to* introduces the presupposition that there are alternatives to X for which the sentence predicate holds. If we represent the meaning as a two-level structure as above, we cannot guarantee that the X in the assertion part and the X in the presupposition part are identical. To guarantee this, we follow Beaver (1992), who introduces a presupposition operator '∂' within a framework of dynamic interpretation. Thus we can connect the two parts of meanings without the problem of insensitivity to variable bindings introduced in the assertion.

(5) $[\![\text{-}to]\!] \doteq \lambda X \lambda Y [\partial \exists X' [X' \in ALT_{\neq}(X) \ \& Y(X')] \ \& [Y(X)]]$.

Now let us explain why such a simple meaning of *-to* can give rise to seemingly different meanings in different contexts. For this purpose, we will refer to the concept of pragmatic scales as introduced by Fauconnier (1978). For example, (6)-a) pragmatically entails -b) according to (7).

(6)
a) Max can solve the most difficult problem.
b) Max can solve all problems .

(7) <u>The pragmatic scale</u> $\leq$;
$\leq$ is a pragmatic scale for R (predicate) iff for all x, y in the domain of $\leq$, if R(x) and $x \leq y$, then R(y) (Note that $\leq$ need not be linear or anti-symmetric, but for reasons of simplicity, here we assume that scales are linear.)

From the definition of the pragmatic scale we can derive the following principle, assuming that a speaker is always maximally informative:

(8)

A) If '$R(x)$' is uttered as the most informative expression among the alternative $R(y)$, $R(z)$,..., then we can conclude $\forall y[\, y \leq x \rightarrow \neg R(y)]$, otherwise $R(y)$ would have been uttered, with $y \leq x$.

B) If '$\neg R(x)$' is uttered, then this is the most informative assertion among the possible alternatives. As $\forall x,y\ [\neg R(x)\ \&\ y \leq x \rightarrow \neg R(y)]$ (from 7)), this means that $\forall x,y\ [\, x \leq y \rightarrow \neg\neg R(y)]$

The pragmatic scale and the informativity principle above are closely related to Quantity Implicatures based on the maxim of Quantity by Grice (1967),'Make your contribution as informative as is required for the current purposes of the exchange.' Implicatures due to the maxim of Quantity have been analyzed by many scholars; Scalar Implicatures[3] by Horn (1972), Fauconnier (1975 &1978), Gazdar (1979), Levinson (1983), etc. What we should note is that scalar implicatures are built on the conventional elements of a linguistic scale in terms of Horn (1972); In (7), variables x, y belong to such a linguistic scale. In addition, (8), the informativity principle, shows the direction of quantity implicatures. Especially (8)-B) shows the classical cases of scale reversal by negation.

Let's turn to our data. What if we replace the negation, *ep* ('not have') in (1)-a) with *iss* ('be or exist')? All of a sudden, (1)-a) sounds unnatural or unacceptable. Why is this the case? It has to do with the pragmatic scale, (7) and the informativity principle (8). According to our[4] common world knowledge, the pragmatic scale would look as follows:

(9) Scale of understanding linguistic theories
< ...X, Y, Z... Chomsky >

According to (5), *-to* presupposes that there is at least one individual that is different from the referent of the NP to which *-to* attaches, and R, which in this case is **understand-the-theory**[5], holds of it. However, based on the pragmatic scale of (9) we know that if $\neg R$ (**Chomsky**), then

$\forall y[\ y \leq x\ \&\ x=\mathbf{Chomsky} \rightarrow \neg R(y)]$. Or if 'Chomsky' doesn't understand the theory, then nobody can. This means that we can not find any individual x such that $R(x)$ is felicitous as an assertion in terms of informativity. If the original negation is kept in situ, the negation reverses[6] the pragmatic scale according to (8)-B), and 'Chomsky' will be the bottom element on the reversed pragmatic scale. This reversal results in '$\forall y[\ x=\mathbf{Chomsky}\ \& \neg R(x)\ \&\ x \leq y \rightarrow \neg R(y)]$.' Thereby, we can find individuals of which $\neg R$ holds. Therefore, the meaning of *-to* is compatible with the reversed scale. In short, to insure informativity the particle *-to* must not be attached to the top element on the pragmatic scale. Furthermore, the meaning of *-to* varies with the characteristics of the pragmatic scale concerned. For example, as for the flavor of concession in (1)-b), we can provide the following explanation;

(10)Scale of classes of trains (in Korea)
< third class, second class, first class, prestigious class >

By the meaning of *-to* , and 'the third class of train', the denotation of the constituent to which the particle *-to* attaches, we know that there are other classes of trains, which are better than the third class, and naturally the speaker likes much more than the third class. Further we can infer that in order to express his modest concession the speaker picks up the bottom element on the scale of classes for trains, which is the most humble one available and goes to some extent against his own inclinations. On the other hands, if he utters 'the first class-*to* ' to show his yielding manner, he will fail to do so because on the scale of classes for trains, 'the prestigious class', which he can only yield by taking 'the first class' (the second luxurious one), is the most luxurious. Thus as a concessive clause, *iltung cha-to coh-ta* (' The first class train is also OK.') sounds awkward.

In conclusion, the role or the meaning of *-to* is only to indicate that there is some other option available on the pragmatic scale. or among alternatives We can relate this role to the notion of alternatives just by assuming that there are alternatives; if they forms a pragmatic scale, then the observed effects come about.

NPI's and *-to* : As in other languages, NPI's in Korean also are usually expressed by phrases denoting the minimal element of specified sorts[7]. However, as Krifka (1991:21) points out, 'it is often not easy to characterize a polarity sort, although one cannot help, as a speaker of a language, to have the idea that polarity items evoke a certain natural class of entities, events, attitudes, or the like.' The followings are examples of NPI's in Korean.

(11) a) Kunye-nun sonkkalak-to hana kkattak-ha-ci an-ass-ta.
she-Top finger one slight move-do-suff Neg-pst-Dec
'She didn't lift a finger.'

a')*Kuney-nun sonkkalak-to hana kkattak-hay-ss-ta.
she-Top finger one slight move-do--pst-Dec
'She lifted a finger.'

sonkkalak-to hana kkattak-ha ('lift a finger') relates to acts of labor, and denotes such an act that involves less labor than some arbitrarily small limit.

(11) b) Na-nun ttayngcen han-pwun-to ep-ta.
I-Top red cent one-counter(of money) not have-Dec
I don't have a red cent.'

b)*Na-nun ttayngcen han-pwun-to iss-ta.
I-Top red cent one-counter(of money) be-Dec
' I have a red cent.'

ttayngcen han-pwun ('a red cent') relates to amount of money, and denotes such an amount that is smaller than some arbitrarily small amount.

(11) c) Kuney-nun nwunsep-to hana kkattak ha-ci an-ass-ta.
she-Top eyelash one slight move do-suff Neg-pst-Dec
'She didn't bat an eyelash.'

c') *Kuney-nun nwunsep-to hana kkattak-hay-ss-ta.
-do-pst-Dec
'She batted an eyelash.'

nwunsep-to hana kkattak-ha ('bat an eyelash') relates to the reactions to stimuli, and denotes one that involves a weaker reaction than an arbitrarily weak reaction.

(11) d) Pi-ka han pangwul-to o-ci an-ass-ta.
rain-Nom one drop come-suff not-pst-Dec
'There was not a drop of rain.'

d') *Pi-ka han pangwul-to o-ass-ta.
'A drop of rain fell down.'

han pangwul ('a drop of (rain) ') relates to an amount of rain, and denotes such an amount that is smaller than some arbitrarily small amount.

(11) e) Ne-nun ku mwuncey-lul payknyen ka-to mos pwu-n-ta.
you-Top the problem-Acc 100 year go unable solve-pst-ta
' You can not solve the problem in 100 years.'

e') *Ne-nun ku mwuncey-lul payknyen ka-to pwu-n-ta.
' You can solve the problem in 100 years.'

In this case, the NPI, *payknyen ka* ('in 100 years') denotes very high values on the scale. Whether we select low or high values depends on the construction. Below I will explain why *payknyen ka* takes the highest value on the scale differently from most NPI's.

Following Fauconnier (1978), we know from the above examples that there is some ordering among the elements of a sort to which the NPI belongs. Krifka (1990 & 1991) makes use of a lattice-theoretic approach to explain the reason that NPI's have to appear in a (restricted) downward entailing (hereafter DE) context. Following him, we can assume that the elements of the same sort as the denotation of the NPI form a preorder but not a linear order as in Fauconnier's notion of the pragmatic scale., and that the NPI itself is the smallest element on that ordering.

(12) $S = \langle A', L_A, \leq_A \rangle$ is Negative Polarity Structure iff
a) if A' is of type δ, L_A is of type $\langle \delta, t \rangle$ (set of δ-elements);

b) $\leq_A$ is a preorder relation on L_A;
c) $A' \in L_A$, and L_A contains more than one element;
d) A' is the unique Y such that for every $X \in L_A$, $Y \leq_A X$.

For the above Negative Polarity Structure, we find a correlation either with the part relation or set-inclusion relation on events and objects as follows:

(13)
a) $\forall X, e\, [X \in L_A \,\&\, e \in X \rightarrow \exists e'\, [e' \in A' \,\&\, e' \leq_p e]$, where $\leq_p$ stands for a part relation.

b) $\forall X[X \in L_A \,\&\, X \neq A' \rightarrow X \subseteq A']$

For example, let X be some predicate applying to acts of labor, then it holds that there is an e' in the predicate **lift-a-finger** that is part of e. (13-b) is for the L_A whose NPI, A', is like **a-sound**, **anybody**, etc.. For (13-a), the part relation will turn into a set inclusion relation similar to (13-b) at the propositional level. This is shown in (13'). Since $\leq_A$ is defined in terms of a part relation for objects and events we can assume that the Negative Polarity Structure is compatible with the part relation for events and objects. (13) tells us that the set of possible worlds where an event or an object that the NPI applies to occurs or exists is the most inclusive, that is;

(13')
a) $\{ w \mid [\![\exists e\, [\, \mathbf{sing}\, (e)]]\!]^{w} = 1 \} \subseteq \{ w \mid [\![\exists e\, [\, \mathbf{a\text{-}sound}\, (e)]]\!]^{w} = 1 \}$

b) $\{ w \mid [\![\exists e[\, \mathbf{clean\text{-}a\text{-}room}(e)]]\!]^{w} = 1 \} \subseteq \{ w \mid [\![\exists e[\, \mathbf{lift\text{-}a\text{-}finger}\, (e)]]\!]^{w} = 1 \}$

Based on (13'-b), we can say that *sonkkalak-to hana kkattak-ha* ('lift a finger'), NPI, is the most inclusive one among the alternatives in L_A. Therefore, it is the least informative alternative. Furthermore, we can generalize the infomativity relation based on the part or set-inclusion relation on objects or events as follows:

(13")$X \leq_I Y$ (Y is as much as or more informative than X), where X and Y belong to a set of same sort and are properties of t-based type, e.g., $<s, <e,t>>$, iff either

a) $\forall w', x, y[X(x)(w') \& Y(y)(w') \& x \leq_{p,w'} y \rightarrow [\{w' | [\![Y(y)(w')]\!] =1\} \subseteq \{w' | [\![X(x)(w')]\!]=1\}]]$, or

b) $\forall w, X, Y [Y(w) \subseteq X (w) \rightarrow \{w | [\![\exists y [Y(y)(w)]]\!] =1\} \subseteq \{w | [\![\exists x [X(x)(w)]]\!]=1\}]$

Given the part relation and set inclusion and the informativity ordering above in connection with NPI, we can provide an explanation for the reason that NPI's appear in the contexts of DE. If NPI's are used in the scope of negation, or DE contexts, the set inclusion relation will be reversed, and this results in the reversal of the informativity-structure. Thus we have to use NPI's in the scope of negation or more generally in DE contexts because of the behavior of NPI's with regard to the relation between informativity and set-inclusion (or part relation), and the following pragmatic reason: If an utterance is an assertion, it has to meet the maxim of Quantity (Grice 1967), which says 'Make your contribution as informative as is required.' In particular: If alternatives are explicitly given, then a hearer can assume that the speaker chooses the most informative alternative. In other words, if a speaker makes an assertion A[X], where X belongs to a set of alternatives ALT(X), then (s)he must have reasons not to say A[Y], if $Y \in ALT(X)$. What do all these facts have to do with the occurrence of NPI's and the particle *-to* within the scope of negation? As shown in (5), the meaning of *-to* is related to the condition (12-c). Both express that the predication holds for an alternative. This is why NPI's and the particle *-to* can cooccur. The reason that their cooccurrence in an affirmative sentence is bad can be attributed to the same reason involving informativity as mentioned above. In the case of NPI's, the assertion part of the meaning of *-to* is a problem because the part $Y_{VP}(X_{NPI})$ is less informative than any other element in the polarity sort. For example, if for the sake of simplicity, we disregard the subject argument here and write **have** (P) for $\exists x[P(x) \& \mathbf{have}(x)]$, then (11)-b') roughly can be represented in our formalism as follows:

(14)[8]

$$[\partial\exists X' [X' \in \text{ALT}(\textbf{red-cent}) \; \& \; \textbf{have}(X')] \; \& \; \textbf{have}(\textbf{red-cent})]$$

The problem is that the assertion part of (14), **have(red-cent)**, is already presupposed by the presupposition part because $\exists X'[X' \in \text{ALT}$ (**red-cent**) & **have** (X')] always entails **have(red-cent)**, which is the assertion part of (14). Assuming that for an utterance to be a good (or felicitous) assertion, it has to be informative enough to shrink the input common ground. However, the utterance of (11-b') fails to shrink the input common ground because its assertion part is only the part of the presupposition. Therefore, it sounds awkward. As for (11)-e), Krifka (1989) nicely observes that the time-span adverbial (*payknyen ka* [9] 'in 100 years') plays the role of NPI. The explanation is as follows; If someone can solve a problem in two hours, then we can infer that (s)he can solve the problem in n hours where n is larger number than two. So we can generalize the inference pattern as follows; $\forall x, y \; \exists e \; [T(e) \subset_t y \& \; y \subset_t x \rightarrow T(e) \subset_t x]$, (where x and y are variables over time periods, e is a variable over events, T is a functor which takes an event to produce a time period, and $\subset_t$ is the relation of time-period inclusion.) The time-period of 100 years can be understood as a metaphor for a most inclusive time period belonging to the alternative set. Therefore, for *payknyen ka-to* to sound felicitous, it has to be employed in the scope of negation or DE context that reverses the ordering relation.

<u>The semantics of *-na* and Free-Choice *amwu* ('any')</u>: For the meaning of *-na* , first, let's look at cases where *-na* occurs with other than Free-Choice *amwu* ('any')(hereafter, FC-*amwu*). In the same fashion in which we have tried to determine the presuppositional part and the assertional part of *-to* , we can apply our tests in the present case:

(15)

Chencay-na ku mwuncey-lul pwul swuiss-ta.
genius the problem-Acc solve can-Dec.
A genius can solve the problem.

Test: 'It is possible that ...'

Chencay-na ku mwuncey-lul pwul swuiss-nun kanungseng-i iss-ta.
genius the problem-Acc solve can-Rel. possibility-Nom be-Dec
'It is possible that a genius can solve the problem.'

⇒ Chencay-pota ttokhan salam-un pwul-swuiss-ta
genius - more than bright person-Top solve-can-Dec
'People brighter than a genius can solve it.'

≠> Chencay-nun pwul swuiss-ko ku pota ttokha-ci an-nun salam-nun pwul swu eps-ta.
-top solve can -and that brighter suff Neg-Rel -Top solve can not-Dec
'A genius can solve it and people less intelligent than a genius cannot.'

Based on the above test, (and the other tests which yield similar results) we conclude that an expression X-*na* has the following meaning :

(16) Presupposition : $\partial\ \forall P' [\ P' \in ALT_{>}(P) \rightarrow \forall x\ [P'(x) \rightarrow Q(x)]]$.
Assertion: $\forall P'[\ [\ P' \in ALT_{<}(P) \rightarrow \forall x[P'(x) \rightarrow \neg\ Q(x)]]\ \&\ \forall x[P(x) \rightarrow Q(x)]]]$

(In (16), P stands for the variable over the element to which the particle -*na* attaches, and Q for the variable over the predicate, which is the rest of the sentence except the element with the particle -*na*. $ALT_{>}(P)$ and $ALT_{<}(P)$ (an abbreviational notation) denote the alternatives to P that are a higher and lower value of the scale, whatever scale it may be, respectively.)

To put together what we have developed so far, the meaning representation of -*na* can be given as follows:

(17) $[\![\text{-}na]\!] = \lambda X \lambda Y[\ \partial\ \forall P''[\ P'' \in ALT_{\succ}(X) \rightarrow Y(P'')]\ \&$
$\forall P'[\ P' \in ALT_{<}(X) \rightarrow \neg Y(P')]\ \&\ Y(X)]$,
where X is for the variable over the element to which the particle -*na* attaches, and Y for the variable over the predicate, the rest of the sentence except X.

To illustrate (17), let's represent (15) as in (18) in a formal way.

(15) Chencay-na ku mwuncey-lul pwul swuiss-ta.
genius the problem-Acc solve can-Dec.
'A genius can solve the problem.

(18) $\Rightarrow [\ \partial \forall P''[P'' \in ALT_{>}(\textbf{genius}) \rightarrow \textbf{csp}(P'')]\&$
$\forall P'[P' \in ALT_{<}(\textbf{genius}) \rightarrow \neg\, \textbf{csp}(P')]\&\ \textbf{csp}(\textbf{genius})]$, where **csp** stands for the predicate **can-solve-the-problem**.

This means that every alternative to a genius that is less intelligent than a genius cannot solve the problem but a genius can solve the problem. In addition, it is presupposed that those alternatives who are more intelligent than a genius can solve the problem. This representation appears to bear the meaning of (18) quite faithfully.

In Korean, as with *any* in English, people have distinguished Free Choice(FC)-*amwu* ('any') and Polarity Sensitive (PS)-*amwu* ('any'), which appears to have an existential quantifying force. As expected, PS-*amwu* goes with the particle *-to* in a negative sentence just like any other NPI. However, FC-*amwu* can occur with the particle *-na* . One thing to note is that the particle *-na* is usually accompanied by a modal auxiliary *swuiss* ('can'). In the literature, there have been many arguments about the quantifying force of *any* in English (of universal or existential). Below I will try to show why the FC-*amwu* and the PC-*amwu* seem to bear on the universal quantifying force and the existential quantifying force respectively in the framework of lattice theoretic approach. We can say that *amwu* in Korean denotes the most general term in the sort of persons, but actually it is different from the general term 'a person' in the sense that *amwu* is an NPI, and thereby introduces an ordered set of alternatives. Its lattice sort is defined as a set which contains every subproperty of 'person'. We can represent the meaning of (19) by using (17) as follows;

(19)

Amwu-na ku paty-ey o-l swuiss-ess-ta.
anyone the party-at come-Rel can-pst-Dec.
'Anyone can come to the party.'

$\Rightarrow [\partial \forall P''[P'' \in ALT_{>}(\textbf{amwu}) \rightarrow \textbf{ccp}(P'')]\&$
$\forall P'[P' \in ALT_{<}(\textbf{amwu}) \rightarrow \neg \textbf{ccp}(P')]\ \&\ \textbf{ccp}(\textbf{amwu})]$,
where **ccp** is an abbreviation for the predicate **can-come-to-the-party**, and **amwu** stands for the meaning of **person**.

The presuppositional part means that every individual which belongs to every subproperties of person can come to the party. This is true, given the assumption **ccp (amwu)**[10]. The first conjunct of assertional part is also vacuously true because there is no property in ALT (**amwu**) that could be more inclusive than **amwu**. Even if it is vacuously true, it contribute to the emphatic assertional force of the entire sentence together with the second conjunct because it tells us that there are no persons that can not 'come to the party.' Notice that according to (12)-d), **amwu** is the unique bottom element of that polarity structure, which includes all the subproperties. Hence we can also infer that FC *amwu -na* has the universal quantifying force. For the existential quantifying force of PS-*amwu -to* is discussed in the next section.

It is remarkable that when *-na* attaches to expressions other than the subject, the sentences are not declarative. They are usually propositive similar to the form of 'Let's' in English.

(3) a)*Mary-ka yenghwa-na po-ass-ta.
-Nom movie see-pst-Dec.
'Mary saw a movie'

b) Yenghwa-na po-ca
movie see-PRPS
'Let's see a movie'

Below we will explain how *-na* can have the meaning of the implicature part from the (core) meaning of (17) *-na* (as in Lee 1979) of (2)). So far we have seen what the core meanings of *-to* and *-na* look like, and why *-to* has to appear with NPI's in negative sentences, while *-na* has to go with FC *amwu*. Until now, we excluded from our discussion the focus marked by the stress on NPI's to which *-to* , and *-na* attach. In the next section, we are going to deal with focus, illocutionary operators, and the matter of compositional derivations of the predicted readings.

3. <u>Compositional derivation of representations with focus</u>

Focus and *-to* and *-na* : The problem of focus is so involved that we cannot deal with it in detail in this paper. However, in this section we are going to talk briefly about the representation of focus and about ways of interpreting focus that serve our current purpose. There are various ways of realizing focus. Syntactically it is realized by .cleft constructions, rightward movement, etc. To put a stress on a certain element in a sentence can also be a way of marking focus. As we mentioned above, NPI's to which *-to* or *-na* attach bear a strong stress. and this indicates that this expression is in focus. When we want to derive the meaning of a sentence with a focus compositionally, we have to devise a way to project the information about where the focus is located from the focus expression itself to the complex expression. For the interpretation of focus, two frameworks are popular; namely, Structured Semantic Representations and Alternative Semantics. The second was developed by Rooth (1985) to treat focus-sensitive operators such as *only* . According to this theory, a semantic representation in focus is related to a set of alternatives. As for the first framework, the presupposition analysis is prevalent. As representatives, we can take Jackendoff (1972), and Williams (1980), where a sentence with the focused part is analyzed to be partitioned into two parts a presupposition set and a focus or Focus-Presupposition structure, '< F, P>'. This idea has been developed to the concept of Focus-Background structured meaning, '<B, F>' by von Stechow (1989), Jacobs (1990) and Krifka (1992). In short, focused elements will introduce structured meanings, and the Focus-Background structures are interpreted by focus operators, e.g., illocutionary operators like ASSERT(ion), QUEST(ion), DIRECT(ive), OPTAT(ive). For example the meaning of ASSERT(<B, F>) as follows;

(20) ASSERT(<B,F>): It is asserted that B(F), with the felicity condition that the values X such that B(X) are under discussion.

(20') [JOHN]$_F$ came to the party.

According to (20), the utterance of (20') asserts that B(F), in other words, 'John came to the party' with the following felicitous condition that the hearer and speaker have been discussing who came to the party. The felicity conditions vary with different Focus-Background structures. To derive the representation of sentences with focus compositionally, we need some compositional rules for recursive structured meanings. In other words, we have to devise a rule which enables the focus-background information to be conveyed to higher nodes. Following Krifka (1992), we are going to make use of the following recursive definition of application (21).

(21) (Krifka 1992:.25)

a) If α is of type $(\delta)\tau$ and β is of type δ, then $\beta(\alpha)$ is of type τ and is interpreted as functional application.

b) Focus inheritance from operator;
if $<\alpha,\beta>$ is of type $<(\delta)(\tau)\mu,\delta'>$, and γ is of type τ, then $<\alpha,\beta>(\gamma)$ is of type $<(\delta)\mu, \delta'>$, and is interpreted as $<\lambda X_\delta[\alpha(X)(\gamma)], \beta>$.

c) Focus inheritance from argument:
If γ is of type $(\delta)\tau$ and $<\alpha,\beta>$ is of type $<(\mu)\delta, \mu'>$, then $\gamma(<\alpha,\beta>)$ is of type $<(\mu)\tau,\mu'>$, and is interpreted as $<\lambda X_\mu.[\gamma(\alpha(X))], \beta>$.

In addition, in this paper, we will make use of the following notations: x, y, z, x', z', etc. as variables of type of e. P, P', etc. are variables of type <e,t>, and a, b are meta-variables . If A is a syntactic form, then $[\![A]\!]$ is the semantic representation of A in our semantic representation language. The following rule covers focusation of a constituent; if a constituent is focused then it introduces a background-focus structure; the background is empty at the point, that is, a simple identity function.

(22) SF:C $\rightarrow$ C_F(arbitrary category C indexed by focus feature F);
$[C_F] = <\lambda X.X, [C]>$, where X is of the type from which the type of [C] is derived that is not a focus-background type.

Thanks to type-raising theories such as those of Partee and Rooth (1983) and Dowty(1986), we can generalize the meaning representations of *-to* , (6), and *-na* , (19) as follows to allow for argument categories of various type.

(23)[11]

a) $[\![\textit{-na}]\!]$: $\lambda\alpha\, \lambda\beta\, \lambda\nu\, [\, \partial\forall\alpha''[\alpha'' \in ALT_>(\alpha) \rightarrow [\alpha'', \beta](\nu)]\ \&$
$\forall\alpha'[\alpha' \in ALT_<(\alpha) \rightarrow \neg[\alpha',\beta]]\ \&\ [\alpha,\beta](\nu)]$

b) $[\![\cdot to]\!]$: $\lambda\alpha\lambda\beta\, \lambda\nu\, [\, \partial\exists\alpha'\, [\alpha' \in ALT_{\neq}(\alpha) \,\&\, [\alpha',\beta](\nu)] \& [\alpha,\beta](\nu)]$

Derivations and interpretations: First, let's show a simple compositional derivation of (24),which does not contain focused elements;

(24) Chencay-na ku mwuncey-lul pwul swuiss-ta.
genius the problem-Acc solve can-Dec.
'A genius can solve the problem.

chencay (genius); **genius**: type; <e,t>

|

| *-na* :$[\![-na]\!]$: NA, the abbreviation of the semantics of *-na*.

| /

chencay-na :NA(**genius**)

| $= \lambda\alpha\, \lambda\beta\, [\, \partial\forall\alpha''[\, \alpha'' \in ALT_{>}(a) \rightarrow \beta(\alpha'')]\&$

| $\forall\alpha'[\alpha' \in ALT_{<}(\alpha) \rightarrow \neg\beta(\alpha')] \,\&\, \beta(\alpha)]](\,\textbf{genius})$

|

| $= \lambda\beta\, [\, \partial\forall\alpha''[\alpha'' \in ALT_{>}(\,\textbf{genius}) \rightarrow \beta(\,\alpha''\,)]\&$

| $\forall\alpha'[\alpha' \in ALT_{<}(\,\textbf{genius}) \rightarrow \neg\beta(\alpha')] \,\&\, \beta(\,\textbf{genius})]]$

| *ku mwunchay-lu! pwul swu iss* .

| / $= \lambda P \forall x[P(x) \rightarrow \textbf{csp}(x)]$[12]

Chencay-na ku mwunchay-lul pwul swu iss :

$= \partial\forall\alpha''[\alpha'' \in ALT_{>}(\,\textbf{genius}) \rightarrow \forall x\, [\alpha''(x) \rightarrow \textbf{csp}(x)]]\&$
$\forall\alpha'[\alpha' \in ALT_{<}(\textbf{genius}) \rightarrow \neg\forall x\, [\alpha'(x) \rightarrow \textbf{csp}(x)]]\&\forall x[\textbf{genius}(x) \rightarrow$
$\textbf{csp}(x)]$

To provide a full interpretation for the sentences like (24), which don't contain focused element(s), we need the following assertional illocutionary operator;

(24') ASSERT (ϕ), where ϕ is a variable over propositions, shrinks a common ground c to a common ground c',where c' is the intersection with the set of possible worlds for which ϕ is true. Felicity conditions; (i) $c' \neq c$ (asserting ϕ makes a difference in the common ground), (ii) $c' \neq 0$ (the truth of must not be already excluded by c)

If we apply the above assertional operator, ASSERT, to the derivational result of (24), we get the following:

| *-ta* : ASSERT
|/
Chencay-na ku mwunchay-lul pwul swu iss ta :
$= \text{ASSERT}(\partial\forall\alpha''[\alpha''\in ALT_{>}(\textbf{genius})\rightarrow\forall x\,[\alpha''(x)\rightarrow \textbf{csp}(x)]\&$
$\forall\alpha'[\alpha'\in ALT_{<}(\textbf{genius})\rightarrow \neg\forall x\,[\alpha'(x)\rightarrow \textbf{csp}(x)]\&$
$\forall x[\textbf{genius}(x)\rightarrow \textbf{csp}(x)]\ )$

The assertion of (24) changes the common ground to those worlds where it is presupposed that every kind of person that ranks higher than a genius on a scale of intelligence can solve the problem, and every kind of person that ranks lower than a genius on a scale of intelligence cannot solve the problem. Of course, every person who is a genius can solve the problem in those worlds.

Next, to deal with sentences like (3) we also need an propositive illocutionary operators, (e.g., PROPOS), which is defined as follows;

(25)[13] PROPOS(< B, F>) = If there is no X, X∈ ALT(F) such that to make B(X) is preferred to the speaker and the hearer over B(F), then the speaker propose to make B(F) true.

let's try to derive the meaning representation of (3), which is a propositive sentence.

(26)
yenghwa : $=\lambda R\lambda x\exists y[\textbf{movie}(y)\&R(x,y)]$ =M for the abbreviation of
| the representation of *yenghwa*, as an object NP
SF [*yenghwa*]$_F$: <λTT, M >
|
| *-na* : ⟦*-na* ⟧:NA, the abbreviation of the representation of *-na*.
|/
yenghwa-na :

| $= \lambda\alpha\, \lambda\beta\lambda v\, [\, \partial\forall\alpha''[\alpha''\in ALT_{>}(\alpha) \rightarrow [\alpha'',\beta](v)]\&$
| $\forall\alpha'[\alpha'\in ALT_{<}(\alpha)\rightarrow \neg[\alpha',\beta](v)]\&[\alpha',\beta](v)](<\lambda TT, M>)$
|
| $=\langle\lambda T'\, \lambda\beta\lambda v\, [\, \partial\forall\alpha''[\alpha''\in ALT_{>}(T') \rightarrow [\alpha'',\beta](v)]\&$
| $\forall\alpha'[\alpha'\in ALT_{<}(T')\rightarrow \neg[\alpha',\beta](v)]\, \&[T',\beta](v)]],\, M\rangle$
| *po* :see
| /
yenghwa-na po :
| $=\langle\lambda T''\, \lambda v\, [\, \partial\forall\alpha''[\alpha''\in ALT_{>}(T'') \rightarrow [\alpha'',see](v)]\&$
| $\forall\alpha'[\alpha'\in ALT_{<}(T'')\rightarrow \neg[\alpha',see](v)]\, \&[T'',see](v)]],\, M\rangle$
| *wuli* (we) : $\lambda PP(we)$
| /
wuli yenghwa-na po :
| $=\lambda PP(we)(<\lambda T''\, \lambda x[\, \partial\forall\alpha''[\alpha''\in ALT_{>}(T'') \rightarrow[\alpha'',see](x)]\&$
| $\forall\alpha'[\alpha'\in ALT_{<}(T'')\rightarrow \neg[\alpha',see](x)]\&[T'',see](x)]],\, M>)$
|
| $=\langle\lambda T'''[\, \partial\forall\alpha''[\alpha''\in ALT_{>}(T''') \rightarrow \alpha''(see)(we)]\&$
| $\forall\alpha'[\alpha'\in ALT_{<}(T''')\rightarrow\neg[\alpha'(see)(we)]\, \&\, T'''(see)(we)]]\, ,\, M>$
|
| *−ca* ; PROPOS
| /
eynghwa-na po-ca :
$=PROPOS(\langle\lambda T'''[\, \partial\forall\alpha''[\alpha''\in ALT_{>}(T''')\rightarrow\alpha''(see)(we)\&$
$\forall\alpha'[\alpha'\in ALT_{<}(T''')\rightarrow\neg[\alpha'(see)(we)]\, \&\, [T'''(see)\, (we)]]\, ,$
$\lambda R\lambda x\exists y[movie(y)\&R(x,y)]\, >)$

We get the following representation:

(27)
If there is no X, X∈ALT(movie) such that to make true See(X), is preferred to the speaker and the hearer over See(movie), then the speaker propose to make See(movie) true.

The above result tells us everything that Lee (1979) chose to express for *-na* in (3). In other words, since See (X) and See (movie) are abbreviations for B(X) and B(F), respectively they can be fully spelled as follows;

(28)

(i) $B(F){:}\partial\forall\alpha''[\alpha''\in ALT_{>}(\textbf{movie})\rightarrow\exists y[\ \alpha''(y)\ \&\ \textbf{see}\ (\textbf{we},\ y)]]\&$
$\forall\alpha'[\alpha'\in\ ALT_{<}(\textbf{movie})\rightarrow\neg[\exists y[\ \alpha'(y)\ \&\ \textbf{see}\ (\textbf{we},\ y)]\ \&$
$\exists y[\ \textbf{movie}\ (y)\ \&\ \textbf{see}\ (\textbf{we},\ y)].$

(ii) B(X):similarly, we can get the fully spelled B(F) by replacing movie in (i) with X .

From (27) and (28), we can say that propositive (26) means that the speaker proposes to the hearer that whatever they (alternatives to a movie) may be, if they rank lower on a scale of entertainment (e.g., less exciting) than a movie does, then the speaker and hearer see a movie instead, while if there is an alternative which is more preferable to the speaker and the hearer, they see it. In addition, what is noteworthy with propositives containing the particle *-na* is that they convey the politeness of the speaker in the following sense: the speaker can always leave some room for the hearer to make a counter-proposal by employing the particle *-na* because the presupposition part triggered by the particle *-na* says ' if 'you', the hearer, have or know something better than what 'I', the speaker, propose, then let us do it.'. In the case of (26), the movie is in fact the best option that is allowed for them, but there is an implicational meaning that the speaker doesn't take the proposal as the really best one to convey her or his politeness. But such a reading is not directly triggered by the meaning of the particle *-na*, but by the conspiracy of the illocutionary operator and *-na* .

Let us now turn to the case of NPI, *amwu*, with the particle *-na* . Following Krifka (1992), we apply an illocutionary operator ASSERT to the sentence radical to obtain the meaning of a sentence with the declarative mood marker. Let's modify (20) to some extent to serve our purpose better by specifying the felicity condition more precisely. Following Stalnaker (1979), we assume that an assertion modifies or shrinks the shared assumption or common ground, which can be represented as a set of possible worlds, and a sentence S can also can be represented as a set of possible worlds where S holds.

(29)

ASSERT(<B, F>) shrinks a common ground c to a new common ground c', such that $c'=c \cap [\ B(F)]$. Felicity conditions required;

i) Asserting B(F) results in a different common ground.,c≠ c'.
ii) The result of c ∩ [B(F)] is not an empty set.
iii)There is an X which is an element of ALT(F), and B(X) could have been asserted with regard to c that would have a different result. That is c ∩ [B(X)] is not an empty set c ∩ [B(X)]≠ c, and c ∩ [B(F)] ≠ c ∩ [B(X)].

Next, let's see why (30)-a) sounds awkward, but -b) is ok in the course of the derivation.

(30)

a)*Amwu-to ku pati-ey wa-ss-ta.
anyone the party-at come-pst-Dec.
*'anyone came to the party.'

b) Amwu-to ku pati-ey o-ci an-ass-ta.
anyone the party-at come-suff Neg-pst-Dec.
'Nobody came to the party

amwu (any); λP∃x[amwu(x)&P(x)];type; <<e,t>,t>
|
SF [*amwu*]$_F$: < λTT,λP∃x[amwu(x)&P(x) >; T is of type <<e,t>,t>
|
| *-to* : TO:the abbreviation of the sematics of *-to*.
| /
amwu-to ;
| =TO(<λTT,λP∃x[amwu(x)&P(x)]>)
|
| =<λT. λβ [∂ ∃α' [α'∈ ALT≠(T')[α',β]]&[T',β]],
| λP∃x[amwu(x)&P(x)]>
|
| wa-ss('came'); **came**
| /
amwu-to wa-ss
| =<λT. λβ [∂ ∃α' [α'∈ ALT≠(T')[α',β]]&[T',β]],
| λP∃x[amwu(x)&P(x)]>(came)
|
| =<λT"[∂∃α'[α'∈ ALT≠(T")&[α'(came)]]&[T"(came]],
| λP∃x[amwu(x)HP(x)]>
| *-ta* ; ASSERT;

| /

Amwu-to wa-ss-ta :

$=ASSERT(<\lambda T''[\partial\exists\alpha'[\alpha' \in ALT_{\neq}(T'')\&[\alpha'(came)]]\&$
$[T''(came)]], \lambda P\exists x[amwu(x)\&P(x)]>)$

According to (29), to be an appropriate assertion, the above should meet the following conditions;

(31)

(i) B(F),that is, $\partial\exists\alpha'[\alpha' \in ALT_{\neq}(\lambda P\exists x[amwu(x)\&P(x)])\&$ $\alpha'(came)] \& \exists x[amwu(x)\&came(x)]]$, is meaningful and informative enough to result in a new (different from the input common ground) common ground.

(ii) it is under discussion for which $X \in ALT(\lambda P\exists x\ [amwu(x)\& P(x)])$, it holds that B(X),that is $\partial\exists\alpha'[\alpha' \in ALT_{\neq}(X)\&\alpha'(came)]\&X(came)]$ would have a different result from that of $B(\lambda P\exists x[amwu(x)\&P(x))$.

(iii) the speaker has reasons not to assert B(X), $X \in ALT_{\neq}(\lambda P\exists x[amwu(x)\&P(x)])$

Taking into account the fact that the focused part is an NPI, *amwu* ('any'), which is the unique bottom element of the polariy structure, we can say that if there is any X, which is different from *amwu* ('anyone') and hence belongs to a more specific set than '*amwu* ('anyone') came to the party.', then it is automatically asserted that a person came. In other words, the presuppositional part entails what the assertional part means. This means the above utterance is under no circumstances informative enough to change the input common ground to a new different common ground. In this sense, the above utterance fails to meet the conditions of (31), and therefore, it sounds awkward. As for (30)-b), it differs from (30)-a) in that it is a negative sentence. Thus the following felicitous conditions should be met for (30)-b) to be a good assertion.

(31')

(i) B(F),that is, $\partial\exists\alpha'[\alpha' \in ALT_{\neq}(\lambda P\exists x[amwu(x)\&P(x)])\&$

$\neg\alpha'(\mathbf{come})]$ & $[\neg\exists x[\mathbf{amwu}(x)\&\mathbf{come}(x)]]$, is meaningful and informative enough to result in a new (different from the input common ground) common ground.

(ii) it is under discussion for which $X\in ALT(\lambda P\exists x[\mathbf{amwu}(x)\& P(x)])$,it holds that B(X),that is $\partial\exists\alpha'[\alpha'\in ALT_{\neq}(X)\&\neg\alpha'(\mathbf{come})]\&[\neg X(\mathbf{come})]$ would have a different result from that of $B(\lambda P\exists x[\mathbf{amwu}(x)\ \&\ P(x))$.

(iii)the speaker has reasons not to assert B(X), $X\in ALT_{\neq}(\lambda P\exists x[\mathbf{amwu}(x)\&P(x)])$

If we assume that $\neg\exists x[\mathbf{amwu}(x)\&\mathbf{come}(x)]$ is true, then the presuppositional part is also obviously true because of the following reasons. The presuppositional part says that individuals of a proper subproperty of **person** in general didn't come to the party. While the assertional part says that every individual x which **amwu** applies didn't come.This means that individuals belonging to any subproperty of **person** in general didn't came since any individuals, which belong to subproperties of **amwu** are also elements of **amwu**. The set of possible worlds where the assertional part is true is a proper subset of The set of possible worlds in which presuppositional part is true due to negation, which is complementation on sets of worlds, thereby reverses set inclusion. Therefore, if the assertional part is true, then the presuppositional part is also true. This means that the first felicitous condition of (31') is met. The assertional part is informative enough to reduce the input common ground to a new common ground. As for the second and third conditions of (31'), the speaker has good reasons not to pick up an individual that holds for a subproperty of **person** in general. For example, if the speaker says, ' a 'beautiful lady' didn't came to the party.', this utterance would result in a weaker assertion than that bearing *amwu* because the set of possible worlds where 'a beautiful lady didn't came to the party' is a superset of the set of the possible worlds of the asssertion that 'nobody came to the party.' Thus the speaker employs *amwu* to make a strong assertion instead of other expressions denoting a subproperty of **person** in general. Therefore (30)-b) is a good assertion and the meaning of the particle *-to* rightly serves to make the sentence a felicitous assertion. Obviously, this way of interpreting *amwu-to* used in a negative context leads to the reading of a negation of the existential quantifier.

As for adverbials with the particle *-to* , we can also show their derivation in the same manner as above. The derivation is as follows;

(32) ppali-to wa-ass-ta
fast come-pst-Dec
(S)he came fast (as well as in other manners)

ppali (fast); **fast** , whose type is $<<e,t>,<e,t>>$

|

SF [*ppali*]$_F$: $<\lambda EE, \text{fast}>$; E is of type $<<e,t>,<e,t>>$

| *-to* :TO:the abbreviation of the sematics of *-to*.

| /

ppali-to :

| $=TO(<\lambda EE, \text{fast}>)$

| $=\lambda\alpha\lambda\beta\lambda x\,[\partial\exists\alpha'[\alpha'\in ALT_{\neq}(\alpha)\&[\alpha',\beta](x)\&$

| $[\alpha,\beta](x)\,](<\lambda EE,\text{fast}>)$

| $=<\lambda E'.\lambda\beta\lambda x\,\,[\partial\exists\alpha'[\alpha'\in ALT_{\neq}(E'.)\&[\alpha',\beta](x)[E'.,\beta](x)],\text{fast}>$

| *wa-ss* ('came'); $=\lambda y[\text{came}(y)]$

| /

ppali-to wa-ss:

| $=<\lambda E'.\lambda\beta\lambda x\,\,[\partial\exists\alpha'[\alpha'\in ALT_{\neq}(E'.)\&[\alpha',\beta](x)\&$

| $[E'.,\beta](x)],\text{fast}>(\lambda y[\text{came}(y)])$

| $=<\lambda E''.\lambda x\,\,[\partial\exists\alpha'[\alpha'\in ALT_{\neq}(E''.)\&[\alpha',\lambda y[\text{came}(y)]](x)\&$

| $[E'',\lambda y[\text{came}(y)](x)]\,\,,\text{fast}>$

| somebody; $\lambda PP(c(x))$; $c(x)$ means discourse context fixes who x is

| /

(Somebody)*ppali-to wa-ss*

| $=\lambda PP(c(x))(<\lambda E''.\lambda x\,[\partial\exists\alpha'[\alpha'\in ALT_{\neq}(E''.)\&\,[\alpha',\lambda y[\text{came}(y)]](x)\,\&$

| $[E'',\lambda y[\text{came}(y)](x)]\,\,,\text{fast}>)$

| $=<\lambda E''.[\partial\exists\alpha'[\alpha'\in ALT_{\neq}(E'')\,\&[\alpha',\text{came}(c(x))]\,\,\&$

| $[E'',\text{came}(c(x))],\,\,,\text{fast}>$

| *-ta* ; ASSERT;

I /
(Somebody) *ppali-to wa-ss-ta*;
=ASSERT(λE"[∂∃α'[α'∈ ALT≠(E")&α'(**came**(c(x)))&
E"(**came**(c(x)))]], **fast**>)

According to (29), we can obtain the following representation from (32).:

(33)

ASSERT(λE" [∂ ∃α'[α'∈ ALT≠(E")&α'(**came**(c(x)))]&
E"(**came**(c(x)))]],**fast**>) shrinks a common ground c to a new common ground c', such that c'=c ∩ [∂∃α'[α'∈ ALT≠(**fast**) & α'(**came**(c(x)))] & **fast**(**came**(c(x)))].

Felicity conditions required;

i) Asserting [∂ ∃α'[α'∈ ALT≠(**fast**)& α'(**came**(c(x)))]& **fast** (**came** (c(x))) results in a different common ground, c ≠ c'.

ii) The result of c ∩ [∂∃α'[α'∈ ALT≠(**fast**) & α'(**came**(c(x)))]& **fast**(**came**(c(x)))] is not an empty set.

iii)There is an X which is an element of ALT(**fast**), and B(X) could have been asserted with regard to c that would have a different result. That is c ∩ [B(X)] is not an empty set, c ∩ [B(X)] ≠ c, and c ∩ [B(**fast**)] ≠ c ∩ [B(X)].

According to (33), for (32) to be a good assertion, first, [**fast**(**came**(c(x)))] must be informative enough to shrink the input common ground c, and [∃α'[α'∈ ALT≠(**fast**) &α'(**came**(c(x)))]] must be presupposed in the common ground, which means that someone came fast as well as in other manners. Second, the truth of∂∃α'[α'∈ ALT≠(**fast**)&α'(**came**(c(x)))]& **fast**(**came**(c(x)))] must not be already excluded by the input common ground c. In other words, the speaker must not assert anything that has been already taken as false. Third, the speaker and the hearer have discussed in what manner (s)he came, and similarly, '(s)he came in a different manner from 'fast' (e.g.., *safely*)' could have been felicitously asserted with regard to the input common ground c. Such an assertion result in a different common ground from the one in which the assertion ' (s)he came *fast* .' results. However, the speaker has a good reason not to make an assertion with other alternatives to *fast*, e.g., *safely*. One reason we could imagine is that the speaker would like to make an assertion on the fastness of his coming rather than on the *safeness* of his coming. This is why Hong (1982) observes that the particle *-to* also has the function of emphasizing the meaning of an adverb[14]. Actually this is due to the illocutionary operator, ASSERT.

4. Concluding Remarks

As mentioned in the introduction , we have accomplished three tasks; We showed that the particles *-to* and *-na* can be analyzed as having one core meaning with their other accompanying meanings due to illocutionary forces or to our world-knowledge on orderings among the elements of alternative sets. Second, we argued that both the incompatibility of *amwu* ('any') plus *-to* and the coocurrence of *amwu* ('any') plus *-na* with upward entailing property predicates are due to informativity and some other pragmatic felicity conditions. Third, the quantifying force of PS-*amwu* (∃) and FC-*amwu* (∀) are due to the conspiracy of the meanings of the particles *-to* and *-na*, ordered alternatives introduced by the *amwu* and the status of *amwu* in the ordered alternatives, and pragmatic principles (e.g., scalar implicature) Last, following Krifka (1992), we tried to derive sentences where 'alternative sensitive' operator *-na* and *-to* introduce a strong stress as focus on the element to which they attach. The compositional derivations done so far show what the representations of meanings of the expressions with focus and illocutionary operators look like. In addition, we argued that Lee (1979)'s analysis of *-na* , and *-to* leaves many things to be desired, and most of the problems of Lee (1979) can be solved by making use of illocutionary operators as in Krifka (1991, and 1992). In this paper we leave how to treat the GEN(eric) operator undetermined for further study.

NOTES

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1 Here we mean by NPIs a set of expressions that typically appear in specific contexts, most prominently the scope of negation, and denote the minimal value or small entity of the sort concerned, or general things, etc. Therefore they are named Negative Polarity Items.

2 With the second and third tests, the same result as that in (4) will be obtained. For the purpose of saving space, I do not do the tests here.

3 Levinson(1983) presents the following rule for deriving scalar implicatures from scalar predicates. Given the scale $< e_1, e_2, ... e_n >$, if a speaker asserts A(e2), then he implicates $\neg A(e_1)$, if he asserts $A(e_3)$, he implicates $\neg A(e_2)$ and $\neg A(e_1)$, and in generally if he asserts A(en), then he implicates from $\neg A(e_{n-1})$ up to $\neg A(e_1)$.

4 Here 'our' means those who know something about linguistics and especially current syntactic theories. Thus by 'our' knowledge, we know that Chomsky has the most amount of knowledge of current syntactic theories and is the most likely to understand the syntactic theories.

5 A word in boldface stands for the representation of its meaning .

6 The reversing effect by negation is due to Fauconnier(1975 &1978).

7 In Heim(1984), remedying Ladusaw (1979)'s general Downward Entailing Contexts for the occurrence of NPI's, which can not explain some contexts like if-clauses, she restricts the admissible strengthening to those which are introduced by the alternative items in the position of the NPI.

8 When it related to the lattice sort, the alternative set ALT is interchangeable with the lattice sort, L_A.

9 For Korean, one hundred might have been the largest number imaginable. Actually *ka* in Korean means 'to go', but in this case, its meaning is corresponding to the meaning of 'in' in English.

10 Actually **amwu** and its alternatives can be taken as generalized quantifiers so that they take verbal predicates as their argument: **Amwu** (**ccp**). For simplicity, here I take them as if they are of type e.

11 [α, β] means that either of them can be a functor or an argument of the other. We can always predict this thanks to the type theory . We make use of 'λv [α, β](v)' to deal with the elements which are other than the subject, e.g., the object. v is a variable over a sequence of arbitrary number of variables so that if [α, β] is a one place-predicate, then v means one variable x. While if [α, β] is a sentence, than v means the zero number of variables.

12 Here the universal quantifying force is due to the hidden Generic operator, which is usually interpreted to have more or less as universal quantifying force. But it is better to recognize the fact that universal quantifier and GEN(eric) operator are different in the following sense that while GEN allows for exceptions, the universal quantifier does not allow for exceptions. I have to leave this problem for further study since I have no idea on how to remedy this flaw.

13 This is just a preliminary sketch of the propositive illocutionary operator. I would like to leave elaboration of illocutionary operator in formalism and illocutionary operators in general, for a further study.

14 In English, often the meaning of 'also' acquires the meaning of 'even'. In terminology of Koeing (1991), both are 'additive' particles . Hoeksema, J. comments that the particle *-to* should be translated into 'even' in English since most of the contexts in which the particle *-to* seems

to appear correspond to those which 'even' in English appears in. I think that the particle *-to* in Korean fills both functions of 'even' and of 'too' or 'also' because *-to* can attaches to a constituent that doesn't introduce any scale as follows:

Tom -to wa-ss-ta
come-pst-Dec
' Tom came, too.'

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