The Semantics of *amwu*-N-*to/-irato/-ina* in Korean
–Arbitrary Choice and Concession

Chungmin Lee (Seoul National University: clee@snu.ac.kr)
Daeho Chung (Hanyang University: cdaeho@mail.hanyang.ac.kr)
Seungho Nam (Seoul National University: nam@snu.ac.kr)

This paper reports the syntactic distribution of *amwu*-N-*to/-irato/-ina* phrases, which are representative polarity sensitive items (PSIs) in Korean, and accounts for their semantic characteristics in terms of "arbitrary choice quantification" and "concession." In the first section, we extensively illustrate the distributional behaviour of the PSIs in various constructions and roughly generalizes the distribution in terms of (anti/non-) verdicality." Section 2 interprets *amwu* as an arbitrary choice quantifier, and the particles *–to/-irato/-ina* as "concessive" markers, so the compounds denote a special element in a pragmatic scale determined by context/situation. Section 3, based on the pragmatics of scalar implicature, accounts for the apparent ambiguity of PSIs between "universal" and "existential" readings, and further characterizes the difference among the concessive markers *–to/-irato/-ina* in terms of "quantity/quality scale."

1. Distributions of *amwu*-N Phrases

This section illustrates the distribution of Korean PSIs *amwu*-*to/-irato/-ina* with various constructions which reveal their semantic characteristics. The following table is the summary of the distribution, the relevant data of which are illustrated in the APPENDIX at the end of this paper.

Table-1. The distribution of *amwu*-N-*to/-irato/-ina*

	amwu-N-*to*	*amwu*-N-*irato*	*amwu*-N-*ina*
1. Affirmative S	*	*	√
2. Negative S	√	*	*
3. *eps-/molu-* 'not-exist/know'	√	*	*
4. *before*-clauses	√	*	*
5. Conditionals	*	√	?
6. Universal/Generic Quantifier	*	√	√
7. Habituals	*	√	?
8. Comparatives	*	√	√
9. Questions	*	√	?
10. Modals	*	√	√
11. Imperatives	*	√	√
12. Future tense	*	√	√
13. Generics	*	√	√
14. *tahayngi-* 'is lucky'	*	√	*
15. *kikkeshayya* 'at most'	*	√	*
16. Negative Predicates	√	√	?
17. Rhetorical Q	*	√	√

There should be exceptional cases which do not conform to the judgements of the table, and some of the constructions must be examined in more detailed sub-classes. The above table, however, gives general distributional tendencies of the PSI's. Let us first note some

peculiarities of the table. First of all, *amwu*-N-*na* is not always natural in affirmative sentences but it sounds natural when the whole sentence induces an implicit modal meaning. *Amwu*-N-*na* is shown to be unacceptable in negative sentences, but it is fine only when the negation carries a "denial" illocutionary force -- a sort of metalinguistic negation. Question marks "?" indicate that the combination does not always sound good due to the context/situation.

Now in order to give a semantic generalization of the distribution in Table-1, we introduce the notion of "veridicality" (Zwarts 1995), which characterizes the truth-functional meanings of operators and logical connectives. The notions related to "veridicality" are defined as follows:

(1) Definition-1: Let O be a monadic propositional operator. The following statements hold:
   a. O is *veridical* just in case $O(p) \rightarrow p$ is logically valid. Otherwise, O is *nonveridical*.
   b. A nonveridical operator O is *antiveridical* just in case $O(p) \rightarrow \neg p$ is logically valid.

(2) Definition-2: Let C be a dyadic truth-functional connective. The following statements hold.
   a. C is *veridical* with respect to p [q] just in case $pCq \rightarrow p$ [$pCq \rightarrow q$] is logically valid. Otherwise C is *nonveridical* with respect to p [q].
   b. A nonveridical connective C is *antiveridical* with respect to p [q] just in case $pCq \rightarrow \neg p$ [$pCq \rightarrow \neg q$] is logically valid.

Based on the definitions, Giannakidou (1998, Ch.3) gives an account of the distribution of Greek PSIs as the following:

(3) a. Negative polarity items are licensed by antiveridical operators/connectives.
   b. Affective polarity items are licensed by nonveridical operators/connectives.
   c. Free choice items are licensed by non-episodic operators/connectives.

Now we can also build up a rough semantic generalization of Table-1 of Korean PSIs. That is, we can characterize the licensing condition of *amwu*-N-*to/-irato/-ina* in terms of "(non/anti-)veridicality" as in the following table:

Table-2. Veridicality and PSIs in Korean

	amwu-N-*to*	*amwu*-N-*irato*	*amwu*-N-*ina*
1. Antiveridical contexts	√	*	*
2. Nonveridical contexts	*	√	√
3. Veridical contexts	*	*	√

We should point out that there are a few exceptions to the above generalization: First of all, as shown in Table-1, *amwu*-N-*to* is allowed in *before*-clauses and *eps-/molu-* 'not exist/know,' which are not exactly antiveridical but more negative than conditionals or comparatives. (Nam 1997) Another exception can be found in the constructions with *tahayngi-* 'it is lucky,' which are rather veridical than non-veridical. We also have not accounted for the difference between *amwu-irato* and *amwu-na*, but section 3 will give an answer to this difference.

Finally but very importantly, we note that the near-complementary distribution of *amwu-N-to* and *amwu-N-irato/-na*, which will be discussed in the subsequent sections. This distributional property reveals that the two forms should be very similar in meaning, and that their distribution is conditioned by the particles *–to/-irato/-ina*. Their distribution also raises a big conceptual problem against previous semantic proposals on the licensing conditions of negative polarity items. (Zwarts 1990, 1993; Nam 1994; Giannakidou 1998) That is, *amwu-N-irato* is licensed by non-veridical contexts but, contrary to their claims, it is not licensed by more negative, antiveridical contexts. We will propose that *amwu-N-to* and *amwu-N-irato* are alloforms which carry the same truth-conditional meaning.

2. The Semantics of *amwu*-N Phrases

2.1. Arbitrary Choice Function

The morpheme *amwu* in Korean carries a quantificational force of "arbitrary choice," which roughly denotes 'no matter what object x it may be.' That is, given a domain of discourse D, *amwu-* chooses an arbitrary object in D, so to be a kind of choice function. This quantificational force of "arbitrary choice" is similar to that of 'indefinite' existentials in denoting an object in a given domain, but we note several characteristics which distinguish the two quantifications.

First, unlike indefinite existential NPs, "arbitrary choice" does not induce scope ambiguity with other quantifiers or operators.

(4) a. amwu-to o-ci.anh-ass-ta
         any-TO   come-not-Past-Dec
         'Noone came.'
     b. han/twu saram-i   o-ci.anh-ass-ta
         one/two person-Nom come-not-Past-Dec
         'One/Two person didn't come.'

The indefinites in (4b) above can take wide scope over negation, so to be interpreted as 'there was/were one/two person(s) such that he/they didn't come.' Further, (4b) has another reading where negation scope over the indefinites, i.e., 'it was not the case that one/two person(s) came.' *Amwu-to* in (4a), however, does not show scope interaction with negation, so has only the reading 'noone came,' i.e., 'no matter what person x it may be, x did not come.' As we illustrated in the previous section, *amwu-rato* or *amwu-na* does not occur with an overt negation.

Second, "arbitrary choice" *amwu* does not induce a specific reading, so we have the following difference:

(5) a. amwu-(saram)-rato   o-myen Jini-nun pankin-ta
         any-(person)-RATO come-if Jini-Top welcome-Dec
         'If anyone comes, Jini welcomes him.'

     b. etten saram-i   o-myen Jini-nun pankin-ta
         some person-Nom come-if Jini-Top welcome-Dec

'If a person comes, Jini welcomes him.'

Etten saram in (b) may have either a specific or a non-specific reading, so the sentence is ambiguous. But *amwu-rato* in (a) does not denote a specific reading. The following sentence shows that the demonstrative *ku* does not make *amwu* specific.

(6) ku   amwu-to o-ci anh-ass-ta
     that anyone   come-not-Past-Dec
     'Noone came, who-so-ever.'

Another crucial difference between "arbitrary choice" and indefinite existentials is that the "arbitrary choice" *amwu* induces a scalar implicature in appropriate contexts, so to give a "universal-like" quantificational force. *Amwu-rato/-na* in (a) below induces universal quantification, whereas the same word in (b) does not.

(7) a. amwu-rato/-na ku   il-ul   ha-ul.swu.iss-ta
         anyone   that work-Acc do-can-Dec
         'Anyone can do that.' = 'Every one can do that.'

    b. amwu-rato o-myen   na-eykey cenhwaha-e
         anyone   come-if   I-Dat   call-Imp
         'If anyone comes, give me a call.'

We will see shortly how scalar implicature brings about universal quantification in modal contexts like (a) but not in (b).

Unlike indefinite existentials, the arbitrary choice *amwu* can quantify over a mass domain, which undermines Lee and Horn's (1994) claim that *any* in English denotes 'indefinite *one* plus *even*'. Further, Korean polarity item *amwu* can go with *-na*, but indefinite existentials can not as shown in the following.

(8) a. amwu-to/-rato/-na
         anyone-TO/-RATO/-NA
    b. hana-to/-rato/*-na
         one
    c. cokum-to/-irato/*-ina
         a.little

We will also show that *amwu-to/-rato/-na* in Korean may induce a scalar implicature in a quality scale as well as in a quantity scale, which goes against Lee and Horn's (1994) claim.

Due to the semantics of *amwu*, i.e., arbitrary choice quantification, it does not take neutral/structural case markers like *-ka* (Nom.) or *-lul* (Acc), but it must occur with a concession marker *-to/-rato/-na* (for NPs) or in a concessive clause marked by *-ato/-terato/-na* 'even though'.

(9) a. *amwu haksayng-i   o-ass-ta
          any   student-Nom came

'(Lit.) *Any student came.'
   b. *Jini-nun amwu haksayng-ul cohaha-nanta
        Jini-Top any   student-Acc likes
        'Jini likes any student.'
   c. amuw haksayng-i   o-ato,   sensayngnim-un hwanyengha-ass-ta
        any   student-Nom come-though teacher-Top   welcome-Past-Dec
        'If any student came, the teacher welcomed him.'

Due to its functional nature of arbitrary choice function, *amwu* does not refer to an entity of a given domain, and so does not introduce a "discourse referent" (Kamp & Reyle 1994) to the relevant discourse structure. That is, (10b) and (11b) are not a natural discourse, since the pronoun *ku* (*saram*) cannot be resolved in the discourse. But (10a) and (11a) are natural, and the pronouns pick up the discourse referent introduced by *etten saram* in the preceding utterance.

(10) a. etten saram-i   o-ki.cen.ey imi   Jini-nun ku saram-i kwukwu-i-nci al-ass-ta
          some person-Nom come-before already Jini-Top that person-Nom who-be knew
          'Before some person came, Jini already knew who he would be.'
     b. *amwu-to o-ki.cen.ey Jini-nun ku saram-i nwukwu-i-nci al-ass-ta
          'Before anyone came, Jini knew who he was.'

(11) a. (i)   etten saram-i   ku il-ul   ha-ul.swu.iss-ta
                some person-Nom that work-Acc do-can-Dec
                'Someone can do that.'
         (ii)   na-nun ku-ka   nwukwu-i-nci   al-nta
                I-Top   he-Nom who-be-Compl   know
                'I know who he is.'
     b. (i)   amwu-rato   ku il-ul   ha-ul.swu.iss-ta
                anyone-RATO that work-Acc do-can-Dec
                'Anyone can do that'
         (ii)   #na-nun ku-ka nwukwu-i-nci al-nta

As we informally introduced, an arbitrary choice function denoted by *amwu* in Korean chooses an arbitrary object no matter what it may be. Thus it is a special sort of choice function which is independent of the context or the utterance situation. *Amwu* always occurs in a concessive context, and the quantificational force of "arbitrary choice" combines with the meaning of "concession" to yield a "concessive arbitrary choice function", which picks up a special entity out of the given domain. We will formally define this choice function in terms of "pragmatic scale." The following sentence illustrates informally how to interpret an *amwu*-N phrase in terms of "concessive choice function."

(12)   amwu haksayng-to o-ci.anh.ass-ta
          any   student-Conc. come-not-Past-Dec
          'No matter what student x it may be, it is not the case that x came.'

          =   'there is some **concessive choice function** f_c such that
                 $\neg(f_c(\text{STUDENT}) \text{ CAME})$'

$$= \quad \exists f_c. \neg (f_c \text{ (STUDENT) CAME)}$$

As we noted in section 1, *amwu-to* and *amwu-lato/amwu-na* are in complementary distribution. *Amwu-to* only occurs in strongly negative contexts like overtly negated clauses and *before*-clauses, whereas *amwu-lato/amwu-na* occur in weakly negative contexts, like non-veridical modal, conditional and generic contexts. Their distributional properties strongly support the claim that they share a core meaning of "concession."

Here we note that *amwu-na* is allowed to occur under a "denial" illocutionary operator. Thus the negation in the following sentence (a) is not an ordinary negation but carries an illocutionary force of "denial", which is metalinguistic.

(13) a. amwu-na hapkyekha-ci.anh-ass-e
         anyone passed-not-Past-Dec
         'It is not the case that every one passed (the exam).'
     b. amwu-to hapkyekha-ci.anh-ass-e
         anyone passed-not-Past-Dec
         'No one passed (the exam).'

The following discourse attests the distributional constraint of *amwu-na* in a negated sentences.

(14) a. Nwuka hapkyekha-ess-ni?
         who   pass-Past-Q
         'Who passed (the exam)?'
     b. amwu-to/*amwu-rato/*amwu-na hapkyekha-ci.anh-ass-e
         Anyone-TO/-RATO/-NA   passed-not-Dec
         'No one passed (the exam).'

2.2. Concession and Pragmatic Scale

The particles *–to/-irato/-ina* combine with *amwu-* and they share "concessive" meaning like English *even* and *even though*. (C. Lee 1999) The meaning of "concession" is based on the notion of "low compatibility," i.e., least likelihood, and it often occurs in contrastive contexts. For instance, the following sentence contains a concessive adverbial clause marked by *–ato*.

(15) a. pi-ka   o-ato,   kyengki-nun kyeysoktoy-ess-ta
         rain-Nom come-though game-Top   continued
         'Even though it rained, the game continued,'
     b. e1: 'it rained'
         e2: 'the game continued'

Notice that the events e1/e2 denoted by the first/second clauses do not take place simultaneously in normal situations – they are not compatible with each other, so the whole sentence induces contrastive reading.

Here we claim that noun phrases marked by the concessive marker *–to/-irato/-ina* refer to a lower bound of a pragmatic "likelihood-scale." This is due to the fact that

'concession' requires a likelihood-scale, and the meaning of "low compatibility" picks up the least likely element (i.e., lower bound) of the scale. The following sentences contain a subject NP with *–to/-irato/-ina* and implicate that the subjects denote a lower bound in a likelihood-scale determined by the context.

(16) Jini-to/-rato/-na   kuren il-ul   ha-ul.swu.iss-e
     Jini-TO/-RATO/-NA such   thing-Acc do-can-Dec
     'Even Jini can do such a thing.'
(17) sey   saram-to   an o-ass-ta
     three person-TO not came
     'Less than three people came.'
(18) sey   saram-ina   o-ass-ta
     three person-NA came
     'No less than three people came.'

We might easily construct a pragmatic scale for (16), which gives an ordering for a set of individuals according to 'the ability/probability of their doing such a thing.' Then, (16) implies that 'Jini is the least likely person who can do such a thing.' We just note here the difference between *Jini-to* and *Jini-na* in (16): That is, when *Jini-to/-rato* is used in (16), the speaker of (16) expects that 'there are other (relatively many) people than Jini who are likely to be able to do such a thing,' but when *Jini-na* is used, the speaker expects that 'there are relatively few people who is likely to be able to do such a thing,' and that Jini is the least likely person who is likely to do it.

The indefinite number phrase *sey saram-to/-ina* '(even) three people' in (17) and (18) also derives a scalar implicature that the number 'three' is the least likely number such that the number of people came. Thus, (17) implies that the speaker expected at least three people would come, and (18) implies that the speaker expected at most three people would come, so the number 'three' is the least likely number in a pragmatic quantity scale.

We can identify "concessive" meaning of *–to/-irato/-ina* in the following, where they are leading an adverbial clause:

(19) a. amwu-haksayng-i o-a.to/te.rato   manna-ci.anh-ass-ta
       any-student-Nom come-though   meet-not-Past-Dec
       'No matter what student came, I did not see him.'
    b. nwuka/amwu-ka ka-na sesayngnim-ul mos manna-ass-ta
       who/anyone-Nom go-though teacher-Acc not meet-Past-Dec
       'No matter who went, he could not see the teacher.'

The basic meaning of the particle *–to* in Korean is "addition" like *also/too* in English, and the additive meaning derives concessive reading depending on the utterance context/situation. When it takes *amwu-*, however, it requires a pragmatic (likelihood) scale to denote a lower bound of the scale. Thus when the NP marked by *–to* is an answer to a question, the NP cannot carry a concessive reading of *even*, but only an additive reading of *also*.

(20) a. Jini-malko   tto nwuka hapkyekha-ess-ni?
       Jini-besides   also who   pass-Past-Q

'Who passed (the exam) besides Jini?'
b. Koni-to   hapkyekha-ess-e.
   Koni-also passed
   'Koni also passed (the exam).'
c. simcie   Koni-to hapkyekha-ess-e.
   what.is.more Koni-even passed
   'What is more, even Koni passed (the exam).'

(b) is a natural answer to the question (a), but (c) is not a natural answer since the adverb *simcie* 'what is more' triggers a pragmatic scale and so *Koni-to* only has a concessive reading 'even Koni.'

3. Distribution and Interpretation of *amwu-to/-irato/-ina*

Why do the combinations of the arbitrary choice *amwu* and the concessive markers *-to/-irato/-ina* display different distributions and give rise to different meanings? English *any* is often viewed as having two different meanings depending on the contexts, i.e., NPI *any* and free choice *any*. Such a view presumes the lexical ambiguity of the word *any*. Giannakidou (1998) similarly argues that Greek NPIs divide into two, emphatic NPIs and non-emphatic NPIs, depending on the metrical characteristics (existence and lack of the stress).

There is, however, no need to postulate a lexical ambiguity for the analysis of Korean *amwu*. The various meanings that it has can be deduced from the collaboration of the following three factors: the arbitrary choice meaning of *amwu*, the concessive reading of the markers *-to/-irato/-ina*, and the pragmatic contexts the sentences provide. Here we treat *amwu-to* and *amwu-rato* as alloforms since they are not only very similar to each other in their surface forms but also are complementarily distributed. Let us now consider how *amwu* produces the relevant readings.

3.1. Existential vs. Universal

(21) Negative sentence:
    amwu haksayng-to o-ci.ani-ha-ess-ta
    any   student-TO come-not-do-Past-Dec
    = 'No matter what student x it may be,
       it is not the case that x came'
    = 'there is some **arbitrary choice function** f such that
       $\neg$(f (STUDENT) CAME)'
    = $\exists$f.$\neg$(f (STUDENT) CAME)'

(22) Definition. A function f is an **arbitrary choice function** iff
    (i) f is a choice function, and
    (ii) for a set K, f(K)(Σ_s) = x, where x $\in$ K,

        Σ_s is a pragmatic likelihood-scale induced by the sentence S, and

        x is a lower bound in Σ_s.

(23) Modal Construction:

    amwu haksayng-irato   ku il-un   ha-ul.swu.iss-ta

    any   student-IRATO that work-Top do-can-Dec

    = 'No matter what student x it may be,

       it is possible that x does it'

    = 'there is some **arbitrary choice function** f such that

       $\diamondsuit$(f(STUDENT) DO-IT)'

    = $\exists$f.$\diamondsuit$(f(STUDENT) DO-IT)

In such modal contexts, we can naturally conceive of a pragmatic likelihood scale, which can easily be postulated to be linearly (totally) ordered. Thus, if an element at the lowest point of the scale satisfies the property of the predicate, any other elements in the same scale do, too. Due to the implicature thus produced, the so-called free choice reading (or universal quantifier reading) surfaces.

    Let us next consider the contexts in which *amwu-rato/amwu-na* has an existential reading. In such contexts, no scalar implicature is significant to induce universal-like quantification, since the pragmatic likelihood scale mentioned before is not naturally conceivable.

(24) Imperatives:

    amwu-rato/-na   teylyeo-e

    any-RATO/-NA   bring-Imp

    = 'I ORDER YOU, for some arbitrary choice function f, you take f(x) to me.'

       (no pragmatic scale available)

(25) Future:

    amwu-hako-rato/-na   kyelhonha-l ke-ya.

    any-with-RATO/-NA marry-Adn   thing-be.Dec

    = 'for some arbitrary choice function f, (I/he) WILL marry f(x).'

Even though some likelihood scale is provided by context/situation, it might not be totally ordered but partially ordered, i.e., there are pairs of elements in the scale such that they are not ordered with respect to each other in the scale. For example, we might marginally imagine a likelihood scale for (24) such that individuals are ordered in terms of likelihood of your taking each of them, but this scale would be partially ordered at most. In case like this, even though a lower bound of the scale satisfies the relevant predicate, this should not trigger an implicature deriving a universal quantification.

3.2. *Amwu-rato* vs. *amwu-na*

Now let us see what make *amwu-rato* and *amwu-na* so similar in distribution, but different in meaing in some constructions. First consider their meaning difference in the following constructions:

(26) Relative clauses headed by a universal quantifier:
      amwu-rato/-na   chayyongha-n hoysa-nun   motwu ssuleci-ess-ta.
      any-RATO/-NA hire-Adn   company-Top all   fall-Pst-Dec
      'Every company that hired any number of/just any employee collapsed.'

(27) *if*-clauses:
      yocum   kathun pwulkyengki-ey wuli hoysa-ka   amwu-rato/-na
      these;days like   depression-at   we company-Nom any-RATO/-NA
      chayyongha-n-ta-myen, ssuleci-ko malkeya.
      hire-Pres-Dec-if   fall;end;up
      'If our company hires any employee in such an economic depression,
      it will end up collapsing.'

(28) habitual constructions:
      Jini-nun caki-ceney   amwu chayk-irato/-na   ilk-nun   supkwan-i iss-ta.
      J.-Top   sleep-before any   book-IRATO/-NA read-Adn habit-Nom exist-Dec
      'Jini is in the habit of reading any books before she goes to bed.'

In the above examples, *amwu-rato* is interpreted as 'one man, no matter who he is'. This indicates the lowest point of the quantity scale. In contrast, *amwu-na* reads as 'anybody, irrespective of the quality he has'. In other words, *amwu-na* is an arbitrary choice in the quality scale. We can classify concessiveness into two types, quantity and quality. Based on this, we propose the following:

(29) Propositions: *-to*   'concession in quantity(/quality) scale'
                       -irato 'concession in quantity/quality scale'
                       -ina   'concession in quality scale'

The classification given here helps to understand the fact that *amwu*-N-*ina* unlike *amwu*-N-*irato* often has a derogative sense. The classification also predicts that *amwu*-N-*ina* is not allowed in a situation where no quality scale is brought up. The prediction seems to be borne out.

(30) Questions:
      Chelswu-hanteyse amwu sosik-irato/*-ina   iss-ess-ni?
      C.-from   any   news-IRATO/-INA exisit-Past-Q
      'Has there been any news from Chulsoo?'

(31) If-clauses:
      Pise-nun amwu-rato/??-na   o-myen sacang-eykey yenlakhaycwu-ess-ta.
      secretary-Top any-RATO/-NA come-if boss-to   let;know-Past-Dec
      'If anyone comes, the secretary let the boss know it.

(32) Relative clauses headed by a universal quantifier:
      amwu-rato/??-na salanghaypo-n salam-un ipyel-uy   kothong-ul al-n-ta
      any-RATO/-NA love-Adn   man-Top separation-Gen pain-Acc know-Pres-Dec
      'Everyone who has ever loved anyone knows the pains of separation.'

In the above constructions, *amwu*-N-*rato* sounds much better than *amwu*-N-*na*, since the contexts do not naturally provide a pragmatic "quality scale" for *amwu-na*.

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