

Type-shifting and scrambling in Dutch and Korean*

Hong-Ki Sohng Chong-Sun Lee
University of Washington Hanyang University

Definites in Dutch and Korean are free to scramble, but indefinites tend to resist scrambling. Van der Does & de Hoop (1998) employ an Optimality Theoretic approach to type-shifting to account for the scrambling behaviors of semantically incorporated objects in Dutch. We show that the phenomena of scrambling in Dutch and Korean are accounted for by the suggested OT approach. Scrambling behaviors of object NPs in the context of semantic incorporation are captured by the interaction of constraints based on the preferred types of the verbs and their objects. Scrambling behaviors of object NPs in transitive constructions are modeled in the OT approach by assigning the same semantic type to both the scrambled and the in-situ definites and quantificational NPs and by assigning a quantificational type to the scrambled indefinite. Scrambled indefinites in these languages are correctly predicted to be non-optimal by the interaction of semantic constraints in the OT framework.

1 Introduction

According to van der Does & de Hoop (1998), in Dutch and German, definite NPs freely scramble (i.e., scrambling is optional for definites), whereas indefinites are subject to certain restrictions, contra Diesing & Jelinek (1995), de Hoop (1992), Neeleman & Reinhart (1998), etc. Korean NPs show similar behaviors with regard to scrambling: definites and quantificational NPs are free to scramble, but indefinites tend to resist scrambling (scrambled indefinites in Korean are judged rather awkward or odd).

To account for this difference in scrambling behaviors between definites and indefinites in Dutch, van der Does & de Hoop, elaborating certain insights of Partee (1987) on type-shifting, employ an Optimality Theoretic (OT) approach to type-shifting under which a scrambled NP that is type-shifted may be permitted by the interaction of constraints based on the preferred types of the verb and its object.

In this paper, we will show that the phenomena of scrambling in Dutch and Korean can be accommodated in the suggested OT approach to type-shifting and that the infelicity of scrambled indefinites in both languages can be accounted for in terms of the interaction of semantic constraints such as "iNP in <et>".

In 2.1 and 2.2, we will show that scrambling behaviors of the object NPs in the transitive constructions in Dutch and Korean can be explained in the OT approach to type-shifting by assigning the same semantic type to both the scrambled and the in-situ

* This work was supported by Hanyang University, Korea, made in the program year of 2000. We would like to thank Soowon Kim and Toshiyuki Ogihara for valuable comments on an earlier version of this paper.

definites and quantificational NPs and by assigning a quantificational reading to the scrambled indefinite. Scrambled indefinites in these languages are correctly predicted to be non-optimal by the interaction of semantic constraints in the OT framework.

In 3.1 and 3.2, scrambling behaviors of object NPs in the context of semantic incorporation in Dutch and Korean will be discussed. Definites and indefinites in Dutch are semantically incorporated by light verbs¹, as in *de bus neem* 'take the bus' and *een enkeltje neem* 'get a single', while definites and indefinites in Korean are semantically incorporated by verbs in their figurative use, that is, in cases where a meaning transfer occurs in the combination of the verb and its object (as in *tam-ul ssah-ta* 'build a wall' → 'separate oneself from'). We will show that the different scrambling behaviors of object NPs in the context of semantic incorporation in Dutch and Korean are captured by the interaction of interpretative constraints based on the preferred types of the verbs and their object NPs within OT.

Overall, the phenomena of scrambling in Dutch and Korean are shown to be adequately accommodated in the OT approach to type-shifting, and scrambled indefinites in these languages are correctly predicted to be non-optimal in the OT framework.

2 Scrambling in the context of an ordinary transitive verb in Dutch and Korean

In this section, we discuss the phenomena of scrambling in the context of an ordinary transitive construction in Dutch and Korean. We will discuss scrambling in the context of semantic incorporation in the next section. We will see that scrambling behaviors of the object NPs in the transitive constructions in Dutch and Korean are explained in an OT approach to type-shifting by assigning the same semantic type to both the scrambled and the in-situ definites and quantificational NPs and by assigning a quantificational type to the scrambled indefinite. The inappropriateness of the scrambled indefinites is predicted in terms of the interaction of the interpretative constraints.

2.1 Scrambling in the context of an ordinary transitive verb in Dutch

According to van der Does & de Hoop (1998), in languages like Dutch and German which allow for scrambling, definites, strong NPs, and quantificational NPs may freely scramble, while indefinites and other weak NPs are subject to certain restrictions. This is illustrated in the Dutch examples in (1-4).

- (1) a. dat ik gisteren alle krakers heb gesproken
 that I yesterday all squatters have spoken
 b. dat ik alle krakers gisteren heb gesproken
 that I all squatters yesterday have spoken
 'that I talked to all squatters yesterday'
- (2) a. dat ik gisteren de kraker heb gesproken
 that I yesterday the squatter have spoken
 b. dat ik de kraker gisteren heb gesproken
 that I the squatter yesterday have spoken

¹ Light verbs are discussed in great detail in Grimshaw & Mester (1988). We refer the reader to this work.

- 'that I talked to the squatter yesterday'
- (3) a. dat ik gisteren twee krakers heb gesproken
 that I yesterday two squatters have spoken
 b. dat ik twee krakers gisteren heb gesproken
 that I two squatters yesterday have spoken
 'that I talked to two squatters yesterday'
- (4) a. dat ik gisteren een krakers heb gesproken
 that I yesterday a squatter have spoken
 b. ?dat ik een krakers gisteren heb gesproken
 that I a squatter yesterday have spoken
 'that I talked to a squatter yesterday'

To account for this difference in scrambling behaviors between definites and indefinites, van der Does & de Hoop employ an OT approach to type-shifting under which a scrambled NP that is type-shifted may be permitted by the interaction of constraints based on the preferred types of the verb and its object, and according to which the grammaticality judgment of the output varies.

Let us consider the semantics of definites and indefinites briefly before deciding the preferred types of these NPs. As is well known, referential definites have a natural interpretation in type e . The semantics of referential definites is derived by the ι operator², the partial function of type $\langle\langle et \rangle e \rangle$, which returns the element of its argument provided this element is a singleton.

(5) $\iota(X) = d$, if $X = \{d\}$ for some d .

(6) $\lambda x.nemen(x, \iota y(bus(y)))$

Thus, the VP *de bus nemen* 'to take the bus' has (6) as its semantics.

We could use choice functions to express the semantics of indefinites as in (7).

- (7) a. een enkeltje nemen
 a single take
 'to get a single'
 b. $\lambda x(nemen(x, \epsilon y(nemen(x, y) \ \& \ enkeltje(y))))$

Here, ϵ means a choice from its argument provided this set is non-empty. However, the choice cannot be from just the singles; for then, choosing a single that one does not take makes (7b) false. A *single* in the VP *get a single* should be the one that one takes. By contrast, ι can be applied independently of the verb; for each y in (6), there is a unique bus regardless of whether x takes this bus or not. Due to the dependence on the verb, indefinites are not simply of type e . We therefore follow the suggestion of Partee that indefinites denote more naturally in the predicative type $\langle et \rangle$.

² Partee's (1987) definition of *Iota* is as follows:

Iota is the partial surjective operation, mapping any singleton set onto its member; in IL, augmented by the *iota* operator, it maps P onto $\iota x[P(x)]$.

An (in)definite NP can also have a predicative meaning in type $\langle et \rangle$. It is the denotation of its noun. In the case of definites this denotation should be a singleton, while it should be non-empty in the case of indefinites. For singleton properties P , the predicative meaning of a definite is the same as its referential meaning.

$$(8) P = \{d\} \text{ iff } \iota(P) = d$$

In Partee's system of type-shifting, the predicative definite in type $\langle et \rangle$ can be obtained by applying the total injective function *ident*³ of type $\langle e \langle et \rangle \rangle$ to $\iota(P)$. As the two types of definites result in the same meaning, we assume that definites have their basic, preferred denotation in type e , following the strategy that the simplest type is preferred. Indefinites have their preferred denotation in type $\langle et \rangle$, and quantificational NPs denote in $\langle \langle et \rangle t \rangle$.

Let us consider the data in (1-4). Even though van der Does & de Hoop do not specifically address the cases of scrambling in the context of an ordinary transitive verb, we can account for them in a straightforward way using the Optimality Theoretic approach to type-shifting.

The definite NP or strong NP in (1) and (2) may occur both at the right-hand side and the left-hand side of the adverb *gisteren* 'yesterday', with no change in the meaning of the NP. This kind of scrambling behavior of the definite NP in the context of an ordinary transitive verb is explained under the OT framework, as the NP and the transitive verb stay in their preferred types both in unscrambled and scrambled positions:

(9)

Input		Output	dNP in e	tV in $\langle e \langle et \rangle \rangle$
Definite NP +	☞	$e \langle e \langle et \rangle \rangle$		
Transitive verb	☞	$e \langle e \langle et \rangle \rangle$		

The quantificational NP *twee krakers* 'two squatters' in (3) has the preferred type $\langle \langle et \rangle t \rangle$ in its basic position, and it also has the quantificational type $\langle \langle et \rangle t \rangle$ in the scrambled position with no significant shift in interpretation. As such, the quantificational NP is allowed to occur in both positions as in (10).

(10)

Input		Output	qNP in $\langle \langle et \rangle t \rangle$	tV in $\langle e \langle et \rangle \rangle$
Quantificational NP	☞	$\langle \langle et \rangle t \rangle \langle e \langle et \rangle \rangle$		
+Transitive verb	☞	$\langle \langle et \rangle t \rangle \langle e \langle et \rangle \rangle$		

Scrambling the definite or strong NP and the quantificational NP induces no violation of the related interpretative soft constraints so these NPs are predicted to be well-formed in both positions.

Finally, the scrambling behavior of the indefinite in (4) is explained in the suggested OT analysis. Indefinites are assumed to live more naturally in the predicative

³ In Partee's system of type-shifting, *Ident* is the total, injective operation mapping any element onto its singleton set; in IL terms, it maps j onto $\lambda x[x = j]$.

type $\langle et \rangle$. Van der Does & de Hoop assume that if an indefinite may scramble - for example, in the context of an ordinary transitive verb in type $\langle e \langle et \rangle \rangle$ - it could change the interpretation of the phrases in which it occurs. They argue that this only happens when it has its non-preferred type $\langle \langle et \rangle t \rangle$ as a quantifier⁴. Thus, the indefinite in (4b) is assumed to switch to a quantificational type $\langle \langle et \rangle t \rangle$ when it scrambles, deviating from its preferred type. Scrambling the indefinite implies a violation of the preferred interpretation of the indefinite in type $\langle et \rangle$. This explains why scrambling the indefinite in Dutch and German is infelicitous or less well-formed. This information is given by means of a tableau in (11).

(11)

Input	Output	iNP in $\langle et \rangle$	tV in $\langle e \langle et \rangle \rangle$
Indefinite NP+	$\langle et \rangle$ $\langle e \langle et \rangle \rangle$		
Transitive verb	$\langle \langle et \rangle t \rangle$ $\langle e \langle et \rangle \rangle$	*	

2.2 Scrambling in the context of an ordinary transitive verb in Korean

Consider the following examples.

- (12) a. John-i ecey kangka-eyse ku sonye-lul poa-ss-ta.
 John-Nom yesterday riverside-Loc the girl-Acc see-Pst-Dec
 b. Ku sonye-lul John-i ecey kangka-eyse poa-ss-ta.
 the girl-Acc John-Nom yesterday riverside-Loc see-Pst-Dec
 'John saw the girl on the riverside yesterday.'
- (13) a. John-i ecey twu pwulpep kecwuca-lul manna-ss-ta.
 John-Nom yesterday two squatters-Acc meet-Pst-Dec
 b. Twu pwulpep kecwuca-lul John-i ecey manna-ss-ta.
 Two squatters-Acc John-Nom yesterday meet-Pst-Dec
 'John met two squatters yesterday.'
- (14) a. John-i ecey kangka-eyse sonye-lul poa-ss-ta.
 John-Nom yesterday riverside-Loc a girl-Acc see-Pst-Dec
 b. #Sonye-lul John-i ecey kangka-eyse poa-ss-ta.
 a girl-Acc John-Nom yesterday riverside-Loc see-Pst-Dec
 'John saw a girl on the riverside yesterday.'
 (I use the symbol # to indicate the (very) unnaturalness or oddity of a sentence.)

In (12), the definite NP *ku sonye-lul* 'the girl' in type e may occur both in the scrambled and the in-situ positions without any change in the meaning of the NP. It is well-known that scrambling definites is optional in Korean as it is in Dutch and German. In (13), the quantificational NP *twu pwulpep kecwuca-lul* 'two squatters' may also occur in the scrambled and the unscrambled positions with no significant shift in interpretation,

⁴ In generalized quantifier theory, the semantics of an indefinite as an existential quantifier is the set of all sets that have a non-empty intersection with the interpretation of N .

like quantificational NPs in Dutch and German. Scrambled indefinites in Dutch are infelicitous while scrambled indefinites in Korean, as (14b) shows, are very unnatural or strange, that is, scrambled indefinites in these languages are non-optimal.

The scrambling behaviors of definites and quantificational NPs in Korean can be modeled within the Optimality Theoretic framework as usual:

(15)

Input		Output	dNP in <i>e</i>	tV in $\langle e \langle et \rangle \rangle$
Definite NP +	☞	<i>e</i> $\langle e \langle et \rangle \rangle$		
Transitive verb	☞	<i>e</i> $\langle e \langle et \rangle \rangle$		

(16)

Input		Output	qNP in $\langle \langle et \rangle t \rangle$	tV in $\langle e \langle et \rangle \rangle$
Quantificational NP	☞	$\langle \langle et \rangle t \rangle$ $\langle e \langle et \rangle \rangle$		
+Transitive verb	☞	$\langle \langle et \rangle t \rangle$ $\langle e \langle et \rangle \rangle$		

Definites and quantificational NPs in Korean freely scramble with no shift in interpretation, as they stay in the same type whether scrambled or in-situ. As these NPs remain in their preferred type in both positions as referential or quantificational, scrambling these NPs will yield the grammatical output that involves no violation of the related interpretative soft constraints. This explains why scrambling definites and quantificational NPs in Korean is common and yields no change in interpretation.

On the other hand, the indefinite NP *sonye-lul* 'a girl' in (14) prefers to stay in-situ, and scrambling the indefinite is rather unnatural or awkward. Scrambling the indefinite shifts its interpretation to the generalized quantifier type $\langle \langle et \rangle t \rangle$, violating its preferred interpretation in type $\langle et \rangle$, as it does in Dutch.

This information is represented by means of a tableau in (17).

(17)

Input		Output	tV in $\langle e \langle et \rangle \rangle$	iNP in $\langle et \rangle$
Indefinite NP +	☞	$\langle et \rangle$ $\langle e \langle et \rangle \rangle$		
Transitive verb		$\langle \langle et \rangle t \rangle$ $\langle e \langle et \rangle \rangle$		*

As the tableau (17) shows, the scrambled indefinite in Korean is in violation of the constraint "iNP in $\langle et \rangle$ ". Thus, scrambled indefinites in Korean are correctly predicted to be non-optimal in the OT approach to type-shifting. In both languages, indefinites prefer to stay in-situ, as no violation of the semantic constraints occurs in the cases of the in-situ indefinites.

Therefore, the infelicity of scrambled indefinites in Dutch and Korean is accounted for in the OT framework, as they are predicted to be non-optimal in terms of the interaction of the interpretative constraints.

3 Scrambling in the context of semantic incorporation in Dutch and Korean

In this section, we discuss the phenomena of scrambling in the context of semantic incorporation in Dutch and Korean, and we will show that different scrambling behaviors of object NPs in the context of semantic incorporation in Dutch and Korean are captured by the interaction of interpretative constraints based on the preferred types of the NPs and the related verbs within the OT framework.

3.1 Scrambling in the context of semantic incorporation in Dutch

In their article, van der Does & de Hoop (1998) concentrate on the definites and indefinites that form a semantic unity together with light verbs (verbs which do not have much semantic content on their own and cannot bear constrictive stress). They assume that light verbs in Dutch and German combine with object NPs to form a meaningful whole. Yet the definite objects can occur in either scrambled or unscrambled position, and the indefinites are still subject to certain restrictions, as is illustrated in (18-20).

Consider *de was doen* 'do the laundry' versus *een plas doen* 'take a piss' in (18), and *de bus nemen* 'take the bus' versus *een enkeltje nemen* 'get a single' in (19).

- (18) a. dat ik nog de was moet doen
that I still the laundry must do
b. dat ik de was nog moet doen
that I the laundry still must do
'that I still have to do the laundry'
c. dat ik nog een plas moet doen
that I still a piss must do
d. *dat ik een plas nog moet doen
that I a piss still must do
'that I still have to take a piss'
- (19) a. dat ik altijd de bus neem
that I always the bus take
b. dat ik de bus altijd neem
that I the bus always take
'that I always take the bus'
c. dat ik altijd een enkeltje neem
that I always a single take
d. ?dat ik een enkeltje altijd neem
that I a single always take
'that I always get a single'

Finally consider *de mazelen heb* 'have the measles' vs *kinderen hebben* 'have children' in (20).

- (20) a. dat ik ook de mazelen heb
that I also the measles have


- b. dat ik de mazelen ook heb
that I the measles also have
'that I also have the measles'
- c. dat ik ook kinderen heb
that I also children have
- d. *dat ik kinderen ook heb
that I children also have
'that I also have children'


They assume that indefinites stay in-situ when the indefinite objects are semantically incorporated by the verbs. Indefinites may scramble, but in those cases they are assumed to shift to a quantificational type. They argue that an incorporating verb is the result of a shift from type $\langle e \langle et \rangle \rangle$ to type $\langle \langle et \rangle \langle et \rangle \rangle$ as follows.

$$(21) \text{inc}(\mathbf{R}^{\langle e \langle et \rangle \rangle}) \equiv \lambda P^{\langle et \rangle} \lambda x^e \exists y^e [P(y) \ \& \ \mathbf{R}(x)(y)]$$

They claim that light verbs in their preferred type $\langle \langle et \rangle \langle et \rangle \rangle$ in (18-20) prefer to combine with a predicative reading of their object in type $\langle et \rangle$. Scrambling the indefinite shifts its interpretation to the generalized quantifier type $\langle \langle et \rangle t \rangle$, violating its preferred interpretation as a predicate. This induces an additional deviation of the preferred interpretation of the light verb as an incorporating verb. Thus scrambling would violate the two interpretive soft constraints in the case of the indefinites. This explains why scrambling an indefinite object in the context of semantic incorporation is ungrammatical, as is illustrated in (18d, 20d). This result is represented in the tableau (22).



(22)

Input	Output	iNP in $\langle et \rangle$	IV in $\langle \langle et \rangle \langle et \rangle \rangle$
Indefinite NP + 	$\langle et \rangle \langle \langle et \rangle \langle et \rangle \rangle$		
Light verb	$\langle \langle et \rangle t \rangle \langle e \langle et \rangle \rangle$	*	*

(The optimal candidate is marked with ''.)

As for (19c-d), van der Does & de Hoop argue that one can come up with a context in which single tickets are hardly ever sold. Therefore, whenever there are single tickets available, I will take the opportunity to get one. In such a context we get a kind of generic reading for the object while the verb becomes contrastive (i.e., the verb bears contrastive stress). Hence scrambling is possible. In this context, the verb is not an incorporating verb but an ordinary transitive verb, and the scrambled indefinite that shifts to a quantificational type is not semantically incorporated any more. Accordingly, the scrambled indefinite and the verb in (19d) are subject to the semantic constraints "iNP in $\langle et \rangle$ " and "tV in $\langle e \langle et \rangle \rangle$ " in (11), repeated here as (23), and the scrambled indefinite in (19d) is judged non-optimal or less well-formed, as it is in violation of the semantic constraint "iNP in $\langle et \rangle$ ".

(23)

Input	Output	iNP in <et>	tV in <e<et>>
Indefinite NP+ 	<et> <e<et>>		
Transitive verb 	<<et>t> <e<et>>	*	

Consider the definites in the context of semantic incorporation. They are considered as having their basic denotation in type *e* as specified in terms of the *ι*-operation. Accordingly, they usually combine with non-incorporating verbs.

(24) de vis eten 'eat the fish'

$\lambda x(\text{eat}(x, \iota y(\text{fish}(y))))$

But the definite NPs also combine with the incorporating verbs, their referential interpretation then being shifted to the corresponding predicative meaning.



(25) de vis eten 'eat the fish'

$\lambda x \exists y[\text{eat}(x, y) \ \& \ \text{fish}(y)]$

Van der Does & de Hoop claim that as fish is supposed to be a singleton, (24) and (25) have the same meaning. To put it another way, the two possible derivations result in the same meaning. They claim that since definite NPs are interpreted more freely than predicative indefinites, they have more freedom to scramble.

In (18-20), the combination of a light verb and a definite object involves one violation of the relevant interpretative constraint at least: either the definite object shifts from its preferred type *e* to its predicative meaning <et> to combine with a light verb in <<et><et>> or the light verb changes from its preferred type <<et><et>> to its transitive meaning <e<et>> to combine with a referential definite in *e*, as is shown in (26).

(26)

Input	Output	dNP in <i>e</i>	IV in <<et><et>>
Definite NP + 	<et> <<et><et>>	*	
Light verb 	<i>e</i> <e<et>>		*

Van der Does & de Hoop assume that the two constraints involved in choosing the optimal derivation in the case of a definite are tied (i.e., they are not ranked with respect to each other). Hence scrambling is truly optional for definite objects as both derivations are judged optimal. Thus scrambling in the context of semantic incorporation in Dutch is shown to be adequately accommodated in the suggested OT approach to semantic types.

3.2 Scrambling in the context of semantic incorporation in Korean

Van der Does & de Hoop (1998) argue that in Dutch and German, definites and indefinites that form a semantic unity together with light verbs which do not have much semantic content on their own are semantically incorporated by the light verbs.

Predicative NPs in Korean are assumed to be semantically incorporated by the verbs in their figurative use (i.e., in cases where a meaning transfer occurs in the combination of the verb and its object). The examples are given below.


- (27) a. John-i cinan cwuey casik-ul po-ass-ta
 John-Nom last week a child-Acc see-Pst-Dec
 b. ??Casik-ul John-i cinan cwuey po-ass-ta
 a child-Acc John-Nom last week see-Pst-Dec
 'John begot a child last week.'
- (28) a. John-uy sikkwutul-un yepcip-kwa tam-ul
 John-Gen family members-Top next door neighbors-with wall-Acc
 ssah-ass-ta.
 build-Pst-Dec
 b. ??Tam-ul John-uy sikkwutul-un yepcip-kwa
 wall-Acc John-Gen family members-Top next door neighbors-with
 ssah-ass-ta.
 build-Pst-Dec
 'John's family separated themselves from the next door neighbors.'
- (29) a. Mary-ka han sikan ceney camcali-lul po-ass-ta.
 Mary-Nom one hour ago the bed-Acc look at-Pst-Dec
 b. Camcali-lul Mary-ka han sikan ceney po-ass-ta.
 the bed-Acc Mary-Nom one hour ago look at-Pst-Dec
 'Mary looked at the bed one hour ago.'
 'Mary made the bed one hour ago.'
- (30) a. John-i cinan cwuey twulcaae casik-ul po-ass-ta
 John-Nom last week the second child-Acc see-Pst-Dec
 b. Twulcaae casik-ul John-i cinan cwuey po-ass-ta
 the second child-Acc John-Nom last week see-Pst-Dec
 'John begot the second child last week.'
 'John saw the second child last week.'

Casik-ul pota and *tam-ul ssah-ta* in (27), (28), and (30) mean literally 'see a child' and 'build a wall' respectively. But these expressions may be used figuratively to mean 'beget a child' and 'separate oneself from' respectively, and in those cases, the indefinite object NPs are assumed to be used predicatively to form a semantic unity with the verbs under consideration.

Camcali-lul pota in (29) means literally 'look at the bed', but it can mean figuratively 'make the bed', and in that case the definite object is assumed to be semantically incorporated by the verb. *Camcali* 'the bed' is a unique entity as a means of sleeping, and is assumed to have a predicative interpretation in type (*et*) to combine with the incorporating verb *pota* 'look at' in type <<*et*><*et*>>. As the gloss for (29) indicates, the scrambled definite *camcali-lul* and its verb can have both a literal meaning and a figurative meaning. The scrambled definite can still be semantically incorporated by the incorporating verb in (29b). I assume that this is due to the strong character of the *l* operator which derives the semantics of the definite NPs.

We will employ the tools of OT to account for the difference in scrambling behaviors of the object NPs in the context of semantic incorporation in Korean. As we already saw, the incorporating verb in type $\langle\langle et \rangle \langle et \rangle\rangle$ prefers to combine with a predicative reading of its object. A scrambled indefinite shifts to a quantificational reading in violation of its preferred type $\langle et \rangle$ as a predicate. This in turn causes another violation of the preferred interpretation of the incorporating verb in $\langle\langle et \rangle \langle et \rangle\rangle$. The result is represented in terms of a tableau below.



(31)

Input	Output	iNP in $\langle et \rangle$	incV in $\langle\langle et \rangle \langle et \rangle\rangle$
Indefinite NP + 	$\langle et \rangle \langle\langle et \rangle \langle et \rangle\rangle$		
Incorporating verb	$\langle\langle et \rangle t \rangle \langle e \langle et \rangle \rangle$	*	*

Thus the scrambled indefinites and the verbs in (27b) and (28b) are predicted not to have a figurative meaning, as they are in violation of the two constraints in (31) in the context of semantic incorporation. The scrambled indefinites and the verbs in their literal use in these sentences are subject to the semantic constraints “iNP in $\langle et \rangle$ ” and “tV in $\langle e \langle et \rangle \rangle$ ” represented in the tableau (17), and the sentences (27b) and (28b) with a literal meaning are judged unnatural or odd as the scrambled indefinites that shift to a quantificational type violate the constraint “iNP in $\langle et \rangle$ ”.

The object NP *camcali-lul* in (29a,b) as a means of sleeping is considered a predicative definite, and the combination of an incorporating verb and a predicative definite object involves one violation of the relevant constraint at least, as is shown in (32).

(32)

Input	Output	dNP in e	incV in $\langle\langle et \rangle \langle et \rangle\rangle$
Definite NP + 	$\langle et \rangle \langle\langle et \rangle \langle et \rangle\rangle$	*	
Incorporating verb 	$e \langle e \langle et \rangle \rangle$		*

As in Dutch and German, the two interpretative soft constraints in this case are assumed to be tied, and this results in two optimal derivations. Therefore, the definite NP and the verb in (29a-b) are predicted to have a figurative reading. In their literal use, they are subject to the constraints in the tableau (15). Accordingly, the definite NP and the verb in (29a-b) are correctly predicted to have both a literal and a figurative reading in the OT framework. *Twulccae casik* ‘the second child’ in (30a, b) is a definite NP. Thus the same situation holds in this case, and the definite NP and the verb can have both a figurative and a literal reading in (30a, b). All this suggests that scrambling a definite object is truly optional in Dutch and Korean.

Overall, scrambling in the context of semantic incorporation in Dutch and Korean is shown to be adequately accommodated in the suggested OT approach to type-shifting.

4. Conclusion

In Dutch and German, definite noun phrases are known to freely scramble whereas indefinites are subject to certain restrictions. Definites in Korean are free to scramble, but indefinites are subject to certain semantic restrictions. Thus object NPs in these two languages show similar behaviors with regard to scrambling.

Van der Does & de Hoop employ an Optimality Theoretic (OT) approach to type-shifting to account for the difference in scrambling behaviors between definites and indefinites, under which a scrambled NP that is type-shifted may be permitted by the interaction of constraints based on the preferred types of the verb and its object and according to which the grammaticality judgment of the output varies.

In this paper, we have shown that the phenomena of scrambling in Dutch and Korean are accommodated in the suggested OT approach to type-shifting and that the infelicity of scrambled indefinites in these languages is accounted for in terms of the interaction of the semantic constraints including “iNP in <et>”.

In 2.1 and 2.2, we have shown that scrambling behaviors of the object NPs in the transitive constructions in Dutch and Korean are accommodated in the OT approach to type-shifting by assigning the same semantic type to both the scrambled and the in-situ definites and quantificational NPs and by assigning a quantificational reading to the scrambled indefinites. Scrambled indefinites in these languages are correctly predicted to be non-optimal by the interaction of interpretative constraints in the OT framework.

In 3.1 and 3.2, scrambling behaviors of object NPs in the context of semantic incorporation in Dutch and Korean have been discussed. Definites and indefinites in Dutch are semantically incorporated by light verbs, as in *de bus neem* ‘take the bus’ while definites and indefinites in Korean are semantically incorporated by verbs in their figurative use, as in *tam-ul ssah-ta* (‘build a wall’ → ‘separate oneself from’).

A key to the phenomenon of a scrambled indefinite is that an indefinite that scrambles shifts to a quantificational type <<et>t>, deviating from its preferred type as a predicate. This induces additional deviation of the preferred interpretation of an incorporating verb. Different scrambling behaviors of object NPs in the context of semantic incorporation in Dutch and Korean are captured by the interaction of interpretative constraints based on the preferred types of the verbs and the object NPs within OT.

Overall, the phenomena of scrambling object NPs in Dutch and Korean are shown to be adequately accommodated in the OT approach to type-shifting, and scrambled indefinites in these languages are correctly predicted to be non-optimal in the OT framework.

References

- Choi, Hye-Won (1997) Topic and focus in Korean: the information partition by phrase structure and morphology, in Ho-Min Sohn & John Haig (eds.) *Japanese/Korean Linguistics*, CSLI Publications, Stanford, California.

- de Hoop, Helen (1992) Case configuration and noun phrase interpretation, Ph.D. dissertation, Univ. of Groningen (1996, Garland Publishing, New York & London).
- Diesing, Molly, and Eloise Jelinek (1995) Distributing arguments, *Natural Language Semantics* 3:123-76.
- Grimshaw, Jane, and Armin Mester (1988) Light verbs and θ -marking, *Linguistic Inquiry* 19:205-232.
- Neeleman, Ad, and Tanya Reinhart (1998) Scrambling and the PF interface, in Miriam Butt & Wilhelm Gueder (eds.), *The Projection of Arguments: Lexical and Compositional Factors*, CSLI Publications, Stanford.
- Partee, Barbara (1987) Noun phrase interpretation and type-shifting principles, in Jeroen Groenendijk, Dick de Jongh & Martin Stokhof (eds.), *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers*, Foris, Dordrecht.
- van der Does, Jaap, and Helen de Hoop (1998) Type-shifting and scrambled definites, *Journal of Semantics* 15:393-416.
- van Geenhoven, Veerle (1996) Semantic incorporation and indefinite descriptions: semantic and syntactic aspects of noun incorporation in West Greenlandic, Ph.D. dissertation, Tübingen.

Hong-Ki Sohng
 University of Washington
 Dept. of Linguistics
 Box 354340 A210 Padelford Hall
 Seattle, WA
 98195-4340
 sohngkh@u.washington.edu

Chong-Sun Lee
 Hanyang University
 Dept. of English Language and Literature
 Seongdong-gu Haengdang-dong 17
 Seoul, South Korea
 133-791
 chongsunlee@hotmail.com